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Interim Offshore Monitoring Program Round 3 Data Package

for

Portsmouth Naval Shipyard
Kittery, Maine

Northern Division
Naval Facilities Engineering Command
Contract Number N62472-90-D-1298
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TETRA TECH NUS, INC.

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INTERIM OFFSHORE MONITORING PROGRAM
ROUND 3 DATA PACKAGE

FOR

PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

COMPREHENSIVE LONG-TERM
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1.0 INTRODUCTION

This Round 3 Interim Offshore Monitoring Program Data Package for Operable Unit (OU) 4 at Portsmouth Naval Shipyard (PNS) in Kittery, Maine was prepared for the U.S. Department of Navy (Navy), Northern Division (NORTHDIV) Naval Facilities Engineering Command (NAVFAC) by Tetra Tech NUS, Inc. (TtNUS) under the Comprehensive Long-Term Environmental Action Navy (CLEAN), Contract Number N62472-90-D-1298, Contract Task Order (CTO) 201. This Data Package presents the results of the third round of sampling that was conducted in accordance with the Interim Offshore Monitoring Plan (TtNUS, 1999).

The Interim Offshore Monitoring Program was initiated as required by the Interim Record of Decision (ROD) for OU4 (Navy, 1999a). The monitoring program is designed to provide offshore monitoring in the interim period before completion of the offshore Feasibility Study (FS) and selection and implementation of the final remedy for OU4. At the time a final remedial action for OU4 is implemented, interim monitoring will be discontinued. However, the interim monitoring program was developed to provide a basis for any monitoring program that may be required as part of the final action. The Interim Offshore Monitoring Plan (TtNUS, 1999) provides additional information on the monitoring program.

During Round 3 of the Interim Offshore Monitoring Program, conducted from August 27 through 30, 1999, sediment, blue mussel (*Mytilus edulis*), and juvenile American lobster (*Homarus americanus*) samples were collected from 14 monitoring stations around PNS and 4 reference stations located in the Piscataqua River. The sampling was conducted by the University of Rhode Island (URI) under the direction and supervision of TtNUS. The laboratory analysis was conducted by Texas A&M University (TAMU).

The rest of this data package provides the field and laboratory results for Round 3.

2.0 SAMPLING INVESTIGATION

This section provides a summary of the sampling activities conducted during Round 3 of the Interim Offshore Monitoring Program. Support documentation for the field activities are provided in appendices as follows: Appendix A contains the Field Log Books; Appendix B contains Sediment Sample Log Sheets; Appendix C contains Chain of Custody Forms; Appendix D contains Mussel Collection Log Sheets; and Appendix E contains Juvenile Lobster Collection Log Sheets.

Figures 1 through 12, showing the monitoring and reference stations and sample locations, are provided after Section 3.0.

2.1 SAMPLING AND ANALYTICAL PROGRAM

The sampling program for Round 3 of the Interim Offshore Monitoring Program included collecting sediment, mussel, and juvenile lobster samples from 14 Monitoring Stations (MS) around PNS, and from 4 Reference Stations (RS) in the Piscataqua River. It was proposed that 3 sediment samples, 2 to 3 mussel samples, and 1 lobster sample would be collected from each MS, and 4 sediment samples, 2 mussel samples, and 1 lobster sample would be collected from each RS. Table 2-1 presents a summary of the samples that were collected at each station. Table 2-2 provides a description of each sample location. Tables 2-3, 2-4, and 2-5 present a summary of the analytical program for each sediment, mussel, and juvenile lobster sample, respectively. Table 2-6 is a summary of the Quality Assurance/Quality Control (QA/QC) samples that were collected (i.e., field duplicates, rinsate blanks, and field blanks), the analytical program, and a description of the samples.

Sample collection methods and field activities are further discussed herein. Deviations from the Interim Offshore Monitoring Plan (TtNUS, 1999) and the Site Visit Memorandum (Navy, 1999b) dated September 8, 1999 are discussed in Section 2.2.

2.1.1 Sediment Sample Collection

Sediment samples were collected in accordance with the Interim Offshore Monitoring Plan (TtNUS, 1999). The following paragraphs summarize the sediment sample collection activities.

Sediment samples were collected from 0 to 10 cm of the seafloor using a Smith-MacIntyre grab sampler or Eckman grab (for those sample locations requiring a boat), or a metal scoop (for those sample locations assessable by foot). These sediment samples were used for all analyses, including Acid Volatile Sulfide (AVS) and Simultaneously Extracted Metals (SEM). In addition, sediment samples were collected from the

surface (0 to 2 cm) for AVS only. A minimum of three grabs were collected from each sample location when the Smith-MacIntyre or Eckman grab was used. Only one grab sample was collected per location accessible by foot. All of the subtidal samples were collected using a grab sampler, and all of the intertidal samples were collected by hand using a scoop.

As each grab sample was retrieved, the water from the sampler was slowly drained (or suctioned off) immediately before collecting the sediment sample. Equal portions of the top 0 to 2 cm sediment in the grab sampler were removed from each grab using a clean Teflon-coated titanium scoop and placed directly into the sample bottle for AVS analysis for the 0 to 2 cm depth (total of 60 grams required). The sample bottle was filled to the top to have minimum air-space. A portion of the remaining sediment in the grab (from 0 to 10 cm) was removed from the sampler and placed in a chemically-cleaned, stainless steel mixing bowl to form a single composite sample for each sampling location. The sample bottles for analyses of the 0 to 10 cm sediment were filled after homogenization as described below. For sample locations that were accessed by foot, the sample was collected using a stainless steel scoop. As with the grab sampler, sediment for the 0 to 2 cm portion for AVS analysis was taken from the scoop, and placed directly into the sample bottle. The remaining sediment in the scoop was placed in a stainless steel mixing bowl, and the sediment was homogenized.

For the sediment sample for the 0 to 10 cm analyses, when a sufficient volume of sediment for each sampling location was collected in the bowl, it was mixed until homogenous, and then apportioned to the appropriate sample containers for shipment to the laboratory. Excess water in the sample jars was decanted after the sample was placed in the jar.

Before each sample was collected, a clean, clear tube (with no caps on either end) was pushed at least 10 cm into the sediment. A stopper was placed in the exposed end of the tube, and the tube was removed from the sediment. The tube was visually inspected to determine the approximate depth where the sediment changed color (usually from brown to black). The depth where the sediment changes color is termed the redox discontinuity because it gives an indication of where the sediment likely becomes reduced (i.e., less oxygenated). The redox discontinuity for each sediment sample is provided in Table 2-2.

2.1.2 Mussel Sample Collection

Mussel samples were collected in accordance with the Interim Offshore Monitoring Plan (TtNUS, 1999). The following paragraphs summarize the mussel sample collection activities.

Mussel samples were collected at all monitoring stations and reference stations where they were collocated with sediment. In addition, mussels were collected at two locations at Monitoring Station 11 where sediment

was not present. Mussel samples were collected primarily by hand and bivalve rakes; however, a few were collected incidentally with the sediment grab.

Approximately 50 mussels were collected from each station, where they were available, with few exceptions. Most of the mussels were between 5 and 6 cm in length; however, some mussels were smaller or larger depending upon availability. Most of the mussels were collected close to the sediment samples (within a 2-meter radius), and all were collected within a 10-meter radius of the sediment sample as specified in the Monitoring Plan (TtNUS, 1999).

All mussels selected for analysis were cleaned with a brush and seawater to remove sediment and other material on the shell. A representative portion (at least 25%) of the mussels in each sample were measured (length only). The mussels were placed into one plastic bag per composite sample. Mussel samples were shipped overnight to the analytical laboratory in sealed plastic bags, cooled to 4 degrees C. All of the mussels were still alive at the time of shipping to the laboratory so no samples were frozen and shipped on dry ice.

2.1.3 Juvenile Lobster Sampling

Juvenile lobster samples were collected in accordance with the Interim Offshore Monitoring Plan (TtNUS, 1999). The following paragraphs summarize the juvenile lobster sample collection activities.

Juvenile lobster samples were collected at all monitoring stations and reference stations. Modified lobster traps were used to ensure that juvenile lobsters with carapace lengths between 30 to 60 mm were collected. A minimum of three traps were placed at a given station until an adequate number of lobsters was collected. The traps were rotated among the stations based on the availability of juvenile lobsters at each station.

Based on the tissue weight, approximately five lobsters with carapace lengths between 30 to 60 mm were required to obtain a sufficient volume of tissue (minimum of 150 grams wet weight of tail and claw meat for actual sample plus QA/QC samples). The laboratory preferentially used juvenile lobsters with carapace lengths between 50 to 60 mm to make up the sample volume, where possible (see Section 3.2.1 for more details). As discussed in the Round 1 Data Package (TtNUS, 2000), the intestines from the lobsters were removed (via dissection) prior to analysis.

To collect the juvenile lobster, after the trap was retrieved, its contents were emptied into a clean tub. The lobsters in the 50 to 60 mm size range were collected and placed into clean plastic storage containers. The remaining lobsters were returned to the water. At the site trailer, the lobsters were measured, washed (if necessary), wrapped individually in aluminum foil, and placed into plastic bags. The sex of the lobster was also visually determined and noted. The juvenile lobster samples were shipped overnight to the analytical

laboratory on wet ice, cooled to 4 degrees C. All of the lobsters were still alive at the time of shipping to the laboratory so no samples were frozen and shipped on dry ice.

2.1.4 Surveying

Each sample location was identified and mapped using a Geographic Positioning System (GPS) accurate to within 1 meter in accordance with the Interim Offshore Monitoring Plan (TtNUS, 1999). All locations/coordinates also were recorded in a field notebook. During Round 2, permanent markers were installed at most intertidal sampling locations.

2.1.5 Sample Identification System

In accordance with the Interim Offshore Monitoring Plan (TtNUS, 1999), each sample collected was assigned a unique sample tracking number that consisted of alpha-numeric characters identifying the sample medium (e.g., sediment, mussel, or juvenile lobster), location, and sample round identifier. Any other pertinent information regarding sample identification was recorded in the field logbooks.

The alpha-numeric coding used in the sample system is explained in the diagram below and in the subsequent definitions.

(OU4) -	(AA) -	(ANN) -	(NNNA)
	(Sample Medium)	(Sampling Location)	(Sampling Round)

Character Type:
A = Alpha Character
N = Numeric Character

Medium:
SD = Sediment
MU = Mussel
LJ = Lobster, Juvenile

Sample Location:
Monitoring station = M + number
Reference station = R + number

Sample Round Identifier:

A sample location designation followed by year and sampling season was used. Sample location designation varied from 1, 2, or 3 for one of the three sample locations at that station. The year designations were the last two digits of the year (2000) and the sampling season was "A" denoting late summer sampling round.

For example, the first mussel sample collected at Reference Station 4 during this round of sampling was designated as follows:

OU4-MU-R04-100A.

For example, the second sediment sample collected at Monitoring Station 1 during this round of sampling was designated as follows:

OU4-SD-M01-200A.

Field QC samples used the same coding system, but the following three codes were used in the "medium" portion of the sample designation:

RB = Rinsate Blank
FB = Field Blank
FD = Field Duplicate

The field QC location indicator was given in the numerical order in which the QC sample was collected. For example, the first duplicate collected during this sampling round was designated as follows:

OU4-FD-001-100A.

The duplicate samples for the mussels and lobsters were prepared by TAMU after the tissue samples were homogenized because collecting different mussels and lobsters would not be considered true duplicates. Therefore, an "-FD" was added to the end of the sample designations for the duplicate samples for the mussels and lobsters. A "-2" was added to the end of the sediment sample numbers for the AVS samples that were collected from 0 to 2 cm to differentiate the samples from the AVS samples that were collected from 1 to 10 cm.

2.1.6 Sample Handling and Management

Sample handling and management included the field-related considerations associated with the selection of sample containers, preservatives, allowable holding times, and analyses and sample custody and shipping. Sample handling was conducted in accordance with the Interim Offshore Monitoring Plan (TtNUS, 1999). Sample management, including sample custody from the field to the laboratory and sample management, was conducted in accordance with the Interim Offshore Monitoring Plan (TtNUS, 1999).

2.1.7 Equipment Decontamination

All nondedicated reusable sampling equipment used for collecting samples were decontaminated both before beginning field sampling and between samples in accordance with the Interim Offshore Monitoring Plan (TtNUS, 1999).

2.1.8 Residue Management

Sampling residue were handled in accordance with B&R Environmental SOP SA-7.1 provided in the PNS SOP Reference Manual (B&R Environmental, 1996) and as discussed in the Interim Offshore Monitoring Plan (TtNUS, 1999).

2.1.9 Field Documentation

Field documentation was conducted in accordance with the Interim Offshore Monitoring Plan (TtNUS, 1999). Weather conditions, unusual events, and field measurements were documented, as appropriate.

Appendix A presents copies of the field books used during the sampling investigation. The field notes were recorded in four books, one each for the four field teams (three teams from URI, and 1 from TtNUS). The field notes include a description of the stations along with a site sketch that shows the approximate location of each sample at the station. Table 2-2 summarizes some of the information from the field books. Some of the information provided on Table 2-2 also came from the sediment log sheets that are provided in Appendix B.

2.1.10 Calibration Procedures and Preventative Maintenance

Instruments used in the field and in the laboratory were calibrated in accordance with the manufacturers specifications.

2.2 SAMPLING PLAN DEVIATIONS

The following are the deviations from the Interim Offshore Monitoring Plan (TtNUS, 1999) and Site Visit Memo (Navy, 1999b) for the Round 3 sampling:

- The size of the eelgrass beds was not estimated in the field because the eelgrass is difficult to see from the boat until the boat is directly over the bed. Because of this, the eelgrass bed size could not be estimated with sufficient accuracy to warrant inclusion into the notes. However, Table 2-1 indicates whether the samples were collected in an eelgrass bed.

TABLE 2-1

SAMPLES COLLECTED PER STATION AND THE HABITAT/LOCATION OF EACH SAMPLE
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number[1]		Samples Collected			Habitat/Area Sampled					Comments
		Sediment	Mussel	Lobster	Intertidal Zone	Subtidal Zone	Eelgrass Bed	Mussel Bed[2]	Salt Marsh	
OU4-SD-M01	-100A	X		X		X				
	-200A	X	X		X			X		
	-300A	X	X			X		X		Sediment duplicate is OU4-FD-001-000A
OU4-SD-M02	-100A	X	X	X		X		X		
	-200A	X	X		X			X		
	-300A	X	X		X			X	X	
OU4-SD-M03	-100A	X	X	X	X					Mussels were collected 10 feet east of the station marker because they were not abundant near seep BC 1018
	-200A	X	X		X					
	-300A	X				X				
OU4-SD-M04	-100A	X	X	X	X					Mussels were collected 10 feet west of the sediment sample
	-200A	X				X				
	-300A	X			X				X	
OU4-SD-M05	-100A	X	X	X	X					Sediment duplicate is OU4-FD-002-000A; mussels were collected approximately 15 feet toward shore from the sediment sample
	-200A	X				X	X			
	-300A	X	X		X					Mussels were collected within 5-7 feet of the sediment sample toward the shore

TABLE 2-1

SAMPLES COLLECTED PER STATION AND THE HABITAT/LOCATION OF EACH SAMPLE
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number[1]		Samples Collected			Habitat/Area Sampled					Comments
		Sediment	Mussel	Lobster	Intertidal Zone	Subtidal Zone	Eelgrass Bed	Mussel Bed[2]	Salt Marsh	
OU4-SD-M06	-100A	X	X	X	X					Mussels were collected within 5-10 feet of the sediment sample
	-200A	X	X			X	X			It was difficult to locate mussels within the 5-6 cm size range
	-300A	X	X		X				X	Mussels were collected 7-10 feet seaward of the sediment sample
OU4-SD-M07	-100A	X	X	X	X			X		
	-200A	X				X				
	-300A	X	X			X	X	X		
OU4-SD-M08	-100A	X	X	X	X			X		Sediment duplicate is OU4-FD-003-000A
	-200A	X	X			X		X		
	-300A	X	X		X			X		
OU4-SD-M09	-100A	X	X	X	X					The only available mussels were collected about 40-60 feet away from the sediment sample
	-200A	X	X		X			X		
	-300A	X				X				Sediment duplicate is OU4-FD-004-000A
OU4-SD-M10	-100A	X	X	X	X			X		Sediment duplicate is OU4-FD-005-000A
	-200A	X	X			X	X			Mussels were collected at low tide by wading out to a rock near the station marker
	-300A	X	X			X				

TABLE 2-1

SAMPLES COLLECTED PER STATION AND THE HABITAT/LOCATION OF EACH SAMPLE
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number[1]		Samples Collected			Habitat/Area Sampled					Comments
		Sediment	Mussel	Lobster	Intertidal Zone	Subtidal Zone	Eelgrass Bed	Mussel Bed[2]	Salt Marsh	
OU4-SD-M11	-100A		X	X	X					
	-200A		X		X					
	-300A	X	X		X			X		Mussels were collected near the sediment sample
OU4-SD-M12	-100A	X	X	X	X			X		
	-200A	X	X			X	X			Sediment duplicate is OU4-FD-006-000A; mussels were collected off of a rock wall
	-300A	X				X	X			
OU4-SD-M13	-100A	X	X	X		X				Mussels were collected on a raft
	-200A	X				X				
	-300A	X	X		X	X				
OU4-SD-M14	-100A	X	X	X	X				X	Mussels were collected within 30 feet of the sediment sample
	-200A	X	X			X				Mussels were collected at low tide from rocks near the sediment sample
	-300A	X				X				
OU4-SD-R01	-100A	X		X	X				X	
	-200A	X				X				
	-300A	X	X			X				Mussels were collected from rocks near the sediment sample
	-400A	X	X		X			X		

TABLE 2-1

SAMPLES COLLECTED PER STATION AND THE HABITAT/LOCATION OF EACH SAMPLE
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number[1]		Samples Collected			Habitat/Area Sampled					Comments
		Sediment	Mussel	Lobster	Intertidal Zone	Subtidal Zone	Eelgrass Bed	Mussel Bed[2]	Salt Marsh	
OU4-SD-R02	-100A	X		X	X				X	
	-200A	X				X	X			
	-300A	X	X			X				Mussels were collected around the boat, not on the bridge
	-400A	X	X		X			X		
OU4-SD-R03	-100A	X		X	X				X	
	-200A	X				X	X			
	-300A	X	X			X	X			Mussels were difficult to collect at high tide
	-400A	X	X		X			X		
OU4-SD-R04	-100A	X		X	X				X	
	-200A	X				X				
	-300A	X	X			X		X		Mussels were difficult to collect at high tide
	-400A	X	X		X					

Notes:

1 - The "SD" designation in the sample number is for the sediment samples, the mussel samples have an "MU" designation, and the juvenile lobsters have an "LJ" designation. The monitoring station number is indicated by an "M" followed by the station number (e.g., M01 is Monitoring Station 1). The reference station number is indicated by an "R" followed by the station number (e.g., R01 is Reference Station 1). Round 3 samples have a round indicator of "00A" preceded by the sample station within the MS (either 1, 2, 3, or 4) or RS (either 1, 2, 3, or 4).

2 - The mussel bed cell is marked when the sediment samples were collected in a mussel bed. At several locations the mussels were collected within 10 meters of the sediment based on available sediment near the mussels, or because other habitats were the primary focus of the sample (i.e., eelgrass, saltmarsh).

TABLE 2-2

STATION AND SAMPLE DESCRIPTIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY MAINE

Sample Number	Redox Discontinuity[1] (cm)	Sediment Description	Biota Present	Other Comments/Notes
OU4-SD-M01-100A	1-2	0-2 cm (light brown coarse sand with gravel); 2-9 cm (black sandy silt with shell pieces); many rocks and shells, including mussel shells	hermit crab, snail, many worms; young starfish, sea stars, sea urchins, and brittle star	
OU4-SD-M01-200A	>7	light to medium brown coarse sand and gravel		
OU4-SD-M01-300A	2	surface (cobbles and mussel shells); 0-2 cm (medium to light brown sand with cobbles); 2-11 cm (mottled dark brown and black sandy silt with worm tubes)	many worms, mussel (dead), some green algae, other plant material	
OU4-SD-M02-100A	2.5	0-2.5 cm (gravel with coarse brown sand); 2.5-6 cm (light gray clayey silt); many rocks		bullets present in the sediment; very strong currents made it difficult to maintain the same position
OU4-SD-M02-200A	0.2	surface (covered with mussel shells); 0-0.2 (medium brown silt); 0.2-3 cm (black silty mud with sand); 3-10 cm (brown sand); sediment contains gravel		
OU4-SD-M02-300A	>10	0-10 cm (silt with marsh grass roots)	marsh grass	
OU4-SD-M03-100A	0.2	none recorded		sampling location is approximately 10 feet east of seep BC 1018
OU4-SD-M03-200A	0.1	0-0.1 cm (black silt); many rocks	snails	sampling location is 15 feet west of the seep
OU4-SD-M03-300A	2-3	0-2 cm (brown); 2-10 cm (mottled gray and black); 8-10 cm (black fades to gray); sediment was sandy silt; many worm tubes	large clam worm	

TABLE 2-2

STATION AND SAMPLE DESCRIPTIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY MAINE

Sample Number	Redox Discontinuity[1] (cm)	Sediment Description	Biota Present	Other Comments/Notes
OU4-SD-M04-100A	>10	coarse gravel with sand		seep BC 1016 flows across the sampling location
OU4-SD-M04-200A	2.5-3	0 to 2.5-3 cm (medium brown); 3-8 cm (mottled medium gray and black); 8-12 cm (medium gray); sediment was sandy silt with some shells	some worms, and isopods (or decapods)	
OU4-SD-M04-300A	>6	gravel and sand with many marsh grass roots		
OU4-SD-M05-100A	1	0-1 cm (light brown); 1-10 cm (dark black); sediment was fine silt	abundant mussels and snails	sampling location is approximately 1 foot from the station marker in the mud flat
OU4-SD-M05-200A	0.8-1.4	0-1.4 cm (medium brown); 1.4-5 cm (black); 5-11 cm (mottled dark gray and black); sediment was sandy silt	algae, eelgrass bed, soft-shelled clam	
OU4-SD-M05-300A	1	0-1 cm (light brown silty sand); 1-10 cm (black medium sand with silt)		sampling location is adjacent to the station marker
OU4-SD-M06-100A	0.1	0-0.1 cm (light brown); 0.1-10 cm (black); sediment was silt with some fine sand	mussels	sampling location was in seep BC 1008, approximately 1 foot seaward of the station marker
OU4-SD-M06-200A	0.1	0-10 cm (dark brown sandy silt)	eelgrass (including rhizomes), algae, snails, small sea star, fish (in grab), large clam worms	used maps to find this sampling location - no GPS
OU4-SD-M06-300A	>10	0-10 cm (light brown silty sand with many roots)	salt marsh	sampling location is approximately 1 feet east of the previous location on the edge of the salt marsh (near the station marker)
OU4-SD-M07-100A	1	0-1 cm (light brown); 1-10 cm (dark gray); sediment was sandy silt		

TABLE 2-2

STATION AND SAMPLE DESCRIPTIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY MAINE

Sample Number	Redox Discontinuity[1] (cm)	Sediment Description	Biota Present	Other Comments/Notes
OU4-SD-M07-200A	0.6-1	0 to 1 cm (medium brown); 1 to 6 cm (mottled light brown and black); 6-10 (medium brown, less black); sediment was silty sand	clam worms, eelgrass (dead)	sampling location was near hazardous rock
OU4-SD-M07-300A	3	0-3 cm (medium brown sandy silt); 3-10 cm (mottled light gray/brown and black sandy silt); 10-13 cm (mottled brown and black silty sand); shells present	eelgrass	
OU4-SD-M08-100A	1	0-1 (light brown); 1-10 (black); sediment was sandy-clayey silt with a few pebbles	some small worms	used maps to find this sampling location - no GPS; station marker was just above the mud
OU4-SD-M08-200A	0.3-0.7	0-0.7 cm (medium brown); 0.7-4 cm (mottled dark gray/black); 4-9 (medium to light gray); sediment is silty sand	worm, green crab	low tide, lobster pots, and a hazardous rock made exact positioning difficult
OU4-SD-M08-300A	none observed	0-10 cm brown sand with some cobbles and gravel		sampling location was 1 foot east of the station marker
OU4-SD-M09-100A	>5	gray and brown gravelly, coarse sand with a little mud; many rocks		
OU4-SD-M09-200A	0.4	0-0.4 cm (brown silt); 0.4-10 cm (dark gray/black sandy silt with gravel)	mussels, snails	sampling location was 10 feet downslope from pipe
OU4-SD-M09-300A	0.6	0-8 cm (mottled black and medium gray); 8-16 cm (medium gray); sediment was very soft silt to clayey silt with a strong odor		
OU4-SD-M10-100A	4	0-4 cm (dark brown); 4-10 cm (black); sediment was medium-grained sand with silt, a few pebbles, and some larger cobbles		

TABLE 2-2

STATION AND SAMPLE DESCRIPTIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY MAINE

Sample Number	Redox Discontinuity[1] (cm)	Sediment Description	Biota Present	Other Comments/Notes
OU4-SD-M10-200A	1-2	0-2 cm (dark brown); 2-9 cm (mottled dark brown and black); sediment was silty sand	eelgrass, slipper shells (dead), clam worm, red crab	strong current
OU4-SD-M10-300A	2	0-2 cm (medium brown); 2-12 cm (black); sediment was sandy silt with shell pieces, small rocks, and algae pieces; strong odor	many worms, including clam worms	
OU4-SD-M11-100A	not applicable	no sediment present	mussels	
OU4-SD-M11-200A	not applicable	no sediment present	mussels	
OU4-SD-M11-300A	4	surface (cobbles); 0-4 cm (yellowish-brown); 4-10 (dark gray); sediment was sandy gravel	mussels	
OU4-SD-M12-100A	5	0-5 cm (light brown with fibrous material); 5-10 cm (dark grey to black); sediment was silt		sampling location was 2 feet seaward of the station marker between the wooden rail ways
OU4-SD-M12-200A	0.3	0-0.3 cm (medium brown); 0.3-10 cm (mottled dark brown to black); sediment was sandy-silt with some shells and wood pieces	abundant eelgrass (including rhizomes, blades, and roots), brown algae, small snails, worms	collect sample during low wind conditions, and at low boat traffic times (morning) to avoid getting waves in the boat
OU4-SD-M12-300A	0.5-1	0-1 (medium brown); 1-4.5 (dark gray); 4.5-6 (light brown); 6-11.5 (black); sediment was clayey silt	eelgrass bed, blood worms	sampling location was 16 m from the warning sign; position 2 (from May 2000) was used because position 1 is currently under a barge
OU4-SD-M13-100A	1.5-3	0 to 1.5-3 cm (medium brown); 3-9 cm (black); sediment was sandy silt with worm tubes, a small mussel shell, and wood pieces	brown algae (kelp), sea lettuce	

TABLE 2-2

STATION AND SAMPLE DESCRIPTIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY MAINE

Sample Number	Redox Discontinuity[1] (cm)	Sediment Description	Biota Present	Other Comments/Notes
OU4-SD-M13-200A	1-2	surface (small amphipod tubes); 0-2 cm (light brown); 2-4 cm (black); 4-9 cm (mottled medium to dark gray and black); sediment was sandy silt with many worm tubes	eelgrass, worms	
OU4-SD-M13-300A	1-2	0 to 1-2 cm (light brown); 2-9 cm (black); sediment was clayey, sandy silt with strong odor; some shells and wood pieces present	eelgrass, algae, leaves (dead)	
OU4-SD-M14-100A	none recorded	salt marsh sediment	salt marsh	sampling location was adjacent to the station marker
OU4-SD-M14-200A	0.5-1	0-1 cm (light brown); 1-12 cm (mottled dark gray and black); sediment was sandy silt with a strong odor	many red worms, shrimp, large clam worm	
OU4-SD-M14-300A	0.7-1.5	0-1.5 cm (light brown); 1.5-6 cm (medium gray); 6-13 cm (mottled dark gray and black); sediment was sandy silt with a strong odor	worms, eelgrass (dead)	
OU4-SD-R01-100A	1	0-1 cm (light brown); 1-10 cm (dark, almost black); sediment was silty mud		
OU4-SD-R01-200A	none recorded	surface (medium brown); below surface (black)		
OU4-SD-R01-300A	0.5	0-0.5 cm (medium brown); 0.5-6 cm (dark gray); sediment was silty sand with rocks and shells		
OU4-SD-R01-400A	1.5-2	0-2 cm (brown); 1-10 cm (darker brown); sediment was silt with marsh grass roots	marsh grass, snails (10 within one square foot), worms	

TABLE 2-2

STATION AND SAMPLE DESCRIPTIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY MAINE

Sample Number	Redox Discontinuity[1] (cm)	Sediment Description	Biota Present	Other Comments/Notes
OU4-SD-R02-100A	1	coarse sand with some pebbles and marsh grass roots	marsh grass	sampling location is approximately 2 meters from station marker toward drawbridge
OU4-SD-R02-200A	4	0-4 cm (medium brown); 4-11 cm (mottled brown and black); sediment was fine- to medium-grained sand (0-7 cm) and silty sand (>7 cm)	eelgrass, tube worms	sample was collected while the boat was tied to red nun #4
OU4-SD-R02-300A	1-2	surface (rocks and shells); 0-2 cm (medium brown); 2-6 cm (mottled dark gray and black); 6-10.5 cm (dark gray); sediment was a fine sand (0-5 cm), and clayey silt with little, or no sand (5-10.5 cm)	mussels, snail, clam worm	
OU4-SD-R02-400A	0.5	0 to 0.5 cm (light brown); 0.5 to 10 cm (black); sediment was silt with 3 or 4 worm burrows		sampling location is approximately 1 meter from the station marker
OU4-SD-R03-100A	>10	brown silt with many marsh grass roots	marsh grass, many snails	sampling location is right next to Round 2 hole
OU4-SD-R03-200A	1-2	0 to 1-2 cm (medium brown); 2-10 cm (mottled medium brown and black); sediment was silty sand with worm burrows	eelgrass	
OU4-SD-R03-300A	0.5	0-0.5 cm (medium brown); 0.5-6 cm (mottled dark brown and black); sediment was sandy silt with gravel	eelgrass, many worms including clam worms, small brittle stars, sand shrimp, snails	strong current
OU4-SD-R03-400A	0.5	0-0.5 (medium brown); 0.5-10 cm (dark gray); sediment was sandy silt		sampling location is 2 feet seaward of the station marker

TABLE 2-2

STATION AND SAMPLE DESCRIPTIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY MAINE

Sample Number	Redox Discontinuity[1] (cm)	Sediment Description	Biota Present	Other Comments/Notes
OU4-SD-R04-100A	>10	0-10 cm (brown silt)	abundant marsh grass	sampling location is 20 yards west of seep; sampling location is adjacent to the Round 2 sample hole
OU4-SD-R04-200A	1-1.5	0-1.5 cm (medium brown), 1.5-6 cm (dark gray); sediment was coarse- to medium-grained sand with gravel and rocks	snails, young crab	very strong current
OU4-SD-R04-300A	4	0-4 cm (medium brown); 4-8 cm (dark gray); sediment was coarse- to medium-grained sand with gravel and many shells	snails, eelgrass	very strong current
OU4-SD-R04-400A	>10	0-10 cm (dark gray to brown fine, silty sand)		

Notes:
1 - Redox discontinuity is based on a visual observation of where the sediment color changes from brown to black.

TABLE 2-3

SUMMARY OF ANALYTICAL PROGRAM FOR SEDIMENT SAMPLES
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Numbers[1]	Metals	PAHs	Alkylated PAHs	Pesticides	PCBs	TOC	Grain Size	AVS:SEM	AVS (0-2cm)	Dioxins
OU4- SD- M01- 100A	X	X	X	X	X	X	X	X	X	
OU4- SD- M01- 200A	X	X	X	X	X	X	X	X	X	
OU4- SD- M01- 300A	X	X	X	X	X	X	X	X	X	
OU4- SD- M02- 100A	X	X	X	X	X	X	X	X	X	
OU4- SD- M02- 200A	X	X	X	X	X	X	X	X	X	
OU4- SD- M02- 300A	X	X	X	X	X	X	X	X	X	
OU4- SD- M03- 100A	X	X	X	X	X	X	X	X	X	
OU4- SD- M03- 200A	X	X	X	X	X	X	X	X	X	
OU4- SD- M03- 300A	X	X	X	X	X	X	X	X	X	
OU4- SD- M04- 100A	X	X	X	X	X	X	X	X	X	
OU4- SD- M04- 200A	X	X	X	X	X	X	X	X	X	
OU4- SD- M04- 300A	X	X	X	X	X	X	X	X	X	
OU4- SD- M05- 100A	X	X	X	X	X	X	X	X	X	
OU4- SD- M05- 200A	X	X	X	X	X	X	X	X	X	
OU4- SD- M05- 300A	X	X	X	X	X	X	X	X	X	
OU4- SD- M06- 100A	X	X	X	X	X	X	X	X	X	
OU4- SD- M06- 200A	X	X	X	X	X	X	X	X	X	
OU4- SD- M06- 300A	X	X	X	X	X	X	X	X	X	
OU4- SD- M07- 100A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M07- 200A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M07- 300A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M08- 100A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M08- 200A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M08- 300A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M09- 100A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M09- 200A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M09- 300A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M10- 100A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M10- 200A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M10- 300A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M11- 100A	Not collected									

TABLE 2-3

SUMMARY OF ANALYTICAL PROGRAM FOR SEDIMENT SAMPLES
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Numbers[1]	Metals	PAHs	Alkylated PAHs	Pesticides	PCBs	TOC	Grain Size	AVS:SEM	AVS (0-2cm)	Dioxins
OU4- SD- M11- 200A	Not collected									
OU4- SD- M11- 300A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M12- 100A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M12- 200A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M12- 300A	X	X	X	X	X	X	X	X	X	X
OU4- SD- M13- 100A	X	X	X	X	X	X	X	X	X	
OU4- SD- M13- 200A	X	X	X	X	X	X	X	X	X	
OU4- SD- M13- 300A	X	X	X	X	X	X	X	X	X	
OU4- SD- M14- 100A	X	X	X	X	X	X	X	X	X	
OU4- SD- M14- 200A	X	X	X	X	X	X	X	X	X	
OU4- SD- M14- 300A	X	X	X	X	X	X	X	X	X	
OU4- SD- R01- 100A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R01- 200A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R01- 300A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R01- 400A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R02- 100A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R02- 200A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R02- 300A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R02- 400A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R03- 100A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R03- 200A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R03- 300A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R03- 400A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R04- 100A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R04- 200A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R04- 300A	X	X	X	X	X	X	X	X	X	X
OU4- SD- R04- 400A	X	X	X	X	X	X	X	X	X	X

Notes:
1- A "-2" was added to the end of the sample number for the AVS samples that were collected from 0-2 cm.

TABLE 2-4

SUMMARY OF ANALYTICAL PROGRAM FOR MUSSEL SAMPLES
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Numbers	Metals	PAHs	Pesticides	PCBs	Lipids	Dioxins
OU4- MU- M01- 100A	Not Collected					
OU4- MU- M01- 200A	X	X	X	X	X	
OU4- MU- M01- 300A	X	X	X	X	X	
OU4- MU- M02- 100A	X	X	X	X	X	
OU4- MU- M02- 200A	X	X	X	X	X	
OU4- MU- M02- 300A	X	X	X	X	X	
OU4- MU- M03- 100A	X	X	X	X	X	
OU4- MU- M03- 200A	X	X	X	X	X	
OU4- MU- M03- 300A	Not Collected					
OU4- MU- M04- 100A	X	X	X	X	X	
OU4- MU- M04- 200A	Not Collected					
OU4- MU- M04- 300A	Not Collected					
OU4- MU- M05- 100A	X	X	X	X	X	
OU4- MU- M05- 200A	Not Collected					
OU4- MU- M05- 300A	X	X	X	X	X	
OU4- MU- M06- 100A	X	X	X	X	X	
OU4- MU- M06- 200A	X	X	X	X	X	
OU4- MU- M06- 300A	X	X	X	X	X	
OU4- MU- M07- 100A	X	X	X	X	X	X
OU4- MU- M07- 200A	Not Collected					
OU4- MU- M07- 300A	X	X	X	X	X	X
OU4- MU- M08- 100A	X	X	X	X	X	X
OU4- MU- M08- 200A	X	X	X	X	X	X
OU4- MU- M08- 300A	X	X	X	X	X	X
OU4- MU- M09- 100A	X	X	X	X	X	X
OU4- MU- M09- 200A	X	X	X	X	X	X
OU4- MU- M09- 300A	Not Collected					
OU4- MU- M10- 100A	X	X	X	X	X	X
OU4- MU- M10- 200A	X	X	X	X	X	X
OU4- MU- M10- 300A	X	X	X	X	X	X
OU4- MU- M11- 100A	X	X	X	X	X	X
OU4- MU- M11- 200A	X	X	X	X	X	X
OU4- MU- M11- 300A	X	X	X	X	X	X
OU4- MU- M12- 100A	X	X	X	X	X	X
OU4- MU- M12- 200A	X	X	X	X	X	X
OU4- MU- M12- 300A	Not Collected					
OU4- MU- M13- 100A	X	X	X	X	X	
OU4- MU- M13- 200A	Not Collected					
OU4- MU- M13- 300A	X	X	X	X	X	
OU4- MU- M14- 100A	X	X	X	X	X	
OU4- MU- M14- 200A	X	X	X	X	X	
OU4- MU- M14- 300A	Not Collected					
OU4- MU- R01- 100A	Not Collected					
OU4- MU- R01- 200A	Not Collected					
OU4- MU- R01- 300A	X	X	X	X	X	X

TABLE 2-4

SUMMARY OF ANALYTICAL PROGRAM FOR MUSSEL SAMPLES
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Numbers	Metals	PAHs	Pesticides	PCBs	Lipids	Dioxins
OU4- MU- R01- 400A	X	X	X	X	X	X
OU4- MU- R02- 100A	Not Collected					
OU4- MU- R02- 200A	Not Collected					
OU4- MU- R02- 300A	X	X	X	X	X	X
OU4- MU- R02- 400A	X	X	X	X	X	X
OU4- MU- R03- 100A	Not Collected					
OU4- MU- R03- 200A	Not Collected					
OU4- MU- R03- 300A	X	X	X	X	X	X
OU4- MU- R03- 400A	X	X	X	X	X	X
OU4- MU- R04- 100A	Not Collected					
OU4- MU- R04- 200A	Not Collected					
OU4- MU- R04- 300A	X	X	X	X	X	X
OU4- MU- R04- 400A	X	X	X	X	X	X

TABLE 2-5

SUMMARY OF ANALYTICAL PROGRAM FOR LOBSTER SAMPLES
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Numbers	Metals	PAHs	Pesticides	PCBs	Lipids	Dioxins
OU4- LJ- M01- 100A	X	X	X	X	X	
OU4- LJ- M02- 100A	X	X	X	X	X	
OU4- LJ- M03- 100A	X	X	X	X	X	
OU4- LJ- M04- 100A	X	X	X	X	X	
OU4- LJ- M05- 100A	X	X	X	X	X	
OU4- LJ- M06- 100A	X	X	X	X	X	
OU4- LJ- M07- 100A	X	X	X	X	X	X
OU4- LJ- M08- 100A	X	X	X	X	X	X
OU4- LJ- M09- 100A	X	X	X	X	X	X
OU4- LJ- M10- 100A	X	X	X	X	X	X
OU4- LJ- M11- 100A	X	X	X	X	X	X
OU4- LJ- M12- 100A	X	X	X	X	X	X
OU4- LJ- M13- 100A	X	X	X	X	X	
OU4- LJ- M14- 100A	X	X	X	X	X	
OU4- LJ- R01- 100A	X	X	X	X	X	X
OU4- LJ- R02- 100A	X	X	X	X	X	X
OU4- LJ- R03- 100A	X	X	X	X	X	X
OU4- LJ- R04- 100A	X	X	X	X	X	X

TABLE 2-6

SUMMARY OF ANALYTICAL PROGRAM FOR QA/QC SAMPLES
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Numbers	Media	Metals	PAHs	Pesticides	PCBs	TOC	Grain Size	AVS:SEM	Dioxins	Comments
Field Duplicates										
OU4- FD- 001- 000A	Sediment	X	X	X	X	X	X	X		Duplicate of OU4-SD-M01-300A
OU4- FD- 002- 000A	Sediment	X	X	X	X	X	X	X		Duplicate of OU4-SD-M05-100A
OU4- FD- 003- 000A	Sediment	X	X	X	X	X	X	X	X	Duplicate of OU4-SD-M08-100A
OU4- FD- 004- 000A	Sediment	X	X	X	X	X	X	X	X	Duplicate of OU4-SD-M09-300A
OU4- FD- 005- 000A	Sediment	X	X	X	X	X	X	X	X	Duplicate of OU4-SD-M10-100A
OU4- FD- 006- 000A	Sediment	X	X	X	X	X	X	X	X	Duplicate of OU4-SD-M12-200A
Tissue Duplicates (1)										
OU4- MU- M10- 100A-FD	Mussel	X	X	X	X				X	Duplicate of OU4-MU-M10-100A
OU4- MU- M11- 200A-FD	Mussel	X	X	X	X				X	Duplicate of OU4-MU-M11-200A
OU4- MU- M12- 100A-FD	Mussel	X	X	X	X				X	Duplicate of OU4-MU-M12-100A
OU4- MU- M13- 100A-FD	Mussel	X	X	X	X					Duplicate of OU4-MU-M13-100A
OU4- LJ- M01- 100A-FD	Lobster	X	X	X	X					Duplicate of OU4-LJ-M01-100A
OU4- LJ- M11- 100A-FD	Lobster	X	X	X	X				X	Duplicate of OU4-LJ-M11-100A
Rinsate Blanks										
OU4- RB- 001- 000A	Water	X	X	X	X				X	Rinsate of stainless steel bowl
OU4- RB- 002- 000A	Water	X	X	X	X				X	Rinsate of titanium scoop (2)
OU4- RB- 003- 000A	Water	X	X	X	X				X	Rinsate of titanium chisel
OU4- RB- 004- 000A	Water	X	X	X	X				X	Rinsate of titanium chisel (2)
Field Blanks										
OU4- FB- 001- 000A	Water	X	X	X	X				X	Direct fill of deionized water used for decontaminating field equipment

Notes:
Blank cell indicates that a sample was not analyzed for that parameter.
Duplicates for dioxin analysis were collected at stations where the environmental samples are analyzed for dioxin (MS-7, 8, 9, 10, 11, or 12).
1 - These duplicates were prepared by the laboratory after the tissue was homogenized.
2 - Sample not analyzed because rinsates are only analyzed every other day.

3.0 RESULTS

The Round 3 collection results for sediment, mussel, and juvenile lobster are discussed herein. In addition, the analytical data for the samples collected during Round 3 are presented. The analytical data was validated as per the Interim Offshore Monitoring Plan (TtNUS, 1999) and validation letters are provided in Appendix F. Data for analyses that were conducted in addition to those required in the Interim Offshore Monitoring Program are provided in Appendix G.

3.1 SEDIMENT

3.1.1 Collection Results

Table 2-2 summarizes the field observations made at each sampling location, including the depth of the sediment redox discontinuity, sediment description, biota present, and other comments/notes. As shown in this table, the redox discontinuity was less that 4 cm for most of the samples; however, no redox zone was observed in most of the salt marsh samples.

The sediment varied across the stations, consisting of a silty mud at some stations and sand at other stations. Several of the samples had worm burrows, and clam worms were found in some samples. Sediment was not available at two locations at Monitoring Station 11 (OU4-SD-M11-100A and OU4-SD-M11-200A).

As part of sediment sampling activities, depth, temperature, salinity, and dissolved oxygen measurements for surface water were collected at all of the subtidal locations. The results are presented in Table 3-1. The water temperature was between 13 and 19 ^{o}C at all of the stations. The salinity measurements were between 27 and 32 parts per thousand (ppt) at all of the stations. Finally, the dissolved oxygen (DO) values were between approximately 6 and 8 mg/L at all of the locations.

3.1.2 Analytical Data

Table 3-2 presents the analytical data for each sediment, mussel, and lobster sample that was collected at the Monitoring and Reference Stations.

Table 3-3 presents the alkylated PAH data for each sediment sample that was collected at the Monitoring and Reference Stations.

Tables 3-4a and 3-4b present the descriptive statistics across all of the samples collected at the Monitoring and Reference Stations, respectively.

Table 3-5 presents the grain size results for each sediment sample that was collected at the Monitoring and Reference Stations.

Tables 3-6 presents the comparison of the simultaneously extracted metals (SEM) to acid volatile sulfides (AVS) for each sediment sample (0 to 10 cm) that was collected at the Monitoring and Reference Stations.

Table 3-7 presents the results of the AVS and SEM-AVS results for the 0 to 2 cm sediment samples that were collected at the Monitoring and Reference Stations. Note that the AVS (0 to 2 cm) was subtracted from the SEM that was collected from 0 to 10 cm, because it is assumed that the SEM concentrations will be similar throughout the 0 to 10 cm horizon.

3.2 MUSSEL

3.2.1 Collection Results

Appendix D presents the lengths of a representative portion (approximately 30 percent) of the mussels that were collected and shipped to the analytical laboratory for chemical analysis.

At most stations, mussels in the preferred size range (5 to 6 cm) were collected when available. However, mostly larger mussels (6 to 7 cm) were available at a few locations (M01-300, M10-200, M10-300, M14-200, R01-300, R03-300, R04-300) located in subtidal areas.

Table 2-2 provides a description of biota present at each sediment sampling location. In most cases, mussel samples were collected immediately adjacent to the corresponding sediment sample (within 2 meters). However, at a few locations, sediment and mussel samples could not be located immediately adjacent to each other because sediment and mussel in close proximity were not available. For these samples, mussels were collected at the nearest available location, at least within 10 meters of the sediment. The only exception was at M09-100 where the mussel samples were collected between 12 to 18 meters from the sediment sample. The locations where this occurred are indicated in the “Biota Present” or “Other Comments/Notes” columns. The “Other Comments/Notes” column also indicates whether the sample was collected near a historical seep location.

3.2.2 Analytical Data

Mussel analytical data (dry weight) are provided in Table 3-2. Percent moisture is provided in Appendix G.

Table 3-8a and 3-8b present the descriptive statistics for mussel across all of the samples collected at the Monitoring and Reference Stations, respectively.

3.3 JUVENILE LOBSTER

3.3.1 Collection Results

The lobster traps were very effective for collecting the juvenile lobsters, although more lobsters were collected at some stations than others. Appendix E lists all of the juvenile lobsters that were collected and shipped to the analytical laboratory for potential chemical analysis. The table presents the sample number, length of the lobster (carapace length), sex of the lobster, whether the lobster was missing any claws, the weight of the muscle tissue (tail and claws), and the weight of the tomalley.

As discussed in Section 2.1.3 of this data package, lobster muscle (tail and claw) samples were analyzed without the intestines. Appendix E indicates which lobsters were selected for chemical analyses.

When selecting the lobsters for analysis, lobsters with both claws in the preferred size range (5 to 6 cm) were selected first. A total of five lobsters were selected for each sample that was analyzed. All of the lobsters selected for analyses were between 5 and 6 cm, although a few were missing a claw.

3.3.2 Analytical Data

Table 3-2 presents the analytical data (dry weight) for each lobster sample (with the intestine removed) that was collected at the Monitoring and Reference Stations.

Table 3-9 presents the descriptive statistics for juvenile lobster with the intestines removed across all of the samples collected at the Monitoring and Reference Stations.

TABLE 3-1

SUMMARY OF WATER QUALITY MEASUREMENTS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Station	Date	Time	Depth (meters)	Temperature (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)
OU4-SD-M01-100A	8/28/00	16:08	0.2	13.79	30.7	7.2
			1.5	13.80	30.9	6.8
			3.0	13.90	30.9	6.7
OU4-SD-M01-300A	8/28/00	13:45	0.2	13.77	30.7	6.8
			1.1	13.74	30.8	6.6
			2.3	13.72	30.8	6.6
OU4-SD-M02-100A	8/28/00	14:31	0.2	13.26	31.0	7.6
			4.1	13.21	30.9	7.3
OU4-SD-M03-300A	8/27/00	11:00	0.5	13.60	30.9	6.4
			1.2	13.34	30.9	6.4
			2.4	13.20	31.0	6.2
OU4-SD-M04-200A	8/27/00	12:00	0.2	14.04	30.8	7.1
			1.1	13.39	31.0	7.0
			2.2	13.32	31.0	7.0
			3.0	13.28	31.0	6.9
OU4-SD-M05-200A	8/27/00	12:45	0.2	13.94	31.2	6.9
			0.9	13.45	31.0	6.4
			1.9	13.45	30.9	6.5
OU4-SD-M06-200A	8/27/00	13:37	0.2	13.68	30.9	7.2
			1.1	13.64	30.9	6.9
			2.1	13.66	30.9	7.1
OU4-SD-M07-200A	8/27/00	16:43	0.2	15.01	30.6	6.7
			0.8	14.90	30.6	6.5
OU4-SD-M07-300A	8/27/00	15:50	0.2	15.05	30.7	6.8
			0.8	14.59	30.7	6.8
OU4-SD-M08-200A	8/27/00	17:20	0.2	15.15	30.8	6.6
			0.6	14.90	30.6	6.5
OU4-SD-M09-300A	8/27/00	18:00	0.2	14.96	30.9	6.2
			1.0	14.80	30.5	6.4
			2.0	14.67	30.7	6.2
OU4-SD-M10-200A	8/29/00	9:00	0.2	15.48	30.1	7.1
			2.2	15.45	30.1	6.9
			4.4	15.48	30.1	6.4
OU4-SD-M10-300A	8/29/00	8:25	0.2	16.44	29.4	6.5
			0.9	16.43	29.4	6.0
			1.8	16.42	29.4	6.0
OU4-SD-M12-200A	8/29/00	14:12	0.2	17.04	30.6	7.3
			1.1	13.85	31.2	7.0
			2.2	13.55	31.4	7.2

TABLE 3-1

SUMMARY OF WATER QUALITY MEASUREMENTS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Station	Date	Time	Depth (meters)	Temperature (°C)	Salinity (ppt)	Dissolved Oxygen (mg/L)
OU4-SD-M12-300A	8/29/00	15:15	0.2	17.76	30.6	7.0
			0.6	13.90	30.7	6.9
			1.4	13.95	31.3	7.2
OU4-SD-M13-100A	8/28/00	17:00	0.2	15.23	30.1	7.0
			3.2	14.98	30.2	5.9
			6.5	14.81	30.2	6.3
OU4-SD-M13-200A	8/28/00	11:45	0.2	15.37	29.9	7.0
			3.7	14.70	30.2	6.3
			7.2	14.21	30.6	6.3
OU4-SD-M13-300A	8/28/00	17:10	0.2	15.40	30.4	6.6
			middle	15.30	30.5	5.8
			bottom	15.20	30.5	6.2
OU4-SD-M14-200A	8/28/00	8:30	0.2	16.75	28.9	6.2
			1.0	16.33	29.2	6.1
			2.0	16.28	29.2	6.0
OU4-SD-M14-300A	8/28/00	9:00	0.2	16.00	29.4	6.0
			2.0	15.62	29.6	6.6
			4.1	15.62	29.6	6.7
OU4-SD-R01-200A	8/30/00	8:15	0.2	18.10	27.8	6.6
			0.4	18.11	28.0	6.6
OU4-SD-R01-300A	8/29/00	17:00	0.2	18.16	27.8	6.9
			1.0	18.15	27.9	6.8
			2.0	18.14	27.9	6.7
OU4-SD-R02-200A	8/29/00	16:30	0.2	15.31	30.3	7.4
			0.9	15.32	30.4	7.1
			1.8	15.25	30.4	7.1
OU4-SD-R02-300A	8/29/00	16:00	0.2	14.90	31.2	7.1
			0.4	14.70	31.1	7.0
OU4-SD-R03-200A	8/29/00	10:30	0.2	15.81	29.6	7.2
			1.5	15.55	30.2	7.0
			3.0	14.92	30.3	7.0
OU4-SD-R03-300A	8/29/00	10:00	0.2	15.43	30.0	7.2
			1.2	15.39	30.2	7.1
			2.4	15.40	30.2	7.0
OU4-SD-R04-200A	8/29/00	11:50	0.2	13.82	31.1	7.4
			1.8	13.75	31.0	7.3
			3.6	13.70	31.1	7.1
OU4-SD-R04-300A	8/29/00	11:00	0.2	14.00	31.0	7.5
			1.8	14.04	31.0	7.3
			3.8	13.97	30.8	7.1

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 01							
	Sediment				Mussel		Lobster	
Parameters	100A	200A	300A	300A-DUP	200A	300A	100A	100A-DUP
Polyaromatic Hydrocarbons (ug/kg)								
1,6,7-TRIMETHYLNAPHTHALENE	56.5 J	8.56	32.2 J	22.1	3.4 J	3.46 J	1.06 J	0.98 J
1-METHYLNAPHTHALENE	123 J	36.2 J	97.2 J	47.4 J	5.1 J	5.76	3.3 J	3.43 J
1-METHYLPHENANTHRENE	382 J	39.8	234 J	216	5.8	3.46 J	1.12 J	0.89 J
2,6-DIMETHYLNAPHTHALENE	76 J	16.6	47.2 J	28.8	3.6 J	4.53 J	1.16 J	1.03 J
2-METHYLNAPHTHALENE	143 J	58.4 J	126 J	92.7	8.3 J	8.71	4.98 J	4.34 J
ACENAPHTHENE	766 J	9.63	84.2 J	64.6	8.5 J	8.33 J	1.74 J	1.48 J
ACENAPHTHYLENE	151 J	114	449 J	453 J	17.3 J	19.7 J	0.78 J	0.92 J
ANTHRACENE	1471 J	146	846 J	385 J	28.6	27 J	2.61 J	2.16 J
BENZO(A)ANTHRACENE	2137 J	276	1200 J	1549 J	30.2	27.5	6.13 J	5.73 J
BENZO(A)PYRENE	2729 J	127 J	2041 J	2071 J	23.7	21.8 J	7.31 J	5.47 J
BENZO(B)FLUORANTHENE	2293 J	490 J	1291 J	2442 J	35.7 J	36.5	8.17	7.14
BENZO(E)PYRENE	1370 J	339 J	1243 J	2062	37 J	39.6	4.94 J	5.17 J
BENZO(G,H,I)PERYLENE	1111 J	416 J	1153 J	1713 J	19.6	21.4	3.74 J	3.85 J
BENZO(K)FLUORANTHENE	893 J	160	490 J	417	15.8 J	11.6	4.11 J	3.83 J
BIPHENYL	45.2 J	9.82 J	34.8 J	25.3 J	1.5 J	1.89 J	1.9 J	1.75 J
CHRYSENE	2001 J	320	1280 J	1502	40.3 J	36.6	11.3	9.37 J
DIBENZO(A,H)ANTHRACENE	226 J	94.9 J	196 J	392 J	2.4 J	2.59	0.27 J	0.36 J
DIBENZOTHIOPHENE	210 J	8.83	40.4 J	26.9	1.4 J	1.1 J	0.57 J	0.61 J
FLUORANTHENE	5746 J	369	1825 J	1295 J	57.2	57.2	17.6	16.6
FLUORENE	761 J	21.5	215 J	133	5.6 J	8.34 J	2.78 J	2 J
INDENO(1,2,3-CD)PYRENE	1107 J	362 J	809 J	1371 J	12.9 J	14.1	3.31 J	3.26 J
NAPHTHALENE	247 J	63.9	158 J	168	9.3 J	8.8 J	7.3 J	5.99 J
PERYLENE	468 J	58	354 J	218	13.9 J	13.4 J	3.57 J	4.14 J
PHENANTHRENE	4906 J	164	1101 J	514 J	13.7	15.9	8.36 J	7.3 J
PYRENE	5126 J	349 J	2840 J	2433 J	61.6	66.8	14.2	13.1
Pesticides/PCBs (ug/kg)								
1,2,3,4-TETRACHLOROBENZENE	0.02 U	0.28 U	0.04 U	0.26 U	0.22 U	0.38 J	15	13
1,2,4,5-TETRACHLOROBENZENE	0.42 J	1	0.6	1.9 U	0.36 U	2.2 U	0.32 J	0.1 J
2,4'-DDD	11	11	8.9	8.9	4.2	2	0.57 J	0.47 UJ
2,4'-DDE	0.18 J	0.66 J	0.03 J	0.27 J	0.46 J	0.48 U	0.67 U	0.65 U
2,4'-DDT	2	18	1.5	2	1.1	3.5	0.23 J	0.6 U
4,4'-DDD	20	37	11	11	7.7	4.4	0.22 J	0.57 U
4,4'-DDE	3.7	20	4.2	4.4	15	12	3.1	2.6
4,4'-DDT	15	87	12 J	21 J	6.2 J	8.8	0.89 UJ	0.87 UJ
ALDRIN	0.062 U	0.05 U	0.074 U	0.076 U	0.03 J	0.22 J	0.77 U	0.75 U
ALPHA-BHC	0.06 J	0.03 J	0.06 J	0.25 J	0.32	0.66 U	0.55 U	0.53 U
ALPHA-CHLORDANE	2.4	3.1	3.6	3.4	2.2	1.1	0.58 U	0.57 U
BETA-BHC	1.8	0.09 J	1.8 J	0.26 UJ	4.6 U	0.35 U	0.1 J	0.27 J
CHLORPYRIFOS	0.3 U	0.24 U	0.35 U	0.48 U	2.2 U	3.6 U	5 U	4.9 U
CIS-NONACHLOR	0.39	0.37	0.89	1.4	0.78	0.71	0.25 J	0.52 U
DELTA-BHC	0.047 U	0.037 U	0.08 J	0.057 UJ	0.13 U	0.22 U	0.09 J	0.3 U
DIELDRIN	13	32	0.083 UJ	0.28 J	2.3 J	0.59	2.9 J	2.2 J
ENDOSULFAN II	3.2	0.88	5.3 J	0.93 J	0.18 J	0.14 J	0.58 U	0.57 U
ENDRIN	0.36	0.63	0.14 J	0.17 U	0.7 U	1.1 U	1.6 U	1.6 U
GAMMA-BHC (LINDANE)	0.25	0.2 U	0.43 J	0.3 UJ	0.13 J	0.34 U	0.48 U	0.47 U
GAMMA-CHLORDANE	1.7	3.7	2.2	2.9	1.5	0.65	0.25 J	0.6 U
HEPTACHLOR	0.04 J	0.42	0.31	0.22	0.38 U	0.41 J	0.88 U	0.85 U
HEPTACHLOR EPOXIDE	0.031 U	0.02 U	0.037 U	0.038 U	0.27 U	0.44 U	0.24 J	0.6 U
HEXACHLOROBENZENE	0.047 U	0.08	0.055 U	0.04 J	0.2 J	0.55 U	0.51 J	0.07 J
MIREX	0.031 U	0.025 U	0.037 U	0.038 U	0.61 U	1 U	0.33 J	1.4 U
OXYCHLORDANE	0.36	0.04	0.82 J	0.36 J	0.28 U	0.46 U	1.3 J	0.56 J
PCB-101/90	1.1	0.7	1	1.2	7.7	6.2	0.9 J	0.67 J
PCB-105	0.64 J	0.52 J	0.48 J	0.25 J	2.9 J	2.6	2	1.3 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 01							
	Sediment				Mussel		Lobster	
Parameters	100A	200A	300A	300A-DUP	200A	300A	100A	100A-DUP
PCB-114	0.19 U	0.15 U	0.22 U	0.23 U	0.94 U	1.5 U	2.1 U	2.1 U
PCB-118	1.3	0.57	1.5	1.9	6.8	5.3	6.8	5.6
PCB-126	0.19 U	0.15 U	0.22 U	0.23 U	0.94 UJ	1.5 U	0.64 J	2.1 UR
PCB-128	0.64	0.26	1.7 J	0.34 J	1.8	1.3	1.2 J	0.88 J
PCB-138/160	2.2	1.3	3	2	12	10 U	5.4 U	5.5 U
PCB-149/123	2.2	1.1	2.6 J	1.4 J	7.2	6.8	2.1 U	0.18 J
PCB-153/132	2.8	0.99	2.7	2.8	16 U	14	7.6 U	8.3 U
PCB-156	2.1	0.64	0.22 UJ	1.7 J	0.94 U	0.56 J	2.1 U	0.31 J
PCB-167	1.4	0.26	9.1	5.5	1.1	0.88 J	0.39 J	0.27 J
PCB-169	0.01 U	0.15 U	0.12 U	0.09 U	0.08 U	0.06 U	2.1 U	0.25 J
PCB-170/190	34 J	14 J	28 J	24 J	0.52 U	0.37 U	1.5 U	1.6 U
PCB-18/17	0.06 J	0.03 J	0.11 U	0.11 U	2.4 U	4 U	5.6 J	5.8
PCB-180	1.3	0.8	1.1	1.4	5.6 U	4.7	2.1 U	3.4 U
PCB-187	1.2	0.43	0.89	0.55	5.5	5.1	2.6 J	4.8 J
PCB-189	0.97	0.32	1.5	1	0.94 U	1.5 U	2.1 U	2.1 U
PCB-195/208	2.1	0.32	1.7 J	0.97 J	0.78 U	1.3 U	0.47 J	0.23 J
PCB-201/157/173	1.29	0.25	1.17 J	1.07	0.38 J	0.06 J	0.33 J	1.6 U
PCB-206	4.6	0.24	1.3	0.17 J	0.81 U	1.3 U	0.47 J	0.18 J
PCB-209	2.3	0.64	2.2	2.6	1.1 U	1.7 U	0.44 J	2.4 U
PCB-28	0.4	0.02 J	0.55	0.75	0.93	0.8 J	0.34 J	1.7 U
PCB-44	0.11 J	0.15	0.37	0.32	0.81 U	0.71 J	0.38 U	1.2 U
PCB-52	0.74	0.74	0.71	1	2.3	1.9	1.3 J	1.4 U
PCB-66	2.4	0.18	1.8	1.1	1.1	0.89 J	0.8 J	0.6 J
PCB-77	0.24 U	0.06 U	0.22 U	0.13 U	0.2 J	0.21 U	2.1 U	2.1 U
PCB-8/5	0.41	0.26 J	0.42 J	0.72 J	1.5	15 U	1.3 J	0.72 J
PCB-81	0.21	0.03 J	0.39	0.25 J	0.94 U	1.5 U	2.1 U	2.1 U
PENTACHLOROANISOLE	0.1 U	0.11 U	0.07 U	0.1 U	0.7 U	2 U	0.47 U	0.33 U
PENTACHLOROBENZENE	0.08 U	0.07 U	0.14 U	0.32 U	0.44 U	1.9 U	0.64 U	0.42 U
TRANS-NONACHLOR	0.73	1.3	0.79	1	1.7	0.92	0.4 J	0.1 J
Metals (mg/kg)								
ALUMINUM	45561	45582	50667	51496	380	319	3.21 U	3.44 U
ARSENIC	10.5	14.4	15.7	15.6	5.46	6.48	4.53 J	3.91 J
CADMIUM	0.24	0.15	0.35	0.31 J	1.74	1.47	0.0427	0.0354
CHROMIUM	56.4	49.5	66.9	92.6	4.19	2.79	0.7	0.55 U
COPPER	35.2	26.1	36.8	58.3 J	29.5 J	8.76	46.1	48.9
IRON	19561	34775	23076	23607 J	896	513	5.09 J	8.87 J
LEAD	62.5	99.5	137	102 J	6.46	6.31 J	0.12 U	0.62
MANGANESE	590	1503	387	600	12.4	10.9	3.19	2.74
MERCURY	0.28	0.0851 U	0.28	0.26	0.27	0.28	0.62	0.68
NICKEL	12.9 J	20.2 J	15.2 J	24.4 J	4.37 U	3.53 U	1.97 U	2.11 U
SILVER	2.3	3.56	2.96	3.84	0.34 U	0.3095 U	0.85 J	0.78 J
ZINC	54.5	61.9	90.8	93 J	106 J	86.3	94.2 J	97.3 J
Miscellaneous Parameters (%)								
% LIPID					4.9	5.3	3.4	2.6
TOTAL ORGANIC CARBON	1.13 J	0.58 J	1.52 J	1.93 J				

Notes:

MS-1 includes the following samples:

OU4-SD-M01-100A
OU4-SD-M01-200A
OU4-SD-M01-300A
OU4-FD-001-000A (duplicate of OU4-SD-M01-300A)
OU4-MU-M01-200A
OU4-MU-M01-300A
OU4-LJ-M01-100A
OU4-LJ-M01-100A-LD

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 02						
	Sediment			Mussel			Lobster
Parameters	100A	200A	300A	100A	200A	300A	100A
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	1.93	10.8	4.36	2.04 J	2.5 J	2.8 J	0.74 J
1-METHYLNAPHTHALENE	3.42 J	25.1 J	9.67 J	2.87 J	5.1 J	4.7 J	2.37 J
1-METHYLPHENANTHRENE	6.71	28	26.2	1.46 J	4.6 J	5	0.85 J
2,6-DIMETHYLNAPHTHALENE	2.72	17.8	6	2.23 J	3.1 J	3.3 J	0.9 J
2-METHYLNAPHTHALENE	4.86 J	49.2 J	12.7 J	4.81 J	7 J	6.2 J	3.87 J
ACENAPHTHENE	2.38 J	15.8 J	14.8 J	1.67 J	9.9 J	8.6 J	1.21 J
ACENAPHTHYLENE	12.7	79.2	45.8	7.87 J	13.7 J	14.2 J	0.64 J
ANTHRACENE	21.9	110	82.7	15.6 J	23.5	25.1	1.26 J
BENZO(A)ANTHRACENE	32.6	265	159	10.2	18.1	15.9	7.86 J
BENZO(A)PYRENE	46 J	98.5 J	52.5 J	4.89 J	14.1	11	11.3
BENZO(B)FLUORANTHENE	63.4 J	393 J	240 J	18.7	24.8 J	24.8 J	13.5
BENZO(E)PYRENE	33.3 J	225	119	17.6	27.5 J	24.3 J	9.37
BENZO(G,H,I)PERYLENE	33 J	257 J	114 J	7.15	13.2	11.9	5.28 J
BENZO(K)FLUORANTHENE	17.8	125	85	7.78	11.9 J	9.2 J	6.2 J
BIPHENYL	1.38 J	7.16 J	3.5 J	1.59 J	1.9 J	2.4 J	1.29 J
CHRYSENE	36.7	298	163	14.9	31.7 J	27.2 J	16.4
DIBENZO(A,H)ANTHRACENE	7 J	57.6 J	28.4 J	0.31 J	1.1 J	1.1 J	0.45 J
DIBENZOTHIOPHENE	1.93	13.9	7.54	0.58 J	1.2 J	0.9 J	0.42 J
FLUORANTHENE	52.7	345	255	25.1	50.3	43.7	15.7
FLUORENE	4.85	33.1	22.3	3.2 J	5.5 J	6 J	1.62 J
INDENO(1,2,3-CD)PYRENE	33.5	247	121	4.74	8.1 J	5.8 J	8.54 J
NAPHTHALENE	7.43	60.5 J	19.8	5.17 J	10.9 J	5.4 J	5.25 J
PERYLENE	19.9	69.4	43.7	8.05 J	13 J	8.5 J	5.13 J
PHENANTHRENE	24.8	192	125	5.45 J	15.4	11.9	3.83 J
PYRENE	51.8 U	322 J	209 J	27.2	44	42.7	14.2
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	0.04 U	0.19 U	0.75	0.46	0.22 U	0.28 U	11
1,2,4,5-TETRACHLOROBENZENE	0.09 U	0.34 U	1.7	2.4 U	0.37 U	1.1 U	0.19 J
2,4'-DDD	0.22	2.4	1.5	0.88	2.3	2.9	0.43 U
2,4'-DDE	0.079 U	0.09 J	0.15 U	0.44 U	0.24 J	0.25 J	0.6 U
2,4'-DDT	0.32	3.2	0.1	1.6	1.8	2.1	0.56 U
4,4'-DDD	0.36	4.6	3.6	1.4	4.5	2.5	0.53 U
4,4'-DDE	0.29	4.5	4.6	4.1	9.9	11	3.1
4,4'-DDT	1.6	24	0.76	0.86	2.4 J	2.2 J	0.8 U
ALDRIN	0.057 U	0.053 U	0.11 U	0.18 J	0.13 J	0.4 U	0.7 U
ALPHA-BHC	0.03 J	0.04 J	0.03 J	0.27 U	0.21 J	0.24 J	0.49 U
ALPHA-CHLORDANE	0.065 U	0.4	0.08 J	0.55	1.3	1.2	0.53 U
BETA-BHC	1.1	0.37	1.1	0.88	1.1 U	3 U	0.45 U
CHLORPYRIFOS	0.27 U	0.25 U	0.53 U	3.3 U	2.6 U	2.6 U	4.5 U
CIS-NONACHLOR	0.03 J	0.14	0.42	0.63	1.2	1	0.48 U
DELTA-BHC	0.043 U	0.04 U	0.084 U	0.2 U	0.16 U	0.16 U	0.28 U
DIELDRIN	0.065 U	2.6	0.13 U	0.36 J	0.9 J	0.75 J	2 J
ENDOSULFAN II	0.09	1	0.58	0.19 J	0.26 J	0.12 J	0.53 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 02						
	Sediment			Mussel			Lobster
Parameters	100A	200A	300A	100A	200A	300A	100A
Polyaromatic Hydrocarbons (ug/kg)							
ENDRIN	0.13 U	0.12 U	0.25 U	1.1 U	0.82 U	0.82 U	1.4 U
GAMMA-BHC (LINDANE)	0.23 U	0.09 J	0.45 U	0.1 J	0.12 J	0.12 J	0.43 U
GAMMA-CHLORDANE	0.06 J	0.18	0.19	0.2 J	0.35	0.4	0.56 U
HEPTACHLOR	0.17 U	0.15 U	0.32 U	0.28 J	0.45 U	0.45 U	0.79 U
HEPTACHLOR EPOXIDE	0.029 U	0.027 U	0.056 U	0.41 U	0.32 U	0.32 U	0.56 U
HEXACHLOROBENZENE	0.02 J	0.04 J	0.12	0.38 J	0.19 J	0.16 J	0.24 J
MIREX	0.029 U	0.027 U	0.056 U	0.93 U	0.73 U	0.72 U	1.3 U
OXYCHLORDANE	0.014 U	0.02	0.028 U	0.43 U	0.34 U	0.33 U	0.62
PCB-101/90	0.27	0.85	2.1	5.8	8.3	7.4	0.7 J
PCB-105	0.15 J	0.49 J	1.2 J	2.1	2.9 J	3.4 J	0.81 J
PCB-114	0.17 U	0.16 U	0.34 U	1.4 U	1.1 U	1.1 U	1.9 U
PCB-118	0.16	0.76	1.6	4.5	8	6.6	3.2
PCB-126	0.17 U	0.16 U	0.34 U	1.4 U	1.1 UJ	1.1 UJ	1.9 U
PCB-128	0.05	0.25	0.97	1.1	2.1	2	0.63 J
PCB-138/160	0.44	1.5	1.9	8.7 U	14	13	3.7
PCB-149/123	0.22	1.1	3	5.5	7.8	7.6	0.11 J
PCB-153/132	0.42	1.4	2.8	12	19	16 U	5.4 U
PCB-156	0.11 J	0.53	0.5	0.26 J	1.1 U	0.94 J	1.9 U
PCB-167	0.2	1.3	1.9	0.53 J	1.1	1 J	1.9 U
PCB-169	0.02 U	0.01 U	0.04 U	0.09 U	0.15 U	1.1 U	0.32 J
PCB-170/190	2.4 J	11 J	8.6 J	0.4 U	0.37 U	0.31 U	1.1 U
PCB-18/17	0.06 J	0.08 J	0.17	3.7 U	0.57 J	0.51 J	3.8 J
PCB-180	0.29	0.56	1.7	3.7	5.7 U	5.5 U	1.6 U
PCB-187	0.17	0.47	0.61	4.3	6.5	5.9	1.6
PCB-189	0.04 J	0.33	0.12 J	1.4 U	1.1 U	1.1 U	1.9 U
PCB-195/208	0.07	0.2	0.38	1.2 U	0.92 U	0.92 U	0.16 J
PCB-201/157/173	0.01 J	0.2	0.17	1.1 U	0.47 J	0.29 J	1.5 U
PCB-206	0.08 J	0.23	0.41	1.2 U	0.96 U	0.95 U	0.17 J
PCB-209	0.15	0.42	0.3	1.6 U	1.2 U	1.2 U	2.2 U
PCB-28	0.13 J	0.21	0.2 J	0.82 J	0.98	1	0.14 J
PCB-44	0.06 J	0.17	0.59	0.58 J	1 U	0.82 U	0.1 U
PCB-52	0.34	0.63	0.73	2.3	2.6	1.8 U	0.14 J
PCB-66	0.04 J	0.42	0.42	0.67 J	1.5	0.95 J	0.6 J
PCB-77	0.01 U	0.05 U	0.04 U	0.23 U	0.07 J	1.4	0.29 U
PCB-8/5	0.29 J	0.29 J	0.48 J	18 U	2.3	4.4	0.43 J
PCB-81	0.17 U	0.01 J	0.01 J	1.4 U	1.1 U	1.1 U	1.9 U
PENTACHLOROANISOLE	0.03 U	0.03 U	0.08 U	2.1 U	0.85 U	1.3 U	0.24 U
PENTACHLOROBENZENE	0.08 U	0.09 U	0.31 U	1.7 U	0.61 U	0.65 U	0.44 U
TRANS-NONACHLOR	0.02 J	0.22	0.24	0.58	0.95	1	0.1 J
Metals (mg/kg)							
ALUMINUM	59723	51651	53293	196	277	718	3.28 U
ARSENIC	14.4	13.6	17.7	6.09	5.79	6.3	4.01 J
CADMIUM	0.0984	0.3	0.41	1.55	1.81	1.66	0.0338

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 02						
	Sediment			Mussel			Lobster
Parameters	100A	200A	300A	100A	200A	300A	100A
Polyaromatic Hydrocarbons (ug/kg)							
CHROMIUM	58.3	72.9	135	2.31	3.68	8.82	0.59
COPPER	39.2	68.2	36.9	25.2	6.69 J	13.6 J	43.7
IRON	31319	26704	23473	313	602	1210	8.77 J
LEAD	35.9	146	87.9	5.53 J	5.25	5.28	0.12 U
MANGANESE	780	437	333	10.3	9.11	16.6	2.49
MERCURY	0.0962 U	1.06	0.31	0.29	0.35	0.21	0.66
NICKEL	22.8 J	28.2 J	24.1 J	2.23 U	3.15 U	9.09	2.01 U
SILVER	3.46	3.27	4.07	0.37 U	0.32 U	0.29 U	0.86 J
ZINC	63.7	84.6	89.6	101	91.4 J	95.7 J	86.7 J
Miscellaneous Parameters (%)							
% LIPID				3.2	4.7	5.7	2.9
TOTAL ORGANIC CARBON	0.41 J	2.72 J	3.99 J				

Notes:

MS-2 includes the following samples:
OU4-SD-M02-100A
OU4-SD-M02-200A
OU4-SD-M02-300A
OU4-MU-M02-100A
OU4-MU-M02-200A
OU4-MU-M02-300A
OU4-LJ-M02-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 03					
	Sediment			Mussel		Lobster
Parameters	100A	200A	300A	100A	200A	100A
Polyaromatic Hydrocarbons (ug/kg)						
1,6,7-TRIMETHYLNAPHTHALENE	10.7	6.61	10.5	1.59 J	2.25 J	1.05 J
1-METHYLNAPHTHALENE	27.1 J	16.8 J	27.3 J	2.59 J	2.96 J	3.39 J
1-METHYLPHENANTHRENE	41.3	33.7	59	1.99 J	2.05 J	0.89 J
2,6-DIMETHYLNAPHTHALENE	16.8	13.1	13.5	2.24 J	3.23 J	0.98 J
2-METHYLNAPHTHALENE	42.1 J	32.6 J	38.1 J	5.03	5.53	5.42 J
ACENAPHTHENE	46.3 J	22.1 J	65.3 J	3.48 J	4.51 J	1.21 J
ACENAPHTHYLENE	153	63.2	62	8.54 J	10.4 J	0.87 J
ANTHRACENE	274 J	126 J	182 J	16.8 J	21 J	1.67 J
BENZO(A)ANTHRACENE	408	273	298	12.8	15.6	3.29 J
BENZO(A)PYRENE	96.9 J	228 J	142 J	9.93 J	9.77 J	3.53 J
BENZO(B)FLUORANTHENE	814	536	445	21.4	27.1	6.15
BENZO(E)PYRENE	420	297	214	18.4	21.1	5.3 J
BENZO(G,H,I)PERYLENE	386 J	338 J	210 J	10 J	11.8 J	3.57 J
BENZO(K)FLUORANTHENE	214	162	127	8.22	10.4	3.45 J
BIPHENYL	8.71 J	6.48 J	7.58 J	1.62 J	1.12 J	1.47 J
CHRYSENE	611	304	272	21.6	23.9	9.39
DIBENZO(A,H)ANTHRACENE	94.4 J	77.4 J	56 J	1.83 J	1.74 J	0.16 J
DIBENZOTHIOPHENE	20.4	12.3	17.6	0.64 J	0.67 J	0.38 J
FLUORANTHENE	1089 J	468 J	591 J	35.7	44.2	12.5
FLUORENE	62 J	33.5 J	73.1 J	3.33 J	3.83 J	1.96 J
INDENO(1,2,3-CD)PYRENE	454 J	370 J	228 J	8.18 J	9.51 J	2.4 J
NAPHTHALENE	63	37.2	82.7	4.93 J	5.07 J	7.21 J
PERYLENE	122	91	102	6.61	8.4	3.14 J
PHENANTHRENE	343	196	336	10.2	10.5	3.38 J
PYRENE	1023	491	550	30.3	37.2	11.2
Pesticides/PCBs (ug/kg)						
1,2,3,4-TETRACHLOROBENZENE	0.44 U	0.2 U	0.14 U	0.23 J	0.38	13
1,2,4,5-TETRACHLOROBENZENE	3 U	1.2 U	1.1 U	1.9 U	1.1 U	0.19 J
2,4'-DDD	11	1.9	2	1.2	1.1	0.4 U
2,4'-DDE	0.23	0.1	0.096 U	0.37 U	0.31 U	0.55 U
2,4'-DDT	1.1	0.75	0.13	2.8	2	0.51 U
4,4'-DDD	24	3.7	1.5	3.5	2.3	0.48 U
4,4'-DDE	6.9	1.9	0.93	4.2	4.4	2.4
4,4'-DDT	4	1.7	0.66	2.7	1.6	0.74 UJ
ALDRIN	0.05 J	0.01 J	0.02 J	0.43 U	0.36 U	0.64 U
ALPHA-BHC	0.18	0.1	0.04 J	0.41 U	0.33 U	0.45 U
ALPHA-CHLORDANE	0.66	0.98	0.22	0.7	0.83	0.48 U
BETA-BHC	1.3	0.18 U	0.24 U	7.9	7.2	0.61
CHLORPYRIFOS	1.2 U	3.2 U	0.31 U	2.8 U	2.3 U	4.2 U
CIS-NONACHLOR	0.97	0.41	0.21	1.1	0.65	0.44 U
DELTA-BHC	0.07 J	0.039 U	0.03 J	0.17 U	0.14 U	0.26 U
DIELDRIN	2.6	1	0.1	0.35	0.36	1.8 J
ENDOSULFAN II	1.2	0.68	1.2	0.32 U	0.41	0.48 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 03					
	Sediment			Mussel		Lobster
Parameters	100A	200A	300A	100A	200A	100A
ENDRIN	0.21 U	0.12 U	0.16 U	0.88 U	0.74 U	1.3 U
GAMMA-BHC (LINDANE)	0.38 U	0.21 U	0.28 U	0.03 J	0.08 J	0.4 U
GAMMA-CHLORDANE	0.11 U	0.059 U	0.078 U	0.26 J	0.24 J	0.51 U
HEPTACHLOR	0.97	0.37	0.2 U	0.48 U	0.4 U	0.72 U
HEPTACHLOR EPOXIDE	0.047 U	0.026 U	0.035 U	0.34 U	0.28 U	0.51 U
HEXACHLOROBENZENE	8.5	0.05	0.052 U	0.3 J	0.19 J	0.18 J
MIREX	0.047 U	0.026 U	0.035 U	0.78 U	0.65 U	1.2 U
OXYCHLORDANE	0.04	0.013 U	0.07	0.36 U	0.3 U	0.78
PCB-101/90	10	5.5	2.4	14	8.4	0.74 J
PCB-105	4.9	2.7	1.3	6.9	4.4	0.57 J
PCB-114	0.28 U	0.16 U	0.21 U	1.2 U	0.99 U	1.8 U
PCB-118	2.6	1.8	2.2	5.7	6.1	2.7
PCB-126	3.9	0.16 U	0.21 U	1.2 U	0.99 U	1.8 UR
PCB-128	2.9	1.3	0.94	2.7	1.5	0.53 J
PCB-138/160	26	10	5.1	35 U	16 U	3.3 U
PCB-149/123	20	8.2	2.3	28	11	0.11 J
PCB-153/132	30	12	4	52	22	4.9 U
PCB-156	4.1	1.5	0.92	1.2 U	0.87 J	1.8 U
PCB-167	1.6	0.62	0.23	2.2	0.42 J	1.8 U
PCB-169	0.23 U	0.04 U	0.06 U	0.07 U	0.99 U	0.42 J
PCB-170/190	6.1 J	2.6 J	1.1 J	1.8 U	1.1 U	0.7 U
PCB-18/17	0.86	0.078 U	0.65	3.1 U	2.6 U	1.1 J
PCB-180	26	10	3.1	12	7.9	1.5 U
PCB-187	19	11	1.6	22	14	1.6
PCB-189	0.93	0.33	0.23	0.33 J	0.09 J	1.8 U
PCB-195/208	4.9	2.6	0.55	0.99 U	0.12 J	0.15 J
PCB-201/157/173	2.89	1.11	0.32	1	1.1	1.4 U
PCB-206	4.5	3.5	0.69	1 U	0.23 J	0.15 J
PCB-209	2.5	1.2	0.83	1.3 U	1.1 U	2 U
PCB-28	0.96	0.43	0.57	1.2	0.97	0.1 J
PCB-44	0.67	0.23	0.47	0.65 J	0.62	0.09 U
PCB-52	0.21 U	2	1.6	4.3	2.8	0.44 J
PCB-66	2.1	0.47	0.48	0.42 J	0.59 J	0.43 J
PCB-77	0.14 J	0.16 U	0.06 J	1.2 U	0.21 U	1.8 U
PCB-8/5	0.52 U	0.12 J	0.38 U	10 U	2.5 U	0.35 J
PCB-81	1.8	1.5	0.11 U	1.2 U	0.99 U	1.8 U
PENTACHLOROANISOLE	0.16 U	0.16 U	0.11 U	1.8 U	0.62 U	0.3 U
PENTACHLOROBENZENE	0.24 U	0.12 U	0.087 U	1.8 U	0.5 U	0.39 U
TRANS-NONACHLOR	0.27	0.12	0.06	0.49	0.61	0.31 U
Metals (mg/kg)						
ALUMINUM	60547	39791	51612	266	296	3.23 U
ARSENIC	19.9	19.9	11.5	5.41	6.09	3.45 J
CADMIUM	0.66	0.64	0.45	1.91	2.16	0.0237
CHROMIUM	110	125	57.6	3.67	5.34	0.77

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 03					
	Sediment			Mussel		Lobster
Parameters	**100A**	**200A**	**300A**	**100A**	**200A**	**100A**
COPPER	186 J	1902 J	27.2 J	28.9	101	61
IRON	35582 J	44337 J	19576 J	866	1106	10.9 J
LEAD	164	292	51.5	20.9 J	21.2 J	0.31 U
MANGANESE	354	446	331	11.1	11.9	5.18
MERCURY	0.52	0.52	0.17	0.53	0.35	0.55
NICKEL	39.4 J	102 J	14.5 J	8.32	7.86	3.87 U
SILVER	4.56 J	3.77 J	3.34 J	0.42 J	0.36 J	1.34 J
ZINC	196 J	647 J	63.7 J	170	284	90.5 J
Miscellaneous Parameters (%)						
% LIPID				3.1	3.5	2.8
TOTAL ORGANIC CARBON	2.5 J	0.64 J	1.31 J			

Notes:

MS-3 includes the following samples:

OU4-SD-M03-100A
OU4-SD-M03-200A
OU4-SD-M03-300A
OU4-MU-M03-100A
OU4-MU-M03-200A
OU4-LJ-M03-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 04				
	Sediment			Mussel	Lobster
Parameters	100A	200A	300A	100A	100A
Polyaromatic Hydrocarbons (ug/kg)					
1,6,7-TRIMETHYLNAPHTHALENE	21.4	10.1	1.73	1.74 J	1.17 J
1-METHYLNAPHTHALENE	48.7 J	15.2 J	3 J	2.51 J	1.81 J
1-METHYLPHENANTHRENE	148	26.6	9.88	2.04 J	1.87 J
2,6-DIMETHYLNAPHTHALENE	38	12.8	2.33	2.73 J	1.3 J
2-METHYLNAPHTHALENE	90.6 J	23.6 J	4.95 J	4.86	2.6 J
ACENAPHTHENE	77.4 J	18	2.53	4.11 J	1.89 J
ACENAPHTHYLENE	216	78.1	17.8	10.9 J	0.59 J
ANTHRACENE	621 J	123 J	28.5 J	20.4 J	4.93 J
BENZO(A)ANTHRACENE	1430	236	181	11.2	10.1 J
BENZO(A)PYRENE	1874 J	131 J	32.9 J	8.09 J	11.3
BENZO(B)FLUORANTHENE	2182	386	284	18.3	13.6
BENZO(E)PYRENE	1054	201	146	17.1	12.1
BENZO(G,H,I)PERYLENE	1047 J	209	149	10.2 J	6.23
BENZO(K)FLUORANTHENE	686	103	94.4	6.66	6.06 J
BIPHENYL	13.3 J	5.67 J	1.41 J	1.23 J	1.88 J
CHRYSENE	1251	243	196	16.4	17
DIBENZO(A,H)ANTHRACENE	334 J	53.4	40.8	1.45 J	0.98 J
DIBENZOTHIOPHENE	47.7	12.7	2.49	0.57 J	0.64 J
FLUORANTHENE	2632 J	415	339	31.3	21.1
FLUORENE	137 J	32.2	5.04	3.7 J	3.11 J
INDENO(1,2,3-CD)PYRENE	277 J	228	170	7.54	6.37
NAPHTHALENE	129	37.1	6.87	5.14 J	3.84 J
PERYLENE	154	93.1	54.2	7.64	6.59
PHENANTHRENE	1030	179	55.1	8.41	9.93 J
PYRENE	2009	394	318	28.8	19.4
Pesticides/PCBs (ug/kg)					
1,2,3,4-TETRACHLOROBENZENE	0.49 U	0.12 U	0.35 U	0.38	10
1,2,4,5-TETRACHLOROBENZENE	1.2 U	1.3 U	0.86 U	2	0.79 J
2,4'-DDD	9.5	1.4	12	1.5	0.45 U
2,4'-DDE	0.81	0.15	1.9	0.4 U	0.63 U
2,4'-DDT	23	0.05	18	1.1	0.58 U
4,4'-DDD	30	1.3	41	3	0.55 U
4,4'-DDE	20	1.1	114	5.5	3.7
4,4'-DDT	104	0.74	77	2	0.84 UJ
ALDRIN	0.055 U	0.05 J	0.049 U	0.46 U	0.73 U
ALPHA-BHC	0.12	0.14	0.05 J	0.26 J	0.52 U
ALPHA-CHLORDANE	1.2	0.42	0.24	0.68	0.55 U
BETA-BHC	0.19 U	0.29 U	0.17 U	1.3	0.1 J
CHLORPYRIFOS	0.59 U	1.8 U	0.37 U	3 U	4.8 U
CIS-NONACHLOR	0.41	0.23	1.1	0.72	0.5 U
DELTA-BHC	0.042 U	0.09	0.05	0.18 U	0.29 U
DIELDRIN	4.2	0.04 J	0.2	0.37	1.7 J
ENDOSULFAN II	2.2	0.69	0.37	0.54	0.12 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 04				
	Sediment			Mussel	Lobster
Parameters	100A	200A	300A	100A	100A
ENDRIN	0.12 U	0.19 U	0.11 U	0.95 U	1.5 U
GAMMA-BHC (LINDANE)	0.22 U	0.35	0.07 J	0.14 J	0.45 U
GAMMA-CHLORDANE	0.062 U	0.096 U	0.055 U	0.28 J	0.58 U
HEPTACHLOR	0.63	0.25 U	0.14 U	0.52 U	0.83 U
HEPTACHLOR EPOXIDE	0.028 U	0.043 U	0.025 U	0.37 U	0.58 U
HEXACHLOROBENZENE	0.12	0.16	0.05	0.05 J	0.2 J
MIREX	0.16	0.043 U	0.06	0.84 U	1.3 U
OXYCHLORDANE	0.08	0.07	0.03	0.39 U	0.56 J
PCB-101/90	5.6	1.3	0.99	9.9	1.7 J
PCB-105	0.71 J	0.44 J	0.48 J	3.8	0.9 J
PCB-114	0.17 U	0.26 U	0.15 U	1.3 U	2 U
PCB-118	2	1.7	0.45	6.6	4.3
PCB-126	6.5	0.26 U	0.34 J	1.3 U	2 UR
PCB-128	1.7	0.55	1.1	1.7	0.76 J
PCB-138/160	19	3	7.7	19	6.2 U
PCB-149/123	6.3	1.2	4.9	14	0.71 J
PCB-153/132	11	2.9	9.7	28	8.9 U
PCB-156	1.5	0.59	0.92	0.94 J	2 U
PCB-167	0.77	0.21 J	0.49	0.49 J	2 U
PCB-169	0.03 U	0.17 U	0.07 U	1.3 U	2 U
PCB-170/190	2.3 J	0.98 J	3.9 J	1.3	1.6 U
PCB-18/17	0.083 U	1.1	0.074 U	3.3 U	2.1 J
PCB-180	11	2.2	9.1	7.9	3.6 U
PCB-187	11	1.2	5.4	14	4.5
PCB-189	0.45	0.29	0.42	0.12 J	2 U
PCB-195/208	5.1	0.48	1.5	1.1 U	0.32 J
PCB-201/157/173	1.34	0.44	0.68	1.4	1.6 U
PCB-206	8.9	0.59	1.7	1.1 U	0.36 J
PCB-209	11	0.8	0.74	1.4 U	2.3 U
PCB-28	0.21 U	0.53 U	0.28 U	1.3	0.16 J
PCB-44	0.11 J	0.49	0.14	0.85	0.12 U
PCB-52	5.4	1.6	0.43	5.6	0.92 J
PCB-66	0.12 U	0.22	0.06 J	1 J	0.77 J
PCB-77	0.15 J	0.06 J	0.03 J	1.3 U	0.52 U
PCB-8/5	0.31 U	0.4 J	0.32	7.5	3.3 U
PCB-81	3.6	0.26 U	0.14 U	1.3 U	2 U
PENTACHLOROANISOLE	0.2 U	0.12 U	0.07 U	1.7	0.28 U
PENTACHLOROBENZENE	0.2 U	0.24 U	0.1 U	2	0.28 U
TRANS-NONACHLOR	0.06	0.05 J	0.16	0.77	0.36 U
Metals (mg/kg)					
ALUMINUM	36081	56241	44541	507	5.95 U
ARSENIC	27.6	14.3	17.9	7.6	3 J
CADMIUM	0.91	0.56	0.13	1.81	0.0209
CHROMIUM	107	67.6	56.6	4.62	0.82

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 04				
	Sediment			Mussel	Lobster
Parameters	**100A**	**200A**	**300A**	**100A**	**100A**
COPPER	20507 J	33.1 J	118 J	25.7	38.8
IRON	89742 J	23080 J	24920 J	1057	17.2 J
LEAD	788	58.2	123	11.4 J	0.14 U
MANGANESE	665	313	556	13.3	4.62
MERCURY	2.41	0.38	0.1749 U	0.44	0.63
NICKEL	197 J	16.6 J	25.1 J	4.95 U	3.25 U
SILVER	8.11 J	3.13 J	3.19 J	0.5 J	1.14 J
ZINC	2633 J	63.4 J	42.1 J	150	81 J
Miscellaneous Parameters (%)					
% LIPID				2.8	2.4
TOTAL ORGANIC CARBON	1.84 J	1.83 J	0.62 J		

Notes:

MS-4 includes the following samples:
OU4-SD-M04-100A
OU4-SD-M04-200A
OU4-SD-M04-300A
OU4-MU-M04-100A
OU4-LJ-M04-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 05						
	Sediment				Mussel		Lobster
Parameters	100A	100A-DUP	200A	300A	100A	300A	100A
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	6.47 J	13.4 J	12.7	8.31	1.79 J	1.78 J	1.1 J
1-METHYLNAPHTHALENE	12.7 J	25.4 J	26.4 J	15.8 J	2.96 J	3.4 J	2.05 J
1-METHYLPHENANTHRENE	22.5	36.3	48.8	29.1	4.68	1.91 J	1.33 J
2,6-DIMETHYLNAPHTHALENE	8.44 J	15.9 J	15.4	9.63	2.55 J	2.68 J	1.06 J
2-METHYLNAPHTHALENE	19.7 J	38.2 J	37.7 J	21.2 J	5.08	6.41	3.32 J
ACENAPHTHENE	13.9 J	26.5 J	17.1	16.1	7.63 J	5.27 J	1.36 J
ACENAPHTHYLENE	46.2 J	107 J	103	70.9	12.8 J	8.32 J	0.56 J
ANTHRACENE	62.9 J	175 J	173 J	99.3 J	34.3 J	16.1 J	1.73 J
BENZO(A)ANTHRACENE	181 J	365 J	315	242	74.1	8.39	4.31 J
BENZO(A)PYRENE	209 J	106 J	149 J	202 J	82.2 J	6.39 J	7.1 J
BENZO(B)FLUORANTHENE	303 J	574 J	493	343	103	14.1	7.53
BENZO(E)PYRENE	173 J	290 J	264	183	59.2	13.9	8.45
BENZO(G,H,I)PERYLENE	156 J	285 J	267	194	52.9 J	8.23 J	6.03
BENZO(K)FLUORANTHENE	113 J	209 J	162	129	46.3	5.68	4.46 J
BIPHENYL	5.01 J	8.19	7.33 J	4.35 J	1.38 J	1.56 J	1.46 J
CHRYSENE	140 J	377 J	306	228	78.7	14.8	12.8
DIBENZO(A,H)ANTHRACENE	33.7 J	73.7 J	64.9	51.1	10.6	1.13 J	0.04 J
DIBENZOTHIOPHENE	8.37 J	17.5 J	14.1	11	1.69 J	0.57 J	0.67 J
FLUORANTHENE	351 J	731 J	544	403	147	25.8	15.4
FLUORENE	18.7 J	42.8 J	41 J	31 J	6.97 J	3.33 J	1.78 J
INDENO(1,2,3-CD)PYRENE	158 J	326 J	289	211	56.6	5.73	5.42
NAPHTHALENE	40.2	57.4	55.7	32.8	5.5 J	5.8 J	4.25 J
PERYLENE	54.4 J	137 J	114	75.7	25.9	6.08	5.58 J
PHENANTHRENE	145 J	294 J	203	179	40.3	7.51	3.87 J
PYRENE	311 J	667 J	512	398	117	22.2	10.8
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	0.09 U	0.46 U	0.07 U	0.07 U	0.51	1.1	7.9
1,2,4,5-TETRACHLOROBENZENE	1.2 U	1 U	1.5 U	0.57 U	1.8	3	0.2 J
2,4'-DDD	1.3 J	2.6 J	1.5	1.3	2	1.1	0.48 U
2,4'-DDE	0.14 J	0.46 J	0.31	0.06 J	0.32 U	0.35 U	0.66 U
2,4'-DDT	0.08 J	0.18 J	0.04	0.13	2.5	0.86	0.61 U
4,4'-DDD	1.3 J	2.2 J	1.6	1.3	2.7	2.1	0.58 U
4,4'-DDE	1.2 J	2.3 J	1	1.1	4.6	4.7	5
4,4'-DDT	1.3 J	0.71 J	0.88	0.53	2.7	1.1	0.88 UJ
ALDRIN	0.02 J	0.05 J	0.05 J	0.01 J	0.37 U	0.41 U	0.77 U
ALPHA-BHC	0.06 J	0.17 J	0.14	0.05 J	0.36	0.28 J	0.54 U
ALPHA-CHLORDANE	0.19 J	0.41 J	0.33	0.22	0.93	0.72	0.58 U
BETA-BHC	0.34 U	0.34 U	0.36 U	0.19 U	6.9	0.64	0.22 J
CHLORPYRIFOS	1.4 U	0.48 U	1.5 U	0.62 U	2.4 U	2.7 U	5 U
CIS-NONACHLOR	0.29	0.32	0.17	0.1	0.82	0.63	0.53 U
DELTA-BHC	0.04 J	0.075 U	0.079 U	0.02 J	0.15 U	0.16 U	0.31 U
DIELDRIN	0.06 J	0.1 J	0.04 J	0.03 J	0.38	0.41	2.2 J
ENDOSULFAN II	0.62	0.65	0.95	0.42	0.28 J	0.2 J	0.58 U
ENDRIN	0.23 U	0.23 U	0.24 U	0.13 U	0.76 U	0.85 U	1.6 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 05						
	Sediment				Mussel		Lobster
Parameters	100A	100A-DUP	200A	300A	100A	300A	100A
GAMMA-BHC (LINDANE)	0.14 J	0.4 U	0.42 U	0.23 U	0.14 J	0.09 J	0.48 U
GAMMA-CHLORDANE	0.11 U	0.09 J	0.12 U	0.064 U	0.27 J	0.21 J	0.61 U
HEPTACHLOR	0.29 UJ	0.48 J	0.3 U	0.16 U	0.41 U	0.46 U	0.87 U
HEPTACHLOR EPOXIDE	0.051 U	0.05 U	0.053 U	0.028 U	0.29 U	0.33 U	0.61 U
HEXACHLOROBENZENE	0.076 U	0.075 U	0.24	0.042 U	0.22 J	0.14 J	0.3 J
MIREX	0.051 U	0.05 U	0.053 U	0.028 U	0.67 U	0.75 U	1.4 U
OXYCHLORDANE	0.02 J	0.08 J	0.14	0.03	0.31 U	0.35 U	0.7
PCB-101/90	0.99 J	2.1 J	1.6	0.49	7	6.6	1.4 J
PCB-105	0.38 J	0.71 J	0.67 J	0.22 J	3.1	2.3	1.8
PCB-114	0.3 U	0.3 UJ	0.32 U	0.17 U	1 U	1.1 U	2.1 U
PCB-118	0.99 J	1.7	1.6	0.48	5.5	4.4	7.3
PCB-126	0.15 U	0.3 U	0.32 U	0.17 U	1 U	1.1 U	2.1 UR
PCB-128	0.37 J	0.69 J	0.58	0.09	1.5	1.2	1.4 J
PCB-138/160	1.5 J	2.5 J	2.5	1.2	11	11	8
PCB-149/123	0.73 J	1.7 J	1.2	0.78	6.1	6.5	0.29 J
PCB-153/132	1.5 J	3.3 J	2.4	1.2	13	14	11 U
PCB-156	0.41	0.34	0.57	0.28	0.55 J	0.58 J	2.1 U
PCB-167	0.13 J	1.7 J	0.23 J	0.02 J	0.94 J	0.8 J	0.48 J
PCB-169	0.4 J	0.3 U	0.32 U	0.02 U	0.34 J	0.08 J	0.1 J
PCB-170/190	0.68 J	1.7 UJ	1.1 J	0.97 U	0.43 J	0.5 J	1.6 U
PCB-18/17	0.15 UJ	1 J	0.59	0.085 U	2.7 U	3 U	6.2
PCB-180	0.78	1.1	1.9	0.6	5.1	6.8	3.5 U
PCB-187	0.44 J	0.92 J	1.1	0.58	6.9	9.6	3.8
PCB-189	0.26 J	0.41	0.37	0.05 J	1 U	1.1 U	2.1 U
PCB-195/208	0.28 J	0.49 J	0.47	0.23	0.05 J	0.21 J	0.32 J
PCB-201/157/173	0.3	0.21	0.48	0.21	0.29 J	0.11 J	1.6 U
PCB-206	0.28 J	0.58 J	0.39	0.24	0.88 U	0.98 U	0.3 J
PCB-209	0.41 J	1.1 J	0.82	0.59	1.1 U	1.3 U	2.4 U
PCB-28	0.51 U	0.85 J	0.49 U	0.45	1.2	1.1	0.28 J
PCB-44	0.27	0.2 J	0.66	0.1 J	0.7	0.71	1.2 U
PCB-52	0.6 J	1.1 J	0.95	0.32	2.9	2.9	0.81 J
PCB-66	0.19 J	0.44 J	0.36	0.08 J	0.61 J	0.9 J	1.2 J
PCB-77	0.04 J	0.12 J	0.02 J	0.03 J	0.63 J	0.86 J	0.31 U
PCB-8/5	0.16 J	0.9 J	0.95	0.07 J	3.7	4.5	0.57 J
PCB-81	0.3 U	0.03 U	0.32 U	0.07 U	1 U	0.13 J	2.1 U
PENTACHLOROANISOLE	0.1 U	0.18 U	0.19 U	0.03 U	0.58	1.1	0.19 U
PENTACHLOROBENZENE	0.22 U	0.24 U	0.22 U	0.06 U	1	1.8	0.31 U
TRANS-NONACHLOR	0.13 J	0.54 J	0.14	0.01 J	0.7	0.74	0.18 J
Metals (mg/kg)							
ALUMINUM	62766	58894	60457	57212	641	269	4.52 U
ARSENIC	18.3	18.9	14	14.1	6.56	5.95	4.89 J
CADMIUM	0.59	0.57	0.63	0.56	2.85	1.75	0.04
CHROMIUM	97.7	92.5	88.8	87.6	6.9	2.74	0.72 U
COPPER	65 J	57.3	33 J	31.4 J	20.4	6.09	52.5
IRON	33256 J	30611	30228 J	28333 J	1027	612	9.55 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 05						
	Sediment				Mussel		Lobster
Parameters	**100A**	**100A-DUP**	**200A**	**300A**	**100A**	**300A**	**100A**
LEAD	116	118	66.6	65	103 J	5.75 J	0.22 U
MANGANESE	358	350	345	356	16.3	9.38	2
MERCURY	0.37	0.39	0.19	0.1878 U	2.31	0.27	0.6
NICKEL	25.4 J	25.9 J	25.1 J	22.8 J	3.9 U	1.76 U	2.99 U
SILVER	4.43 J	3.95	4.38 J	4.11 J	0.31 U	0.29 U	0.49 J
ZINC	95.9 J	116	97.4 J	71.9 J	198	97.1	89.1 J
Miscellaneous Parameters (%)							
% LIPID					3.8	4.1	2.8
TOTAL ORGANIC CARBON	2.57 J	2.47 J	2.59 J	0.57 J			

Notes:

MS-5 includes the following samples:

OU4-SD-M05-100A
OU4-FD-002-000A (duplicate of OU4-SD-M05-100A)
OU4-SD-M05-200A
OU4-SD-M05-300A
OU4-MU-M05-100A
OU4-MU-M05-300A
OU4-LJ-M05-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 06						
	Sediment			Mussel			Lobster
Parameters	100A	200A	300A	100A	200A	300A	100A
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	5.51	13	0.6	1.61 J	2.64 J	1.74 J	1.09 J
1-METHYLNAPHTHALENE	9.15 J	20.8 J	0.85 J	2.9 J	5.04	2.35 J	2.74 J
1-METHYLPHENANTHRENE	31.6	53.3	1.43	1.77 J	1.97 J	1.51 J	0.6 J
2,6-DIMETHYLNAPHTHALENE	10.8	17.9	0.68 J	2.37 J	3.63 J	2.05 J	1.03 J
2-METHYLNAPHTHALENE	18.2 J	33.1 J	1.33 J	5.59	9.17	4.11 J	4.08 J
ACENAPHTHENE	11 J	19.4	0.56	3.24 J	4.93 J	1.73 J	0.86 J
ACENAPHTHYLENE	41.6	116	4.58	6.54 J	10.8 J	6.87 J	0.7 J
ANTHRACENE	83.5	192 J	5.55 J	12.3 J	20.4 J	12.6 J	1.34 J
BENZO(A)ANTHRACENE	233	375	10.9	11.6	11.4	9.24	1.85 J
BENZO(A)PYRENE	113 J	86.6 J	16.3 J	9.23 J	11.4 J	8.71 J	2.92 J
BENZO(B)FLUORANTHENE	438 J	525	15.8	22.5	25.7	13.4	4.4 J
BENZO(E)PYRENE	210	310	10.4	18.3	23.1	11.7	3.9 J
BENZO(G,H,I)PERYLENE	225 J	327	11	10.5	12.1	7.18	3.54 J
BENZO(K)FLUORANTHENE	149	142	6.69	8.45	9.37	6.41	2.18 J
BIPHENYL	4.56 J	8.12 J	0.75 J	1.43 J	1.27 J	1.62 J	1.62 J
CHRYSENE	249	398	11.6	21.3	21.3	13.6	5.58 J
DIBENZO(A,H)ANTHRACENE	47.1 J	80	2.12	1.44 J	1.55 J	1.05 J	0.21 J
DIBENZOTHIOPHENE	11.7	15.3	0.59	0.92 J	0.75 J	0.57 J	0.32 J
FLUORANTHENE	488	603	20.4	38.7	36.2	27.2	8.28
FLUORENE	22.3	44.7 J	1.41 J	3.59 J	4.54 J	3.6 J	1.59 J
INDENO(1,2,3-CD)PYRENE	237	345	10.9	8.99	9.66	5.42	0.06 J
NAPHTHALENE	21.5	48.2	2.14 J	6.29 J	8.69 J	4.36 J	4.76 J
PERYLENE	72.5	140	3.38	6.73 J	9.58 J	5.3 J	3.18 J
PHENANTHRENE	193	228	7.73	10.3	9.65	9.22	3.06 J
PYRENE	436 J	628	17.6	31.8	34.1	23.4	6.52
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	0.11 U	0.01 U	0.22 U	1.1	0.66	1.6	1.3
1,2,4,5-TETRACHLOROBENZENE	0.29 U	0.87 U	0.08 U	2.5	1.5	2.1	0.02 J
2,4'-DDD	9.9	2.1	0.09	5.9	2	0.67	0.39 U
2,4'-DDE	0.12 J	0.28	0.075 U	0.15 J	0.51	0.48 U	0.54 U
2,4'-DDT	0.46	0.03 J	0.04	1.8	1.1	0.99	0.5 U
4,4'-DDD	17	2.1	0.13	15	4.4	1.8	0.47 U
4,4'-DDE	2.1	1.3	0.83	4	4.6	2.8	1.2
4,4'-DDT	12	0.91	0.03 J	7	2.8	0.59 J	0.72 UJ
ALDRIN	0.054 U	0.02 J	0.054 U	0.08 J	0.35 U	0.55 U	0.63 U
ALPHA-BHC	0.02 J	0.16	0.03 J	0.15 J	0.19 J	0.43	0.45 U
ALPHA-CHLORDANE	0.19	0.15	0.061 U	0.44	0.89	0.5	0.47 U
BETA-BHC	0.21	0.36 U	0.18 U	1.8	0.79	2.9	0.29 J
CHLORPYRIFOS	0.25 U	0.75 U	1.8 U	2.9 U	2.3 U	3.6 U	4.1 U
CIS-NONACHLOR	0.06	0.09	0.08	0.39	0.6	0.35 J	0.43 U
DELTA-BHC	0.04 U	0.19	0.03 J	0.18 U	0.14 U	0.22 U	0.25 U
DIELDRIN	0.06 U	0.06 J	0.061 U	0.3 J	0.46	0.31 J	1.4 J
ENDOSULFAN II	0.62	0.24	0.01 J	0.09 J	0.13 J	0.42 U	0.47 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 06						
	Sediment			Mussel			Lobster
Parameters	100A	200A	300A	100A	200A	300A	100A
ENDRIN	0.12 U	0.24 U	0.12 U	0.91 U	0.72 U	1.1 U	1.3 U
GAMMA-BHC (LINDANE)	0.06 J	0.42 U	0.13 J	0.28 U	0.13 J	0.34 U	0.39 U
GAMMA-CHLORDANE	0.04 J	0.15	0.061 U	0.18 J	0.24 J	0.17 J	0.5 U
HEPTACHLOR	0.15 U	0.04 J	0.04 J	0.33 J	0.39 U	0.79	0.71 U
HEPTACHLOR EPOXIDE	0.027 U	0.053 U	0.027 U	0.35 U	0.28 U	0.44 U	0.5 U
HEXACHLOROBENZENE	0.02 J	0.18	0.041 U	0.44 U	0.07 J	0.55 U	0.06 J
MIREX	0.027 U	0.053 U	0.03	0.81 U	0.63 U	1 U	1.1 U
OXYCHLORDANE	0.08	0.08	0.014 U	0.37 U	0.04 J	0.46 U	0.35 J
PCB-101/90	0.99	1.1	0.09	4.3	7.6	4	1.5 U
PCB-105	0.49 J	0.63 J	0.1 J	1.5	2.8	1.3	0.61 J
PCB-114	0.16 U	0.32 U	0.16 U	1.2 U	0.97 U	1.5 U	1.7 U
PCB-118	0.7	1.7	0.17	3.5	5.9	2.9	2.1 J
PCB-126	0.16 U	0.32 U	0.16 U	1.2 U	0.97 U	0.13 J	1.7 UR
PCB-128	0.25	0.97	0.18	0.89 J	1.5	0.81 J	0.36 J
PCB-138/160	1.6	2.2	0.29 U	7.1	14	6.3	2.6 U
PCB-149/123	1.5	1.1	0.18	4.4	5.9	3.1	1.7 U
PCB-153/132	1.8	2.4	0.36 U	10	18	8.4	3.9 U
PCB-156	0.48	0.65	0.12 J	0.45 J	0.6 J	0.28 J	1.7 U
PCB-167	0.96	0.07 J	0.11 J	0.61 J	0.99	1.5 U	1.7 U
PCB-169	0.01 U	0.07 U	0.08 U	0.07 J	0.97 U	1.5 U	1.7 U
PCB-170/190	13 J	1.8 U	0.93 U	0.35 J	2.4	0.32 J	0.33 U
PCB-18/17	0.08	0.16 U	0.51	0.26 J	2.5 U	4 U	0.85 J
PCB-180	1.1	1.4	0.25	3.3	8.6	2.9	1.1 U
PCB-187	0.88	0.98	0.16 U	4.8	12	3.3	1.2
PCB-189	0.11 J	0.26 J	0.01 J	1.2 U	0.97 U	1.5 U	1.7 U
PCB-195/208	0.4	0.35	0.04 J	1 U	0.35 J	1.3 U	1.4 U
PCB-201/157/173	.0.15	0.44	0.14	0.94 U	0.38 J	1.2 U	1.3 U
PCB-206	0.4	0.5	0.075 U	1.1 U	0.09 J	1.3 U	0.16 J
PCB-209	0.67	0.85	0.03 J	1.4 U	1.1 U	1.7 U	2 U
PCB-28	0.22	0.43 U	0.18 U	0.89 J	0.84	0.21 J	0.19 J
PCB-44	0.16	0.52	0.66	0.62 J	0.67	0.55 J	1 U
PCB-52	0.96	0.95	0.12 J	1.9	1.8	1.8	1.2 U
PCB-66	0.31	0.49	0.04 J	0.62 J	0.92 J	0.59 J	0.34 J
PCB-77	0.09 U	0.09 J	0.01 J	0.75 J	0.13 J	0.5 J	1.7 U
PCB-8/5	0.28 J	0.71	0.05 J	10	7.8	26	2.8 U
PCB-81	0.16 U	0.32 U	0.16 U	1.2 U	0.97 U	0.36 J	0.18 J
PENTACHLOROANISOLE	0.03 U	0.22 U	0.05 U	1.7	1.3	2.2	0.17 U
PENTACHLOROBENZENE	0.07 U	0.3 U	0.1 U	2	1.2	2.1	0.32 U
TRANS-NONACHLOR	0.07	0.14	0.034 U	0.34	0.81	0.43	0.31 U
Metals (mg/kg)							
ALUMINUM	38825	54597	44154	386	302	465	2.85 U
ARSENIC	7.97	13.3	17.4	6.03	5.38	8.03	4.96 J
CADMIUM	0.31	0.49	0.18	1.03	1.77	1.25	0.0231
CHROMIUM	44.2	77	51.9	2.92	2.78	4.59	0.56

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 06						
	Sediment			Mussel			Lobster
Parameters	**100A**	**200A**	**300A**	**100A**	**200A**	**300A**	**100A**
COPPER	13.9	30.5 J	12.7 J	5.65	6.94	6.63	41.3
IRON	15498	25798 J	22841 J	735	536	1074	21.2 J
LEAD	49.1	64.7	25.9	6.25 J	5.38 J	6.32 J	0.26 U
MANGANESE	417	341	797	10.4	9.04	14.3	1.65
MERCURY	0.26	0.35	0.1694 U	0.26	0.3	0.29	0.59
NICKEL	14.8 J	18.1 J	27.4 J	1.83 U	2.53 U	2 U	2.47 U
SILVER	2.33	4 J	3.72 J	0.3 U	0.32 U	0.33 U	1.01 J
ZINC	46.7	63.3 J	28.5 J	98.5	96.1	72.7	93.1 J
Miscellaneous Parameters (%)							
% LIPID				8.8	3.2	2.5	2.5
TOTAL ORGANIC CARBON	0.53 J	2.27 J	0.36 J				

Notes:

MS-6 includes the following samples:

OU4-SD-M06-100A
OU4-SD-M06-200A
OU4-SD-M06-300A
OU4-MU-M06-100A
OU4-MU-M06-200A
OU4-MU-M06-300A
OU4-LJ-M06-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 07					
	Sediment			Mussel		Lobster
Parameters	100A	200A	300A	100A	300A	100A
Dioxins/Furans (ng/kg)						
1,2,3,4,6,7,8-HPCDD	84	16.2	9.46	18 J	9.1 J	5.5 J
1,2,3,4,6,7,8-HPCDF	22.1	4.55	2.48	24.4 U	26.9 U	22.3 U
1,2,3,4,7,8,9-HPCDF	0.98 J	0.1 J	1.95 U	24.4 UJ	26.9 U	22.3 U
1,2,3,4,7,8-HXCDD	1.07	0.12 J	1.95 U	24.4 U	26.9 U	22.3 U
1,2,3,4,7,8-HXCDF	1.32	0.26 J	0.11 J	24.4 U	26.9 U	22.3 U
1,2,3,6,7,8-HXCDD	4	0.68 J	1.95 U	24.4 U	26.9 U	22.3 U
1,2,3,6,7,8-HXCDF	1 J	0.14 J	0.14 J	24.4 U	26.9 U	22.3 U
1,2,3,7,8,9-HXCDD	2.35	0.42 J	0.12 J	24.4 U	26.9 U	22.3 U
1,2,3,7,8,9-HXCDF	1.02 U	1.61 U	1.95 U	24.4 U	26.9 U	22.3 U
1,2,3,7,8-PECDD	0.44 J	0.06 J	1.95 U	24.4 U	26.9 U	22.3 U
1,2,3,7,8-PECDF	0.62 U	0.09 U	0.2 U	24.4 U	10.2 J	22.3 U
2,3,4,6,7,8-HXCDF	0.93 J	0.26 J	0.12 J	24.4 U	26.9 U	22.3 U
2,3,4,7,8-PECDF	1.02 U	1.61 U	0.14 J	24.4 U	26.9 U	22.3 U
2,3,7,8-TCDD	0.76	0.32 U	0.11 J	4.88 UR	5.38 UR	4.46 U
2,3,7,8-TCDF	1.22	0.3 J	0.23 J	6.2 J	5.38 U	1.84 J
OCDD	716	124	67.4	48.8 U	53.8 U	28.6 J
OCDF	29.1	6.88	3.9 U	48.8 U	53.8 U	44.6 U
TOTAL DIOXINS	972	166	93	79.7 J	32.7 J	34 J
TOTAL FURANS	112	24.7	8.48	19.3 J	53 J	1.84 U
TOTAL HPCDD	198	37.5	21.2	31.1 J	9.1 J	5.5 J
TOTAL HPCDF	51.6	10.5	6.4	24.4 U	26.9 U	22.3 U
TOTAL HXCDD	48.4	4.62	3.17	24.4 U	6.2 J	22.3 U
TOTAL HXCDF	23.2	5.14	1.51 J	24.4 U	26.9 U	22.3 U
TOTAL PECDD	0.44 J	0.06 J	1.95 U	24.4 U	26.9 U	22.3 U
TOTAL PECDF	6.26	1.17 U	0.34 U	24.4 U	10.2 J	22.3 U
TOTAL TCDD	8.43 U	0.5 U	1.21 U	48.6 J	17.5 J	4.46 U
TOTAL TCDF	2.26	1.06	0.23 J	19.3 J	42.8 J	1.84 J
Polyaromatic Hydrocarbons (ug/kg)						
1,6,7-TRIMETHYLNAPHTHALENE	4.12	12.5	12.4	1.6 J	1.45 J	0.74 J
1-METHYLNAPHTHALENE	5.69 J	18 J	16 J	3.7 J	3.09 J	2.38 J
1-METHYLPHENANTHRENE	20.4	62.2	33.3	4 J	1.28 J	0.74 J
2,6-DIMETHYLNAPHTHALENE	4.88	18.2	13.9	2.4 J	2.13 J	1.31 J
2-METHYLNAPHTHALENE	9.35 J	27.3 J	24.2 J	5.9 J	5.37	3.79 J
ACENAPHTHENE	9.66 J	32	19.8	8.9 J	3.06 J	1.64 J
ACENAPHTHYLENE	23.8	94.4	60.5	12 J	6.49 J	0.71 J
ANTHRACENE	56.5	169 J	95.3 J	20.3	11.3 J	1.24 J
BENZO(A)ANTHRACENE	163	340	216	20.8	7.48	8.3 J
BENZO(A)PYRENE	85.6 J	339 J	118 J	17.6	4.98 J	13.3
BENZO(B)FLUORANTHENE	224 J	669	355	32.4	13.8	15.5
BENZO(E)PYRENE	115	223	167	30.4 J	12.7	10.6
BENZO(G,H,I)PERYLENE	121 J	274	170	15.5	6.23	6.75
BENZO(K)FLUORANTHENE	63.6	76.4	99	15.4	6.12	5.42 J
BIPHENYL	2.47 J	8.19 J	5.81 J	2.2 J	1.29 J	1.56 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 07					
	Sediment			Mussel		Lobster
Parameters	100A	200A	300A	100A	300A	100A
CHRYSENE	169	353	243	35.1 J	12.2	17
DIBENZO(A,H)ANTHRACENE	29.7 J	86.2	44.2	2.1 J	0.66 J	1.44 J
DIBENZOTHIOPHENE	6.81	17.6	12.6	1.5 J	0.4 J	0.44 J
FLUORANTHENE	310	649	412	59.3	19.6	16.1
FLUORENE	15.7	89.9 J	33.4 J	6.8 J	2.91 J	1.68 J
INDENO(1,2,3-CD)PYRENE	129	73	190	12.1 J	4.72	10.5
NAPHTHALENE	14	49.4	38.7	7.5 J	6.58 J	5.98 J
PERYLENE	42.1	246	82.6	14.2 J	6.32 J	7.04
PHENANTHRENE	117	282	189	20.1	5.28 J	4.11 J
PYRENE	268 J	608	390	51.2	19.7	15.1
Pesticides/PCBs (ug/kg)						
1,2,3,4-TETRACHLOROBENZENE	0.11 U	0.32 U	0.42 U	0.19 U	0.57	9.1
1,2,4,5-TETRACHLOROBENZENE	0.61	1.9 U	1.4 U	1.3 U	1.9	0.06 J
2,4'-DDD	1.2	1.9	1.7	2.5	0.57	0.49 U
2,4'-DDE	0.07 J	0.19	0.11 J	0.22 J	0.37 U	0.68 U
2,4'-DDT	0.37	0.1	0.04	0.58	0.51	0.62 U
4,4'-DDD	1.8	2.5	1.6	3	1.2	0.59 U
4,4'-DDE	2.1	1.7	1	9.2	2.8	2.3
4,4'-DDT	1.7	1.1	0.5	1.6 J	0.48 J	0.9 UJ
ALDRIN	0.056 U	0.089 U	0.083 U	0.08 J	0.11 J	0.78 U
ALPHA-BHC	0.02 J	0.11	0.12	0.2 J	0.15 J	0.56 U
ALPHA-CHLORDANE	0.06 J	0.39	0.52	1.1	0.51	0.59 U
BETA-BHC	0.37	0.3 U	0.28 U	1.3 U	0.74	0.59
CHLORPYRIFOS	0.27 U	1.2 U	0.47 U	2.9 U	2.8 U	5.1 U
CIS-NONACHLOR	0.07	0.35	0.14	1	0.39	0.54 U
DELTA-BHC	0.07	0.11	0.05 J	0.18 U	0.17 U	0.31 U
DIELDRIN	0.32	0.1 U	0.093 U	0.83 J	0.28 J	1.8 J
ENDOSULFAN II	0.28	1.2	0.76	0.21 J	0.09 J	0.59 U
ENDRIN	0.13 U	0.2 U	0.19 U	0.91 U	0.87 U	1.6 U
GAMMA-BHC (LINDANE)	0.23 U	0.35 U	0.33 U	0.13 J	0.02 J	0.49 U
GAMMA-CHLORDANE	0.12	0.1 U	0.13	0.38	0.16 J	0.62 U
HEPTACHLOR	0.16 U	0.25 U	0.24 U	0.5 U	0.48 U	0.88 U
HEPTACHLOR EPOXIDE	0.028 U	0.044 U	0.041 U	0.35 U	0.34 U	0.62 U
HEXACHLOROBENZENE	0.03 J	0.02 J	0.062 U	0.11 J	0.42 U	0.2 J
MIREX	0.028 U	0.044 U	0.041 U	0.8 U	0.77 U	1.4 U
OXYCHLORDANE	0.05	0.1	0.04	0.37 U	0.36 U	0.6 J
PCB-101/90	1.2	1.6	1.1	7.6	4	1.9 U
PCB-105	0.68 J	0.78 J	0.59 J	3.7 J	1.9	0.61 J
PCB-114	0.17 U	0.27 U	0.25 U	1.2 U	1.2 U	2.2 U
PCB-118	1.1	2.2	1.3	7.8	3.7	2.5 J
PCB-126	0.17 U	0.27 U	0.25 U	1.2 UJ	1.2 U	2.2 UR
PCB-128	0.27	0.72	0.52	2	0.84 J	0.46 J
PCB-138/160	1.5	3.2	2.2	12	6.4	2.9 U
PCB-149/123	0.98	1.4	0.83	6.6	3.9	0.14 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 07					
	Sediment			Mussel		Lobster
Parameters	**100A**	**200A**	**300A**	**100A**	**300A**	**100A**
PCB-153/132	1.4	2.4	1.6	17 U	8.8	4.6 U
PCB-156	0.35	0.6	0.53	0.97 J	0.41 J	2.2 U
PCB-167	0.92	0.22 J	0.24 J	1 J	0.45 J	2.2 U
PCB-169	0.01 U	0.16 U	0.06 U	1.2 U	1.2 U	0.03 J
PCB-170/190	6.9 J	1.5 U	1.4 U	0.38 U	0.29 J	0.28 U
PCB-18/17	0.4	0.7	0.78	3.2 U	3.1 U	7.8
PCB-180	0.73	1.5	1.2	5.2 U	2.4	1.4 U
PCB-187	0.71	1.3	0.8	5.9	3.2	1.8
PCB-189	0.1 J	0.42	0.19 J	1.2 U	1.2 U	2.2 U
PCB-195/208	0.35	0.67	0.42	1 U	0.98 U	1.8 U
PCB-201/157/173	0.14	0.6	0.69	0.28 J	0.9 U	1.7 U
PCB-206	0.7	1.2	0.59	1.1 U	1 U	1.2 J
PCB-209	0.35	1.1	0.82	1.4 U	1.3 U	2.4 U
PCB-28	0.99	0.87	0.93	1	0.64 J	1.7 U
PCB-44	0.6	0.48	0.34	0.93 U	0.46 J	1.3 U
PCB-52	1	0.84	0.79	2.1 U	1.2	1.5 U
PCB-66	0.75	0.44	0.3	1.3	0.51 J	0.24 J
PCB-77	0.03 U	0.03 J	0.01 J	0.67 J	0.88 J	0.24 U
PCB-8/5	0.48	0.35 J	0.44 J	4.1	6	0.42 J
PCB-81	0.17 U	0.27 U	0.25 U	1.2 U	1 J	2.2 U
PENTACHLOROANISOLE	0.04 U	0.14 U	0.1 U	0.98 U	1	0.25 U
PENTACHLOROBENZENE	0.12 U	0.31 U	0.13 U	0.54 U	0.99	0.33 U
TRANS-NONACHLOR	0.06	0.23	0.12	0.99	0.44	0.38 U
Metals (mg/kg)						
ALUMINUM	44008	56383	54179	303	337	3.23 U
ARSENIC	10.7	14.7	13.3	5.7	8.08	3.91 J
CADMIUM	0.27	0.65	0.42	1.37	1.31	0.0478
CHROMIUM	53.5	93.7	78.9	3.72	2.47	0.64
COPPER	18.3	35.8 J	19.9 J	6.03 J	5.94	58.4
IRON	17994	27688 J	23382 J	621	486	10.4 J
LEAD	51.1	70.2	52.5	3.87	4.96 J	0.47 U
MANGANESE	282	327	356	8.63	8.65	2.42
MERCURY	0.0926 U	0.25	0.22	0.25	0.25	0.54
NICKEL	18.8 J	19.5 J	15.9 J	3.79 U	2.05 U	1.98 U
SILVER	2.73	3.95 J	3.51 J	0.29 U	0.34 U	1.29 J
ZINC	54.3	75.5 J	50.1 J	81.3 J	90.3	93 J
Miscellaneous Parameters (%)						
% LIPID				6.2	2.5	2.5
TOTAL ORGANIC CARBON	0.77 J	2.09 J	1.67 J			

Notes:

MS-7 includes the following samples:

OU4-SD-M07-100A
OU4-SD-M07-200A
OU4-SD-M07-300A
OU4-MU-M07-100A
OU4-MU-M07-300A
OU4-LJ-M07-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 08							
	Sediment				Mussel			Lobster
Parameters	100A	100A-DUP	200A	300A	100A	200A	300A	100A
Dioxins/Furans (ng/kg)								
1,2,3,4,6,7,8-HPCDD	117 J	114 U	17.7	7.62	20.9 J	17.3 J	27.3 UR	1.59 J
1,2,3,4,6,7,8-HPCDF	32.8 J	32.7 U	4.42	4.47	20.7 U	26.2 U	27.3 U	13.5 U
1,2,3,4,7,8,9-HPCDF	2.12	1.9	2.22 U	0.2 J	20.7 UJ	26.2 UJ	27.3 UJ	13.5 U
1,2,3,4,7,8-HXCDD	1.2	1.4	2.22 U	0.23 J	20.7 U	26.2 U	27.3 U	13.5 UJ
1,2,3,4,7,8-HXCDF	3.28	3.3	0.37 J	1 U	20.7 U	26.2 U	27.3 U	13.5 U
1,2,3,6,7,8-HXCDD	5.17	6	0.49 J	0.28 J	20.7 U	26.2 U	27.3 U	13.5 UJ
1,2,3,6,7,8-HXCDF	2.33	2.7	2.22 U	1 U	20.7 U	26.2 U	27.3 U	13.5 U
1,2,3,7,8,9-HXCDD	3.64 J	0.97 UJ	0.5 J	1 U	20.7 U	26.2 U	27.3 U	13.5 UJ
1,2,3,7,8,9-HXCDF	0.91 U	0.97 U	2.22 U	1 U	20.7 U	26.2 U	27.3 U	13.5 U
1,2,3,7,8-PECDD	1.1 J	0.97 UJ	0.06 J	1 UJ	20.7 U	26.2 U	27.3 U	13.5 UJ
1,2,3,7,8-PECDF	1.71 U	2.3 J	0.25 U	0.4 U	20.7 U	26.2 U	27.3 U	13.5 U
2,3,4,6,7,8-HXCDF	3.2	3.9	0.2 J	1 U	20.7 U	26.2 U	27.3 U	13.5 U
2,3,4,7,8-PECDF	2.24 J	0.97 UJ	2.22 U	1 UJ	20.7 U	26.2 U	27.3 U	13.5 U
2,3,7,8-TCDD	0.5 J	0.19 UJ	0.07 J	0.2 UJ	4.13 UR	5.24 UR	5.46 UR	2.7 U
2,3,7,8-TCDF	2.53	3.4 J	0.36 J	0.35 J	4.13 U	5.24 U	5.46 U	3.02 J
OCDD	957	960	125	64.3	41.3 U	52.4 U	95.3 J	27 U
OCDF	44.3	50.4 U	7.8	4.06	41.3 U	52.4 U	54.6 U	1.44 U
TOTAL DIOXINS	1378	1355	170	85.1	91.4 J	74.7 J	146 J	1.59 J
TOTAL FURANS	217	232 U	22.3	22.3	17 J	37.8 J	54.6 U	4.46 U
TOTAL HPCDD	336 J	321 U	40.3	19.2	33.5 J	19.7 J	27.3 U	1.59 J
TOTAL HPCDF	75.4	79.1 U	11.3	4.67	20.7 U	26.2 U	27.3 U	13.5 U
TOTAL HXCDD	73	67.4	4.81	0.51 J	20.9 J	17.3 J	27.3 U	13.5 U
TOTAL HXCDF	50.6	48.3	0.57 J	4.59	17 J	37.8 J	27.3 U	13.5 U
TOTAL PECDD	1.1	0.97 UJ	0.06 J	1 UJ	20.7 U	26.2 U	27.3 U	13.5 U
TOTAL PECDF	31.3	29.6 J	1.19 U	7.44 J	20.7 U	26.2 U	27.3 U	13.5 U
TOTAL TCDD	11.5 J	6.8 J	0.07 U	1.08 U	37.1 J	37.7 J	51.1 J	2.7 U
TOTAL TCDF	15.5	24.7 J	1.48	1.54 J	4.13 U	5.24 U	5.46 U	3.02 J
Polyaromatic Hydrocarbons (ug/kg)								
1,6,7-TRIMETHYLNAPHTHALENE	12.6	10.4	12.1	1.89	3.3 J	2.8 J	1.7 J	2.84 J
1-METHYLNAPHTHALENE	29.2 J	22.1 J	21.4 J	3.71 J	5.5 J	4.9 J	3.6 J	3.74 J
1-METHYLPHENANTHRENE	44.5 J	42.7	55.7	5.9	9.1	4.3 J	5.1 J	4 J
2,6-DIMETHYLNAPHTHALENE	18	16.9	16.9	3.1	2.9 J	3.3 J	2 J	4.18 J
2-METHYLNAPHTHALENE	45.3 J	37.6	33.5 J	7.26 J	6.7 J	6.4 J	4.6 J	7.81
ACENAPHTHENE	43.2 J	55.9	31.3	7.15 J	27.4 J	10 J	6.9 J	4.89 J
ACENAPHTHYLENE	83.1	90.9 J	87.3	21.5	14.3 J	19.6 J	9.8 J	6.9 J
ANTHRACENE	214	212	180 J	43.5	45	31.9	18.5	13.7 J
BENZO(A)ANTHRACENE	427	379 J	327	73.8	75	20.3	18.4	19.3
BENZO(A)PYRENE	370 J	575 J	157 J	32.5 J	76.7	17.8	16.3	13.6
BENZO(B)FLUORANTHENE	690 J	712 J	507	136 J	116	44.9	35.5	31.1
BENZO(E)PYRENE	367	348	258	79.7	70.2 J	44.6 J	24.6 J	26.4
BENZO(G,H,I)PERYLENE	344 J	304 J	269	82.7 J	53.6	20.2	15.1	11.7
BENZO(K)FLUORANTHENE	199	214	159	44	47.4	23.1	13.9	11.5
BIPHENYL	7.82 J	7.76 J	7.6 J	1.84 J	2.7 J	2.6 J	2.3 J	2.58 J
CHRYSENE	476 J	452	344	118	106 J	48.2 J	34.2 J	27.9
DIBENZO(A,H)ANTHRACENE	84.4 J	83.5 J	71.1	19.2 J	6.7 J	3 J	1.2 J	1.38 J
DIBENZOTHIOPHENE	17.9 J	22.1	17.6	3.72	10.2	1.4 J	1.6 J	1.15 J
FLUORANTHENE	790 J	810 J	663	172	263	66.6	57.9	49.3
FLUORENE	47.6 J	76	50 J	8.14	28.6 J	6.3 J	5.3 J	8.09 J
INDENO(1,2,3-CD)PYRENE	346 J	354	296	76	51.6 J	14.6 J	11.3 J	8.45
NAPHTHALENE	41.6 J	41.2	48.1	8.71 J	12.5 J	9.7 J	9.5 J	5.87 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 08							
	Sediment				Mussel			Lobster
Parameters	**100A**	**100A-DUP**	**200A**	**300A**	**100A**	**200A**	**300A**	**100A**
PERYLENE	71.5 J	106	135	21.6 J	27.5 J	21 J	10.9 J	15
PHENANTHRENE	293 J	420	292	81.7	165	15	22.6	18.4
PYRENE	717 J	683 J	611	147 J	200	67.5	54.4	49.1
Pesticides/PCBs (ug/kg)								
1,2,3,4-TETRACHLOROBENZENE	0.21 U	0.42 J	0.28 U	0.06 U	0.3 U	0.43 U	0.17 U	0.48 J
1,2,4,5-TETRACHLOROBENZENE	0.64	0.93 U	1.2 U	0.03 U	3.4 U	2.2 U	1.3 U	0.31 J
2,4'-DDD	31 J	43	3.7	14	26	6.6	7.2	2.2 J
2,4'-DDE	1 J	2.2 J	0.19	0.5 J	0.72	1	0.27 J	0.54 U
2,4'-DDT	3.8	5.9	0.17	15	4.1	2.2	2.2	0.87
4,4'-DDD	80 J	105	5.6	38	58	15	15	2.2 J
4,4'-DDE	17 J	17	2.4	11	22	16	11	7.9
4,4'-DDT	13 J	32 J	2	70	11	2.9	5.7	0.94 J
ALDRIN	0.056 U	0.058 U	0.07 J	0.042 U	0.37 U	0.5 U	0.52 U	0.63 U
ALPHA-BHC	0.05 J	0.1	0.07 J	0.02 J	0.17 J	0.47	0.33 J	0.45 U
ALPHA-CHLORDANE	1.5	2.3	0.49	0.72	1.4	2.4	0.98	0.88 J
BETA-BHC	0.21 J	0.2 UJ	0.27 U	0.14 U	1.2 U	1.7 U	1.2 U	1.6
CHLORPYRIFOS	0.27 U	1.2 U	0.87 U	0.2 U	2.4 U	3.3 U	3.4 U	4.1 U
CIS-NONACHLOR	0.46	0.68 J	0.35	0.2	0.85	1.4	0.94	1.4 J
DELTA-BHC	0.042 U	0.044 U	0.05 J	0.032 U	0.15 U	0.2 U	0.21 U	0.25 U
DIELDRIN	0.063 UJ	0.25 J	0.13	0.048 U	1	1.3	0.6	0.97 J
ENDOSULFAN II	0.47	0.4	1.1	0.16	0.48	0.26 J	0.2 J	0.23 J
ENDRIN	0.13 U	0.13 U	0.18 U	0.096 U	0.76 U	1 U	1.1 U	1.3 U
GAMMA-BHC (LINDANE)	0.22 U	0.23 U	0.33 U	0.17 U	0.08 J	0.17 J	0.1 J	0.09 J
GAMMA-CHLORDANE	2.1	2.2	0.17	0.98	1.2	0.94	0.61	0.38 J
HEPTACHLOR	0.05 J	0.17 U	0.23 U	0.12 U	0.41 U	0.57 U	0.59 U	0.71 U
HEPTACHLOR EPOXIDE	0.028 U	0.029 U	0.041 U	0.021 U	0.29 U	0.4 U	0.42 U	0.5 U
HEXACHLOROBENZENE	0.04 J	0.04 J	0.11	0.02 J	0.17 J	0.26 J	0.14 J	0.23 J
MIREX	0.02 J	0.029 U	0.041 U	0.021 U	0.67 U	0.92 U	0.95 U	1.1 U
OXYCHLORDANE	0.37 J	0.02 J	0.08	0.011 U	0.31 U	0.43 U	0.44 U	0.53 UJ
PCB-101/90	41 J	12 J	2.1	2.4	14	17	8.9	8 J
PCB-105	22 J	2.3 J	1.2	1.8 J	6.6	6.4	4.6	2.9 J
PCB-114	0.17 U	0.18 U	0.24 U	0.13 U	1 U	1.4 U	1.5 U	1.7 U
PCB-118	32 J	6.1 J	2.3	0.88	13	15	7.7	7.7 J
PCB-126	0.17 U	0.18 U	0.24 U	0.13 U	1 U	1.4 U	1.5 U	1.7 UR
PCB-128	9.2 J	2 J	0.85	0.59	3.6	4.1	2.2	2 J
PCB-138/160	39 J	13 J	4.3	6.1	24	27	17	13 J
PCB-149/123	19 J	8.1 J	2.4	5.7	16	16	11	6.7 J
PCB-153/132	35 J	15 J	3.6	6.5	33	37	22	18 J
PCB-156	6.1 J	2.2 J	0.98	0.7	1.7	1.5	0.16 J	0.89 J
PCB-167	2.9 J	1.5 J	2	0.33	1.8	2	1.2 J	0.82 J
PCB-169	0.01 U	0.02 U	0.06 U	0.02 U	1 U	0.17 U	0.52 U	0.03 J
PCB-170/190	43 J	1.3 J	1.4 U	6.9 J	1.2 U	0.83 U	0.87 U	0.4 U
PCB-18/17	1.3 J	2.7 J	1.4	0.12	0.1 J	0.56 J	3.8 U	4.6 UJ
PCB-180	17 J	8.5 J	3.4	6.3	7.1	9.8	6	6.1 J
PCB-187	9.2 J	5.4 J	2.4	3.6	11	13	8.7	6.6 J
PCB-189	0.49	0.39	0.22 J	0.21	1 U	1.4 U	1.5 U	1.7 U
PCB-195/208	6 J	5	1.5	1	0.85 U	1.2 U	1.2 U	1.4 U
PCB-201/157/173	1.21	0.98	0.69	0.3	0.73 J	1.1	0.52 J	0.16 J
PCB-206	15 J	10	2.7	1.6	0.88 U	1.2 U	1.3 U	1.5 U
PCB-209	2.9 J	4.1	1.7	0.51	1.1 U	1.6 U	1.6 U	2 U
PCB-28	1.5	1.2	0.98	0.22	0.86	1.8	0.63 J	0.83 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 08							
	Sediment				Mussel			Lobster
Parameters	**100A**	**100A-DUP**	**200A**	**300A**	**100A**	**200A**	**300A**	**100A**
PCB-44	9.7 J	1.8 J	0.48	0.32	1.5 U	1.7 U	0.85 J	0.71 U
PCB-52	27 J	4.2 J	1.6	0.59	4	3.8	1.9	1.9
PCB-66	6.4 J	1.3 J	0.42	0.25	1.7	2.1	1 J	1 J
PCB-77	0.18 U	0.09 U	0.05 J	0.02 U	0.41 J	0.2 J	0.47 J	0.18 U
PCB-8/5	0.56 J	0.34 U	0.45 U	0.17 J	5	3.6	3.4	17 J
PCB-81	0.1 J	0.13 J	0.24 U	0.13 U	0.28 J	1.4 U	1.5 U	1.7 U
PENTACHLOROANISOLE	0.13 U	0.17 J	0.14 U	0.24 J	0.89 U	1 U	0.58 U	3.8 J
PENTACHLOROBENZENE	0.1 U	0.33 U	0.15 U	0.05 U	0.64 U	1.2 U	0.88 U	0.8 U
TRANS-NONACHLOR	1	1.5	0.22	0.48	1.6	1.9	0.96	1.1 J
Metals (mg/kg)								
ALUMINUM	51430	46339	51595	56262	467	333	511	3.18 U
ARSENIC	12.5	13.8	13.6	13.1	5.8	6.61	4.53	4.64 J
CADMIUM	0.32	0.31 J	0.57	0.14	1.44	1.57	1.33	0.0187
CHROMIUM	141	132	85.8	155	6.23	4.7	6.28	0.51 U
COPPER	280	341 J	118 J	407	10.2 J	7.12 J	6.46 J	46.2
IRON	55844	42097 J	26387 J	80067	1078	515	760	13.4 J
LEAD	183	218 J	78.3	164	9.52	6.78	4.29	0.17 U
MANGANESE	357	422	334	958	13.3	11.2	17	1.62
MERCURY	0.19	0.73	0.26	0.0953 U	0.23	0.25	0.23	0.66
NICKEL	55.2 J	98 J	25.2 J	130 J	5.11 U	4.09 U	2.51 U	1.95 U
SILVER	4.51	4.19	4.18 J	4.46	0.32 U	0.38 U	0.34 U	1.13 J
ZINC	486	497 J	90 J	738	95.3 J	93.4 J	92.7 J	81 J
Miscellaneous Parameters (%)								
% LIPID					4.6	8.2	3.7	3
TOTAL ORGANIC CARBON	0.88 J	0.87 J	2.01 J	0.2 J				

Notes:

MS-8 includes the following samples:
OU4-SD-M08-100A
OU4-FD-003-000A (duplicate of OU4-SD-M08-100A)
OU4-SD-M08-200A
OU4-SD-M08-300A
OU4-MU-M08-100A
OU4-MU-M08-200A
OU4-MU-M08-300A
OU4-LJ-M08-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 09						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	300A-DUP	100A	200A	100A
Dioxins/Furans (ng/kg)							
1,2,3,4,6,7,8-HPCDD	22.6 U	119	10.9 J	370 J	31.3 J	32.2 J	4.22 J
1,2,3,4,6,7,8-HPCDF	21.5 U	36.6	3.03 J	116 J	7.13 J	10.1 J	13.7 U
1,2,3,4,7,8,9-HPCDF	1.5 J	1.79	0.08 J	5.47 J	22.8 U	32.5 U	13.7 U
1,2,3,4,7,8-HXCDD	1.3 J	1.32 U	2.44 UJ	5.43 J	1.84 J	32.5 UJ	13.7 UJ
1,2,3,4,7,8-HXCDF	6.9 J	3.92	2.44 UJ	9.06 J	22.8 U	32.5 U	13.7 U
1,2,3,6,7,8-HXCDD	2.6 J	6.17	2.44 UJ	17.7 J	2.48 J	32.5 UJ	13.7 UJ
1,2,3,6,7,8-HXCDF	5.3 J	3.37	2.44 UJ	8.34 J	22.8 U	32.5 U	13.7 U
1,2,3,7,8,9-HXCDD	1.8 J	3.7	2.44 UJ	11 J	22.8 UJ	32.5 UJ	13.7 UJ
1,2,3,7,8,9-HXCDF	0.66 UJ	0.19 J	2.44 U	0.89 J	22.8 U	32.5 U	13.7 U
1,2,3,7,8-PECDD	0.66 UJ	1.47	2.44 UJ	5.81 J	22.8 UJ	32.5 UJ	13.7 UJ
1,2,3,7,8-PECDF	2.7 J	2.36	0.15 U	4.78 J	5.84 J	2.06 J	13.7 U
2,3,4,6,7,8-HXCDF	8.1 J	4.57	0.18 J	10.3 J	22.8 U	32.5 U	13.7 U
2,3,4,7,8-PECDF	6.3 J	3.16	2.44 U	7.58 J	22.8 U	2.05 J	13.7 U
2,3,7,8-TCDD	0.13 UJ	0.35	0.49 U	1.81 J	4.57 U	6.49 U	2.74 U
2,3,7,8-TCDF	2 J	3.67	0.34 J	9.22 J	4.57 U	8.14 J	2.74 U
OCDD	128 U	934	71.7 J	3150 J	165 J	168 J	4.53 J
OCDF	11.4 U	48.7	3.98 J	130 J	11.7 U	64.9 U	27.4 U
TOTAL DIOXINS	239 U	1304	101 J	4263 J	316 J	271 J	8.75 J
TOTAL FURANS	150 U	247	14.8 J	733 J	36.4 U	12.3 U	27.4 U
TOTAL HPCDD	54.4 U	290	23.5 J	829 J	74.5 J	88.1 J	4.22 J
TOTAL HPCDF	32.3 U	78.7	6.49 J	246 J	7.13 J	32.5 U	13.7 U
TOTAL HXCDD	35.3 J	78.1	4.87 J	228 J	4.31 J	15 J	13.7 U
TOTAL HXCDF	41.6 J	61.2	3.24 J	128 J	11.7 U	32.5 U	13.7 U
TOTAL PECDD	20 J	1.47	2.44 U	25.1 J	22.8 U	32.5 U	13.7 U
TOTAL PECDF	24.8 J	22.7	0.15 U	81.8 J	5.84 J	4.11 J	13.7 U
TOTAL TCDD	1.7 J	0.35 U	0.88 U	31 J	72.2 J	6.49 U	2.74 U
TOTAL TCDF	39.6 J	35.9	0.97 J	147 J	4.57 U	8.14 J	2.74 U
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	9.54	7.11	14.4 J	16.7	2.6 J	1.4 J	1.49 J
1-METHYLNAPHTHALENE	47.6 J	16.3 J	32.9 J	34.4 J	4.2 J	1.66 J	3.35 J
1-METHYLPHENANTHRENE	6.96	26.4	44.8 J	56.2	6.6	3.48 J	1.23 J
2,6-DIMETHYLNAPHTHALENE	22.7	11.2	21.4 J	24.7	2.7 J	1.33 J	1.57 J
2-METHYLNAPHTHALENE	50.7	27.6 J	49.2 J	51.7 J	6.1 J	2.83 J	4.77 J
ACENAPHTHENE	2.23	33 J	76.8 J	91.5	7.7 J	5.13 J	1.48 J
ACENAPHTHYLENE	6.81 J	54.9	101 J	125	18.2 J	4.43 J	0.25 J
ANTHRACENE	13.3	128	224 J	291	37.3	10.5 J	2.08 J
BENZO(A)ANTHRACENE	25.1 J	304	479 J	655	30	16.7	13
BENZO(A)PYRENE	43.4 J	124 J	102 J	274 J	18.7	16.6 J	23.6
BENZO(B)FLUORANTHENE	51.6 J	437 J	803 J	1023 J	41.7	32.7	21.9
BENZO(E)PYRENE	27.1	239	421 J	522	38.3 J	23.6	14.5
BENZO(G,H,I)PERYLENE	26.4 J	261 J	418 J	538 J	18	15.9 J	10.3
BENZO(K)FLUORANTHENE	14.4	167	271 J	347	20.4	11.3 J	11.7
BIPHENYL	3.89 J	5.97 J	10.9	12.4 J	1.5 J	1.86 J	1.74 J
CHRYSENE	36.3	327	548 J	659	44.2 J	26.6	22.3
DIBENZO(A,H)ANTHRACENE	6.44 J	63.9 J	110 J	124 J	2.1 J	2.47 J	0.34 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 09						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	300A-DUP	100A	200A	100A
DIBENZOTHIOPHENE	2.19	12.7	30.3 J	32.7	1.4 J	0.65 J	0.72 J
FLUORANTHENE	54.7 J	492	1024 J	1216	89.1	35.3	23.6
FLUORENE	6.72	35.6	87.9 J	114	6.8 J	3.05 J	2.31 J
INDENO(1,2,3-CD)PYRENE	26.6	271	466 J	548 J	13.5 J	13	14.4 J
NAPHTHALENE	50.9	30 J	77.3 J	72	9.2 J	4.69 J	7.21 J
PERYLENE	9.21	91.1	206 J	213	22.2 J	10.3	9.92
PHENANTHRENE	28.7	224	497 J	604	22	9.24	6.15 J
PYRENE	43.2 J	468 J	947 J	1129 J	87.4	35.7	22.7
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	0.29	0.18 U	0.24 U	0.44 U	0.28 U	0.53	6.9
1,2,4,5-TETRACHLOROBENZENE	0.84 U	0.7	1.8 U	1.3	1.1 U	0.24 J	0.93 U
2,4'-DDD	0.33	2.2	3.1	4.3	4.9	2.1	0.43 U
2,4'-DDE	0.1	0.09 J	0.3	0.33 J	0.26 J	0.27 J	0.6 UJ
2,4'-DDT	0.28	0.55	0.38 J	0.98 J	3.3	0.35 J	0.55 U
4,4'-DDD	0.49	3.9	3.4	4.4	7.9	2.3	0.52 U
4,4'-DDE	0.37	1.9	3.3	3	13	5.1	1.5
4,4'-DDT	1.4	3.1	2.3	3.4	4.8	1.1 J	0.8 UJ
ALDRIN	0.044 U	0.064 U	0.11 U	0.11 U	0.35 U	0.5 U	0.69 U
ALPHA-BHC	0.03 U	0.06 J	0.24 J	0.1 J	0.25 J	0.36 U	0.49 U
ALPHA-CHLORDANE	1	0.55	0.7	0.73	2	0.74	0.52 U
BETA-BHC	0.15 U	0.24	0.37 UJ	1.4 J	8.6	0.32 U	0.44 U
CHLORPYRIFOS	0.91 U	0.3 U	1.6 U	4.2 J	2.3 U	3.3 U	4.5 U
CIS-NONACHLOR	0.23	0.17	0.35	0.25	1.9	0.13 J	0.47 U
DELTA-BHC	0.01 J	0.06	0.14	0.21	0.14 U	0.2 U	0.28 U
DIELDRIN	0.01 J	0.072 U	0.12 U	0.12 U	1.3	0.79 J	1.2 J
ENDOSULFAN II	0.03 J	0.53	2	1.5	0.3	0.26 J	0.52 U
ENDRIN	0.1 U	0.14 U	0.25 U	0.24 U	0.73 U	1 U	1.4 U
GAMMA-BHC (LINDANE)	0.18 U	0.26 U	0.44 U	0.43 U	0.14 J	0.04 J	0.43 U
GAMMA-CHLORDANE	1.4	0.62	0.39	0.33	0.94	0.38 J	0.55 U
HEPTACHLOR	0.12 J	0.18 U	0.32 U	0.31 U	0.4 U	0.57 U	0.78 U
HEPTACHLOR EPOXIDE	0.05	0.032 U	0.055 U	0.054 U	0.28 U	0.4 U	0.55 U
HEXACHLOROBENZENE	0.13	0.15	0.24	0.34	0.31 J	0.07 J	0.18 J
MIREX	0.022 U	0.032 U	0.055 UJ	0.054 U	0.65 U	0.91 U	1.3 U
OXYCHLORDANE	0.011 U	0.016 U	0.24	0.08 J	0.3 U	0.42 U	0.27 J
PCB-101/90	1.3	2.8	3.7	4.3	12	7.5	0.48 J
PCB-105	0.43 J	1.8 J	1.5	2.5 J	6.5	3.7	0.43 J
PCB-114	0.13 U	0.19 U	0.33 U	0.32 U	0.98 U	1.4 U	1.9 U
PCB-118	0.85	1.9	4	2.9	11	6.2	1.9 J
PCB-126	0.13 U	0.19 U	0.33 U	0.32 U	0.98 U	1.4 UR	1.9 U
PCB-128	0.32	0.7	1.5	1.2	3.6	1.8	0.34 J
PCB-138/160	1.8	4.5	7.2	6.4	22	13	2.5 U
PCB-149/123	1.1	3.1	4	4.9	16	8.1	0.13 J
PCB-153/132	1.9	3.8	7.3	5.8	29	15	3.4 U
PCB-156	0.31	1.6	1.9 J	1.6 J	0.98 U	1.2 J	1.9 U
PCB-167	0.21	1	0.42 J	2.3 J	1.8	0.86 J	1.9 U
PCB-169	0.04 U	0.06 U	0.05 U	0.32 U	0.98 U	1.4 U	1.9 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 09						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	300A-DUP	100A	200A	100A
PCB-170/190	0.17 J	10 J	1.1 J	22 J	1.1 U	0.4 U	0.57 U
PCB-18/17	0.28	0.21	1.2 J	0.64 J	0.95 J	3.6 U	1.6 J
PCB-180	1.3	4.2	5.7	4.6	9.5	3.6 U	1.1 U
PCB-187	1	2.8	4.1	3.7	11	6.2	1.2 J
PCB-189	0.12 J	0.25	0.63 J	0.37 J	0.17 J	1.4 U	1.9 U
PCB-195/208	0.81	2.7	4.3 J	2.5 J	0.82 U	1.2 U	1.6 U
PCB-201/157/173	0.26	0.69	1.45 J	0.82 J	0.84	0.3 J	1.5 U
PCB-206	1.7	9	12 J	5.2 J	0.85 U	1.2 U	1.7 U
PCB-209	0.45	1.9	4.3 J	1.8 J	1.1 U	1.6 U	0.16 J
PCB-28	0.59	1.6	2.1	2.6	1.2	0.56 J	0.44 U
PCB-44	0.84	1.1	1.3 J	5.2 J	1.4 U	0.89 U	1.1 U
PCB-52	0.74	1.2	3.2	2.7	3.7	1.8	1.3 U
PCB-66	0.52	0.75	1.2	1.5	1.6	0.91 J	1.8 U
PCB-77	0.01 U	0.08 U	0.05 J	0.16 U	0.33 J	1.4 U	1.9 U
PCB-8/5	0.15 U	0.51	0.58 J	1.3 J	1.6 J	5.3 J	3 J
PCB-81	0.02 J	0.11 J	0.1 U	0.13 J	0.98 U	1.4 U	1.9 U
PENTACHLOROANISOLE	0.1 U	0.12 U	0.25 U	0.25 U	0.81 U	1.2 U	0.26 U
PENTACHLOROBENZENE	0.21 U	0.2 U	0.48 U	0.49 U	0.74 U	0.23 U	3 U
TRANS-NONACHLOR	0.56	0.31	0.33	0.4	1.7	0.76	0.1 J
Metals (mg/kg)							
ALUMINUM	45148	52761	61780	59116	1175	599	19.1 U
ARSENIC	17.1	13.7	19	18	5.19	7.35	5.13 J
CADMIUM	0.43 J	0.46	0.82	0.82	1.41	1.65	0.0394
CHROMIUM	115	76.9	118	110	7.43	6.6	0.95
COPPER	413 J	101	76.9 J	79	52.5 J	8.39 J	37.5
IRON	43601 J	31552	34799 J	32379	1877	980	13.2 J
LEAD	87.7 J	97.7	100	99.4	7.28	7.33	2.26
MANGANESE	592	389	359	346	73.9	12.2	1.66
MERCURY	0.12	0.25	0.31	0.33	0.24	0.29	0.5
NICKEL	72.3 J	32.4 J	31.5 J	34.1 J	12.9	1.88 U	1.94 U
SILVER	3.93	3.33	7 J	4.36	0.74 J	0.31 U	0.8 J
ZINC	106 J	208	114 J	139	126 J	104 J	101 J
Miscellaneous Parameters (%)							
% LIPID					6.3	3.2	2.3
TOTAL ORGANIC CARBON	1.03 J	1.48 J	2.9 J	2.67 J			

Notes:

MS-9 includes the following samples:

OU4-SD-M09-100A
OU4-SD-M09-200A
OU4-SD-M09-300A
OU4-FD-004-000A (duplicate of OU4-SD-M09-300A)
OU4-MU-M09-100A
OU4-MU-M09-200A
OU4-LJ-M09-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 10								
	Sediment				Mussel				Lobster
Parameters	100A	100A-DUP	200A	300A	100A	100A-DUP	200A	300A	100A
Dioxins/Furans (ng/kg)									
1,2,3,4,6,7,8-HPCDD	13 J	35.3 U	1.37 U	1.76 U	24.8 U	13.1 J	32.5 U	23.9 U	14.3 U
1,2,3,4,6,7,8-HPCDF	3.89 J	8.9 U	1.37 U	10.3 U	2.55 J	40 UJ	32.5 U	23.9 U	14.3 U
1,2,3,4,7,8,9-HPCDF	1.17 UJ	1.56 UJ	1.37 U	1.76 U	24.8 U	40 UJ	32.5 U	23.9 U	14.3 U
1,2,3,4,7,8-HXCDD	0.16 J	1.56 UJ	1.37 U	1.76 U	24.8 UJ	40 UJ	32.5 UJ	23.9 UJ	14.3 UJ
1,2,3,4,7,8-HXCDF	0.39 J	1.56 UJ	1.37 U	1.76 U	24.8 U	40 U	32.5 U	23.9 U	14.3 U
1,2,3,6,7,8-HXCDD	1.3 J	1.9 J	1.37 U	1.76 U	0.99 J	40 UJ	32.5 UJ	23.9 UJ	14.3 UJ
1,2,3,6,7,8-HXCDF	1.17 UJ	1.56 UJ	1.37 U	1.76 U	24.8 U	40 U	32.5 U	23.9 U	14.3 U
1,2,3,7,8,9-HXCDD	0.23 J	1.56 UJ	1.37 U	1.76 U	24.8 UJ	40 UJ	32.5 UJ	23.9 UJ	14.3 UJ
1,2,3,7,8,9-HXCDF	1.17 UJ	1.56 UJ	1.37 U	1.76 U	24.8 U	40 U	32.5 U	23.9 U	14.3 U
1,2,3,7,8-PECDD	0.08 J	1.56 UJ	1.37 U	1.76 U	24.8 UJ	40 UJ	32.5 UJ	23.9 UJ	14.3 UJ
1,2,3,7,8-PECDF	0.39 U	2.1 J	1.37 U	1.76 U	24.8 U	40 UJ	32.5 U	23.9 U	14.3 U
2,3,4,6,7,8-HXCDF	0.21 J	1.56 UJ	1.37 U	1.76 U	24.8 U	2.88 J	32.5 U	23.9 U	14.3 U
2,3,4,7,8-PECDF	0.34 U	1.56 UJ	1.37 U	1.76 U	24.8 U	40 UJ	32.5 U	23.9 U	14.3 U
2,3,7,8-TCDD	0.23 U	0.31 UJ	0.27 U	0.35 U	4.95 U	8 UJ	6.49 U	4.78 U	2.87 U
2,3,7,8-TCDF	0.72	1 J	0.27 U	0.7	4.95 U	4.95 J	6.49 U	4.78 U	2.87 U
OCDD	97.5 J	324 U	12.5 U	345 U	81 J	112 J	128 J	102 J	7.64 J
OCDF	6.95 J	12.8 U	8.1 U	21.9 U	49.5 U	80 U	64.9 U	47.8 U	28.7 U
TOTAL DIOXINS	144 J	427 U	13.1 U	428 U	104 J	131 U	128 J	102 J	7.64 J
TOTAL FURANS	36.7 J	61.6 U	15.1 U	57.4 U	2.55 U	7.83 U	64.9 U	47.8 U	28.7 U
TOTAL HPCDD	31 J	82.4 U	1.37 U	61 U	24.8 U	13.1 J	32.5 U	23.9 U	14.3 U
TOTAL HPCDF	9.17 J	19.3 U	1.37 U	23.5 U	2.55 J	40 U	32.5 U	23.9 U	14.3 U
TOTAL HXCDD	13.2 J	16.9 J	0.5 J	21.4	0.99 J	6.17 U	32.5 U	23.9 U	14.3 U
TOTAL HXCDF	9.64 J	2 J	5.2	9.4	24.8 U	2.88 J	32.5 U	23.9 U	14.3 U
TOTAL PECDD	0.08 J	1.56 UJ	1.37 U	1.76 U	24.8 U	40 UJ	32.5 U	23.9 U	14.3 U
TOTAL PECDF	8.84 J	19.7 J	1.3 J	2	24.8 U	40 UJ	32.5 U	23.9 U	14.3 U
TOTAL TCDD	2.05 U	3.2 J	0.27 U	1	22.5 J	8 UJ	6.49 U	4.78 U	2.87 UJ
TOTAL TCDF	2.13 J	7.7 J	0.5	0.7	4.95 U	4.95 J	6.49 U	4.78 U	2.87 U
Polyaromatic Hydrocarbons (ug/kg)									
1,6,7-TRIMETHYLNAPHTHALENE	4.09	3.55	29.6	12.5	1.38 J	1.92 J	1.86 J	3.31 J	1.57 J
1-METHYLNAPHTHALENE	9.11 J	8.45 J	25.4 J	18.5 J	1.31 J	2.67 J	1.56 J	2.18 J	4.73 J
1-METHYLPHENANTHRENE	11.3 J	23.2 J	111	30.7	1.66 J	2.6 J	2.76 J	6.93	1.4 J
2,6-DIMETHYLNAPHTHALENE	7.43	5.86	24.3	17.1	1.28 J	2.22 J	1.99 J	2.57 J	2.04 J
2-METHYLNAPHTHALENE	20.5 J	15.9	30.1 J	29 J	2.27 J	4.44	2.88 J	3.48 J	5.51 J
ACENAPHTHENE	3.98 J	10.3 J	45.5	20.1 J	1.56 J	3.62 J	2.1 J	5.86 J	1.14 J
ACENAPHTHYLENE	23.5	29.5 J	114	135	3.25 J	8.02 J	5.47 J	7.32	0.73 J
ANTHRACENE	43 J	77 J	494	251	6.6 J	14 J	9.36 J	24.8 J	2.09 J
BENZO(A)ANTHRACENE	103 J	211 J	835	383 J	9.54	13.3	12.7	36.3	6.45 J
BENZO(A)PYRENE	60.2 J	373 J	697 J	230 J	10.3 J	13.7	12.8 J	29.8 J	14.1
BENZO(B)FLUORANTHENE	163 J	305 J	856 J	610 J	17	20.4	22.7	56.7	10.3
BENZO(E)PYRENE	95.4 J	171	430	322 J	13.4	18.3	22.8	43.6	7.12
BENZO(G,H,I)PERYLENE	94.6 J	153 J	478	278 J	7.79	12.5	8.46	22.9	6.6
BENZO(K)FLUORANTHENE	43.9 J	115 J	317	250 J	6.27 J	11 J	7.6	22.4	4.01 J
BIPHENYL	3.3 J	2.75 J	7.25 J	7.42	1.58 J	1.88 J	1.63 J	2.48 J	1.83 J
CHRYSENE	109 J	185 J	625	478 J	14.9	21	21.9	61.4	11.4
DIBENZO(A,H)ANTHRACENE	23.9 J	45.2 J	121 J	67.4 J	1.44 J	1.8 J	1.38 J	3.95	0.27 J
DIBENZOTHIOPHENE	6.12	9.23	39.5	13.2	0.83 J	1.07 J	0.58 J	2.18	0.46 J
FLUORANTHENE	194 J	354 J	1395	400	25.6	42.3	32	87.3	19.4
FLUORENE	12.2 J	22.7 J	117	39.4	2.64 J	5.85 J	3.63 J	8.67 J	2.2 J
INDENO(1,2,3-CD)PYRENE	88.5 J	168 J	562	296	6.78	9.83 J	7.96	20.7	6.7 J
NAPHTHALENE	24.2 J	25.9	56.6	45.4 J	3.04 J	5.46 J	3.1 J	3.73 J	8.15 J
PERYLENE	30.7	42.7	150	94.1	5.75	8.1	9.36	15.4	5.05 J
PHENANTHRENE	103 J	175 J	710	202	10.9	15.7 J	8.12	34.9	4.97 J
PYRENE	156 J	276 J	1188 J	616 J	23.3	37.5	30.7	78.6	15.2
Pesticides/PCBs (ug/kg)									
1,2,3,4-TETRACHLOROBENZENE	0.2 U	0.21 U	0.06 U	0.08 U	0.22 J	0.39 J	0.12 J	0.31	9.4
1,2,4,5-TETRACHLOROBENZENE	0.07 U	0.74 U	0.17 U	1.1	0.26 J	2.6 U	0.28 J	0.55 J	0.14 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 10								
	Sediment				Mussel				Lobster
Parameters	100A	100A-DUP	200A	300A	100A	100A-DUP	200A	300A	100A
2,4'-DDD	7.4	8.4	3.1	4.2	4.7	5.3	2.2	8.7	0.42 U
2,4'-DDE	0.18 J	0.9 J	0.15 J	0.27 J	0.49	0.56 J	0.25 J	0.33 U	0.59 UJ
2,4'-DDT	3	4.9	0.05	0.71	9.3	9.6	0.86	4.8	0.54 U
4,4'-DDD	15	21	7.2	24	7.1	6.5	3.9	18	0.51 U
4,4'-DDE	6.2	8.8	1.8	3.8	8.4	11	7	21	1.3
4,4'-DDT	12 J	28 J	0.58	66	15 J	19 J	1.7 J	9.4 J	0.78 UJ
ALDRIN	0.057 U	0.01 J	0.066 U	0.097 U	0.4 U	0.09 J	0.49 U	0.38 U	0.68 U
ALPHA-BHC	0.03 J	0.11 J	0.05 J	0.07 J	0.29 UJ	0.41 J	0.35 U	0.27 U	0.48 U
ALPHA-CHLORDANE	5.2	6.1	0.33	0.36	2.3	3.3	1.1	1.9	0.51 U
BETA-BHC	0.16 J	0.2 U	0.55	0.64	0.92 J	28 J	1.2	1.1	0.44 U
CHLORPYRIFOS	0.27 U	0.62 U	0.32 U	0.46 U	2.6 U	2.8 U	3.2 U	2.5 U	4.4 U
CIS-NONACHLOR	0.44	0.56	0.11	0.13	0.08 J	0.45 J	0.09 J	0.21 J	0.47 U
DELTA-BHC	0.042 U	0.045 U	0.1	0.15	0.16 U	0.05 J	0.2 U	0.15 U	0.27 U
DIELDRIN	0.15	0.2	0.11	0.05 J	0.5 J	0.47 J	0.89 J	1.6 J	1.2 J
ENDOSULFAN II	0.09	0.06 J	0.68	0.78	0.16 J	0.33 U	0.15 J	0.59	0.51 U
ENDRIN	0.13 U	0.14 U	0.15 U	0.22 U	0.84 U	0.9 U	1 U	0.79 U	1.4 U
GAMMA-BHC (LINDANE)	0.23 U	0.24 U	0.09 J	0.39 U	0.25 U	0.14 J	0.09 J	0.08 J	0.42 U
GAMMA-CHLORDANE	5.9	6.2	0.3	0.48	1.8	2.4	0.51	0.71	0.54 U
HEPTACHLOR	0.2 J	0.37 J	0.19 U	0.28 U	0.23 J	0.25 J	0.56 U	0.43 U	0.77 U
HEPTACHLOR EPOXIDE	0.01 J	0.03 U	0.033 U	0.048 U	0.32 U	0.35 U	0.39 U	0.31 U	0.54 U
HEXACHLOROBENZENE	0.042 UJ	0.06 J	0.05 U	0.18	0.05 J	0.38 J	0.12 J	0.15 J	0.18 J
MIREX	0.028 U	0.03 U	0.033 U	0.048 U	0.74 U	0.79 U	0.9 U	0.7 U	1.2 U
OXYCHLORDANE	0.08 J	0.015 UJ	0.19	0.024 U	0.34 U	0.37 U	0.42 U	0.32 U	0.35 J
PCB-101/90	1.8	2.1	1.4	3.6	4.1	4.5	7.5	39	1.4 J
PCB-105	1.1 J	0.49 J	1 J	1.7 J	1.4	1.2	2.7	16	0.42 J
PCB-114	0.17 U	0.18 U	0.2 U	0.29 U	1.1 U	1.2 U	1.4 U	1.1 U	1.9 U
PCB-118	2	1.3	1.5	2.7	3.8	4.8	7.2	32	1.8 J
PCB-126	0.17 U	0.18 U	0.2 U	0.29 U	1.1 UR	1.2 U	1.4 UR	1.1 UR	1.9 U
PCB-128	0.44	0.32	0.54	0.76	0.91	1.2	1.6	6.9	0.37 J
PCB-138/160	2.3	1.9	2.2	4.2	5.6 U	7.1 U	10	33	2.6 U
PCB-149/123	1.2	1.3	1.5	2.5	3.3	3.6	4.6	0.59 J	0.1 J
PCB-153/132	1.9	1.9	2.1	4.3	7.6 U	9.6 U	13 U	33	3.6 U
PCB-156	0.3	0.23	0.28	0.83	0.5 J	0.71 J	0.87 J	2	1.9 U
PCB-167	0.4	0.34	4.8	1.7	0.4 J	0.66 J	0.72 J	2.2	1.9 U
PCB-169	0.03 U	0.02 U	0.2 U	0.04 U	1.1 U	1.2 U	0.05 J	1.1 U	1.9 U
PCB-170/190	3.3 J	4.4 J	8.5 J	16 J	0.22 U	0.27 U	0.24 U	0.75 U	1.4 U
PCB-18/17	0.085 U	0.091 U	0.1 U	0.2	2.9 U	3.2 U	3.6 U	2.8 U	0.63 J
PCB-180	0.67	0.84	1.4	1.6	2.7 U	3.4 U	5.5	7.4	1 U
PCB-187	0.53	0.45	0.89	1.5	2.5	3	4.6	6.9	1 J
PCB-189	0.17 U	0.18 U	0.18 J	0.21 J	1.1 U	1.2 U	1.4 U	1.1 U	1.9 U
PCB-195/208	0.09	0.14	0.35	0.48	0.94 U	1 U	1.1 U	0.88 U	1.6 U
PCB-201/157/173	0.02124 UJ	0.1 J	0.15	0.22	0.86 U	0.93 U	0.12 J	0.36 J	1.4 U
PCB-206	0.2 J	0.083 UJ	0.13	0.66	0.97 U	1 U	1.2 U	0.92 U	1.6 U
PCB-209	0.3 J	0.54 J	0.4	1.3	1.3 U	1.4 U	1.5 U	1.2 U	2.1 U
PCB-28	0.19 J	0.2 U	0.81	0.88	0.37 J	0.68 U	0.63 J	0.81 J	0.5 U
PCB-44	0.33 J	0.16 UJ	0.26	0.58	0.41 U	0.68 U	0.86 U	5.2	1.1 U
PCB-52	0.87	0.74	0.63	1.2	1.3	1.9	1.8	15	1.3 U
PCB-66	0.19 J	0.09 J	0.78	0.86	0.37 J	0.23 J	0.83 J	2.4	1.8 U
PCB-77	0.02 U	0.04 U	0.04 U	0.09 U	1.1 U	1.2 U	1.4 U	0.38 U	1.9 U
PCB-8/5	0.2 J	0.33 U	0.6	0.66	7.7 J	3.2 J	3.7	2.7	1.6 J
PCB-81	0.03 J	0.18 U	0.05 J	0.29 U	1.1 U	1.2 U	1.4 U	1.1 U	1.9 U
PENTACHLOROANISOLE	0.09 U	0.2 J	0.05 U	0.11 U	1.5 U	0.63 U	1.3 U	1 U	0.26 U
PENTACHLOROBENZENE	0.07 U	0.13 U	0.07 U	0.27 U	0.57 U	2.4 U	0.42 U	0.6 U	3.2 U
TRANS-NONACHLOR	2.4	2.7	0.1	0.16	1.3	1.7	1.1	1.4	0.14 J
Metals (mg/kg)									
ALUMINUM	43299	38397	45463	53658	454	547 J	215	250	3.15 U
ARSENIC	9	8.57	10.7	17.6	6.68	6.8	5	4.17	3.82 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 10								
	Sediment				Mussel				Lobster
Parameters	**100A**	**100A-DUP**	**200A**	**300A**	**100A**	**100A-DUP**	**200A**	**300A**	**100A**
CADMIUM	0.14 J	0.15 J	0.24 J	0.58 J	1.36	1.43	2.05	2.11	0.0256
CHROMIUM	43.5	38.6	54	84.9	5.9	5.38	3.02 U	3.14 U	1.63
COPPER	18.8 J	20.6 J	20 J	36.6 J	41.5 J	6.41 J	5.09 J	6.32 J	39.2
IRON	22122 J	14164 J	19096 J	31849 J	1118	941	320	420	11.3 J
LEAD	64.7 J	98.6 J	79 J	105 J	8.19	5.75	3.37	9.14	0.13 U
MANGANESE	404	337	331	329	13.9	18.4	11.6	11	2.57
MERCURY	0.0974 U	0.0898	0.17	0.21	0.19	0.2	0.25	0.27	0.49
NICKEL	24.2 J	18.3 J	19.4 J	22.9 J	3.86 U	5.33 U	2.02 U	2.38 U	1.93 U
SILVER	2.51	2.21	3.09	4.11	0.32 U	0.88 U	0.31 U	0.29 U	1.08 J
ZINC	32.9 U	59.8 J	52.9 J	117 J	128 J	90.9	80.9 J	90.3 J	92.2 J
Miscellaneous Parameters (%)									
% LIPID					2.4	3.4	6.1	7.9	3.4
TOTAL ORGANIC CARBON	0.61 J	0.91 J	0.87 J	1.92 J					

Notes:

MS-10 includes the following samples:

OU4-SD-M10-100A
OU4-FD-005-000A (duplicate of OU4-SD-M10-100A)
OU4-SD-M10-200A
OU4-SD-M10-300A
OU4-MU-M10-100A
OU4-MU-M10-100A-LD
OU4-MU-M10-200A
OU4-MU-M10-300A
OU4-LJ-M10-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 11						
	Sediment	Mussel				Lobster	
Parameters	300A	100A	200A	200A-DUP	300A	100A	100A-DUP
Dioxins/Furans (ng/kg)							
1,2,3,4,6,7,8-HPCDD	56.7 U	43.9 UR	28.4 UR	42.7 U	27.6 UR	15.6 U	21.7 U
1,2,3,4,6,7,8-HPCDF	130 U	43.9 U	28.4 U	42.7 UJ	27.6 U	15.6 U	21.7 UJ
1,2,3,4,7,8,9-HPCDF	6.9	43.9 U	28.4 U	42.7 UJ	27.6 UJ	15.6 U	21.7 UJ
1,2,3,4,7,8-HXCDD	4.3	43.9 U	28.4 U	42.7 UJ	27.6 U	15.6 UJ	21.7 UJ
1,2,3,4,7,8-HXCDF	1.13 U	43.9 U	28.4 U	42.7 U	27.6 U	15.6 U	21.7 U
1,2,3,6,7,8-HXCDD	7.8	43.9 U	28.4 U	42.7 UJ	27.6 U	15.6 UJ	21.7 UJ
1,2,3,6,7,8-HXCDF	33.2	43.9 U	28.4 U	42.7 U	27.6 U	15.6 U	21.7 U
1,2,3,7,8,9-HXCDD	7.4	43.9 U	28.4 U	42.7 UJ	27.6 U	15.6 UJ	21.7 UJ
1,2,3,7,8,9-HXCDF	1.13 U	43.9 U	28.4 U	42.7 U	27.6 U	15.6 U	21.7 U
1,2,3,7,8-PECDD	1.13 U	43.9 U	28.4 U	42.7 UJ	27.6 U	15.6 UJ	21.7 UJ
1,2,3,7,8-PECDF	17.8	43.9 U	28.4 U	42.7 UJ	27.6 U	15.6 U	21.7 UJ
2,3,4,6,7,8-HXCDF	39.4	43.9 U	28.4 U	42.7 U	27.6 U	15.6 U	21.7 U
2,3,4,7,8-PECDF	41.3	43.9 U	28.4 U	42.7 UJ	27.6 U	15.6 U	21.7 UJ
2,3,7,8-TCDD	0.23 U	8.77 UR	5.68 UR	8.55 UJ	5.52 UR	3.13 U	4.35 UJ
2,3,7,8-TCDF	17.5	8.77 U	5.68 UJ	9.93 J	5.52 U	3.13 U	4.35 UJ
OCDD	262 U	87.7 U	135 J	87.5 J	55.2 U	31.3 U	5.16 J
OCDF	40.3 U	87.7 U	56.8 U	85.5 U	55.2 U	31.3 U	43.5 U
TOTAL DIOXINS	444 U	23.9 J	171 J	120 U	23.4 J	31.3 U	5.16 U
TOTAL FURANS	947	107 J	40.6 J	9.93 U	12.7 J	31.3 U	43.5 U
TOTAL HPCDD	121 U	43.9 U	28.4 U	42.7 U	27.6 U	15.6 U	21.7 U
TOTAL HPCDF	159	43.9 U	28.4 U	42.7 U	27.6 U	15.6 U	21.7 U
TOTAL HXCDD	49.9	43.9 U	13.3 J	42.7 U	27.6 U	15.6 U	21.7 U
TOTAL HXCDF	166	42.7 J	20.1 J	42.7 U	27.6 U	15.6 U	21.7 U
TOTAL PECDD	1.13 U	43.9 U	28.4 U	42.7 UJ	27.6 U	15.6 U	21.7 UJ
TOTAL PECDF	296	39.7 J	28.4 U	42.7 UJ	27.6 U	15.6 U	21.7 UJ
TOTAL TCDD	10.6	23.9 J	23.3 J	32.7 J	23.4 J	3.13 U	4.35 UJ
TOTAL TCDF	286	24.1 J	20.6 J	9.93 J	12.7 J	3.13 U	4.35 UJ
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	9.95	2.5 J	3.4 J	2.06 J	2.4 J	0.81 J	0.71 J
1-METHYLNAPHTHALENE	17.3 J	6.4 J	9 J	2.68 J	5.3 J	2.98 J	1.94 J
1-METHYLPHENANTHRENE	31.9	3.5 J	4.9 J	2.01 J	4.9 J	0.52 J	0.5 J
2,6-DIMETHYLNAPHTHALENE	18.4	3 J	3.4 J	2.19 J	2.7 J	1.63 J	0.96 J
2-METHYLNAPHTHALENE	38.7	8.6 J	11.5 J	4.65 J	7.2 J	3.67 J	2.74 J
ACENAPHTHENE	4.75	6.8 J	8.2 J	5.98 J	11.9 J	0.65 J	0.35 J
ACENAPHTHYLENE	21.1 J	9.3 J	16.7 J	11.1 J	8.4 J	0.56 J	0.47 J
ANTHRACENE	66.9	13.3 J	24.6 J	19.5 J	22.6 J	0.61 J	0.68 J
BENZO(A)ANTHRACENE	142 J	7.3 J	15.8 J	14.4	15.6 J	1.46 J	1.74 J
BENZO(A)PYRENE	233 J	5	10.3	9.16	13.6 J	1.88 J	0.92 J
BENZO(B)FLUORANTHENE	221 J	10.3 J	21.2 J	22.8	23.2 J	1.9 J	3.13 J
BENZO(E)PYRENE	102	13.3 J	27.2 J	21.1	18.8 J	3.11 J	3.07 J
BENZO(G,H,I)PERYLENE	90.9 J	4.6	11.5	10.5	10.4 J	2.63 J	3.02 J
BENZO(K)FLUORANTHENE	56.2	5 J	7.6 J	9.39	10.2 J	1.4 J	5.15 J
BIPHENYL	8.8 J	3.2 J	3.3 J	1.63 J	2.3 J	2.07 J	1.57 J
CHRYSENE	192	13.9 J	25 J	22.2	23.1 J	3.05 J	4.82 J
DIBENZO(A,H)ANTHRACENE	27 J	0.9 J	0.9 J	1.44 J	1.1 J	0.09 J	0.23 J
DIBENZOTHIOPHENE	8.17	1 J	0.8 J	0.67 J	2.1 J	0.44 J	0.3 J
FLUORANTHENE	239 J	22.2	39.8	35.7	55.7 J	6.42 J	6.96 J
FLUORENE	16.6	6 J	7.1 J	4.86 J	8.3 J	1.93 J	1.17 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 11						
	Sediment	Mussel				Lobster	
Parameters	300A	100A	200A	200A-DUP	300A	100A	100A-DUP
INDENO(1,2,3-CD)PYRENE	113	2.9 J	6.6 J	7.18 J	7.7 J	1.39 J	1.9 J
NAPHTHALENE	49.4	14 J	17.9 J	6.28 J	12.3 J	5.09 J	4.68 J
PERYLENE	29.9	14.8 J	18.7 J	9.69 J	31.1 J	3.25 J	2.66 J
PHENANTHRENE	123	6.2	8.5	9.47 J	32.6 J	2.73 J	2.86 J
PYRENE	197 J	22.1	38.3	32.2	47.2	5.06 J	5.6 J
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	0.65	0.14 U	0.19 U	0.46 J	0.17 U	3.5	8.2
1,2,4,5-TETRACHLOROBENZENE	1.8 U	0.41 U	0.64 U	3.9 U	0.63 U	1.5 U	0.36 J
2,4'-DDD	1	1.2 J	2.3	2.5	1.2	0.44 U	0.46 U
2,4'-DDE	0.41	0.1 J	0.43 UJ	0.72 J	0.39 UJ	0.61 UJ	0.64 U
2,4'-DDT	0.85	0.33	2.9	2.2	1.4	0.56 U	0.59 U
4,4'-DDD	1.2	2.2 J	3.1	2.7	2	0.53 U	0.56 U
4,4'-DDE	0.85	4	10	7.3	5.8	1.8	2.8
4,4'-DDT	0.74	0.83 J	1.4 J	1.2 J	1 J	0.81 UJ	0.85 UJ
ALDRIN	0.046 U	0.35 U	0.49 U	0.17 J	0.45 U	0.7 U	0.74 U
ALPHA-BHC	0.04 U	0.22 J	0.38	0.39	0.38	1	0.52 U
ALPHA-CHLORDANE	1.2	0.66 J	1.3	1.2	1.1	0.53 U	0.56 U
BETA-BHC	0.16 U	0.25 U	3.4 U	8.7 J	0.98 U	0.22 J	0.16 J
CHLORPYRIFOS	0.53 U	2.3 U	3.2 U	2.9 U	3 U	4.6 U	4.8 U
CIS-NONACHLOR	0.58	0.86 J	3	3.2	1.2	0.48 U	0.51 U
DELTA-BHC	0.034 U	0.14 U	0.2 U	0.14 J	0.18 U	0.28 U	0.29 U
DIELDRIN	2.7	0.6 J	1.6 J	0.98 J	0.82 J	1.1 J	2.2 J
ENDOSULFAN II	0.17	0.25 J	0.93	0.98	0.26 J	0.53 U	0.56 U
ENDRIN	0.1 U	0.73 U	1 U	0.91 U	0.94 U	1.5 U	1.5 U
GAMMA-BHC (LINDANE)	0.18 U	0.22 U	0.14 J	0.15 J	0.16 J	0.44 U	0.46 U
GAMMA-CHLORDANE	0.27	0.25 J	0.51	0.57	0.3 J	0.56 U	0.59 U
HEPTACHLOR	0.58	0.4 U	0.56 U	0.14 J	0.51 U	0.8 U	0.83 U
HEPTACHLOR EPOXIDE	0.023 U	0.28 U	0.39 U	0.35 U	0.36 U	0.56 U	0.59 U
HEXACHLOROBENZENE	0.35	0.08 J	0.32 J	0.39 J	0.17 J	0.32 J	0.27 J
MIREX	0.023 U	0.65 U	0.89 U	0.81 U	0.82 U	1.3 U	1.3 U
OXYCHLORDANE	0.011 U	0.3 UJ	0.41 U	0.37 U	0.38 U	0.83	0.66
PCB-101/90	13	7.8 J	36	28	10	1.7 U	1.7 U
PCB-105	2.9	3.4 J	15 J	5.8 J	5.6 J	0.43 J	0.77 J
PCB-114	0.14 U	0.98 U	1.4 U	1.2 U	1.3 U	1.9 U	2 U
PCB-118	6.9	7.9 J	33	26	12	2.4 J	3
PCB-126	0.14 U	0.98 UJ	1.4 UJ	1.2 U	2.2 J	1.9 U	2 UR
PCB-128	2.4	2 J	9.9	7.6	2.8	0.48 J	0.5 J
PCB-138/160	21	11 J	46	36	15	3.1 U	3.4 U
PCB-149/123	6.6	6.2 J	24	15	7.2	0.1 J	0.13 J
PCB-153/132	17	13 J	45	36	18	4.4 U	5.5 U
PCB-156	1.5	0.92 J	2.8 J	5.1 J	1.5	1.9 U	2 U
PCB-167	0.71	0.7 J	3.3	2.7	1.2 J	0.35 J	2 U
PCB-169	0.14 U	0.18 U	0.38 U	1.2 U	0.16 U	1.9 U	2 U
PCB-170/190	5.6 J	0.34 U	0.74 U	1 U	0.47 U	0.8 U	0.6 U
PCB-18/17	0.15	2.6 UJ	3.6 U	3.2 U	0.48 J	5.1 U	9.2
PCB-180	10	5.6 J	10 J	6.4 U	6.4 U	1 U	1.3 U
PCB-187	9.7	3.8 J	8.5	6.1	6.5	1.4	1.7
PCB-189	0.3	0.98 U	1.4 U	1.2 U	1.3 U	1.9 U	2 U
PCB-195/208	2	0.82 U	1.1 U	1 U	1 U	1.6 U	1.7 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 11						
	Sediment	Mussel				Lobster	
Parameters	**300A**	**100A**	**200A**	**200A-DUP**	**300A**	**100A**	**100A-DUP**
PCB-201/157/173	1.25	0.19 J	1 U	0.98	0.46 J	1.5 U	1.6 U
PCB-206	3.1	0.85 U	1.2 U	1.1 U	1.1 U	1.7 U	1.8 U
PCB-209	1	1.1 U	1.5 U	1.4 U	1.4 U	2.2 U	2.3 U
PCB-28	0.51	0.66 J	1.1 J	1.1 U	0.73 J	0.61 U	1.6 U
PCB-44	0.82	0.68 U	2 U	1.9 U	1 U	1.1 U	1.2 U
PCB-52	3.4	2 U	6.1	4.2	3	1.3 U	0.04 J
PCB-66	0.89	0.93 J	2.3 J	1.1 J	1.5	0.39 J	0.33 J
PCB-77	0.14 U	0.63 J	1.1 J	1.2 U	1.3 U	1.9 U	0.75 U
PCB-8/5	0.15 U	2.2 J	8 J	0.06 J	7.6	3.1 J	0.86 J
PCB-81	2.9	0.98 U	0.74 J	1.2 U	1.3 U	1.9 U	2 U
PENTACHLOROANISOLE	0.35 J	0.89 U	1.7 U	0.88 U	1.6 U	0.24 U	0.26 U
PENTACHLOROBENZENE	0.66 U	0.64 U	1.3 U	2.5 U	1.1 U	4 U	0.48 U
TRANS-NONACHLOR	0.29	0.77 J	1.4	1.1	0.88	0.11 J	0.36 U
Metals (mg/kg)							
ALUMINUM	34560	174	233	260 J	631	2.74 U	6.53 U
ARSENIC	17.9	5.9	5.45	7.01	6.61	4.66 J	4.85 J
CADMIUM	0.87 J	2.22	1.98	1.85	1.72	0.0442	0.043
CHROMIUM	104	2.85	2.28	3.08	3.91	1.06	0.82
COPPER	1479 J	6.98	7.85	8.02	8.36	38.5	37.9
IRON	45637 J	300	347	448	1686	8.08 J	16.2 J
LEAD	1265 J	11.1 J	28.3 J	40.2	8.05 J	0.14 U	0.15 U
MANGANESE	843	11.4	14.7	15.7	20.9	3.34	4.18
MERCURY	1.14	0.22	0.3	0.4	0.21 U	0.52	0.5
NICKEL	56.2 J	3.96 U	1.85 U	2.12 U	3.62 U	1.68 U	1.97 U
SILVER	7.02	0.65 U	0.31 U	0.35 U	0.3 U	0.75 J	1.02 J
ZINC	524 J	73.8	105	121	79.5	94.1 J	94.9 J
Miscellaneous Parameters (%)							
% LIPID		4.1	6.5	5.6	4.7	1.8	2.3
TOTAL ORGANIC CARBON	0.26 J						

Notes:

MS-11 includes the following samples:
OU4-SD-M11-300A
OU4-MU-M11-100A
OU4-MU-M11-200A
OU4-MU-M11-200A-LD
OU4-MU-M11-300A
OU4-LJ-M11-100A
OU4-LJ-M11-100A-LD

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 12							
	Sediment				Mussel			Lobster
Parameters	100A	200A	200A-DUP	300A	100A	100A-DUP	200A	100A
Dioxins/Furans (ng/kg)								
1,2,3,4,6,7,8-HPCDD	366	13 J	207 J	11.9	12.6 J	38.8 U	27.6 UR	1.26 U
1,2,3,4,6,7,8-HPCDF	86.9 U	3.31 J	53.3 J	1.69 U	31.1 U	38.8 UJ	27.6 U	15.2 U
1,2,3,4,7,8,9-HPCDF	5.9	1.65 UJ	2 J	1.69 U	31.1 UJ	38.8 UJ	27.6 UJ	15.2 U
1,2,3,4,7,8-HXCDD	1.76 U	1.65 UJ	3.1 J	1.69 U	31.1 U	38.8 UJ	27.6 U	15.2 UJ
1,2,3,4,7,8-HXCDF	6.2	1.65 UJ	4.38 J	1.69 U	31.1 U	38.8 U	27.6 U	15.2 U
1,2,3,6,7,8-HXCDD	14.4	1.65 UJ	9.55 J	1.69 U	31.1 U	38.8 UJ	27.6 U	15.2 UJ
1,2,3,6,7,8-HXCDF	4.8	1.65 U	1.42 U	1.69 U	31.1 U	38.8 U	27.6 U	15.2 U
1,2,3,7,8,9-HXCDD	8.3	1.65 UJ	6.98 J	1.69 U	31.1 U	38.8 UJ	27.6 U	15.2 UJ
1,2,3,7,8,9-HXCDF	1.76 U	1.65 U	1.12 J	1.69 U	31.1 U	38.8 U	27.6 U	15.2 U
1,2,3,7,8-PECDD	1.76 U	1.65 U	1.42 U	1.69 U	31.1 U	38.8 UJ	27.6 U	15.2 UJ
1,2,3,7,8-PECDF	1.76 U	1.65 U	1.42 U	1.69 U	31.1 U	38.8 UJ	27.6 U	15.2 U
2,3,4,6,7,8-HXCDF	1.76 U	1.65 UJ	4.84 J	1.69 U	31.1 U	38.8 U	27.6 U	15.2 U
2,3,4,7,8-PECDF	1.76 U	1.65 U	1.42 U	1.69 U	31.1 U	38.8 UJ	27.6 U	15.2 U
2,3,7,8-TCDD	0.35 U	0.33 U	0.28 U	0.34 U	6.21 UR	7.75 UJ	5.52 UR	3.05 U
2,3,7,8-TCDF	0.35 U	0.33 U	0.28 U	0.34 U	8.3 J	7.75 UJ	5.52 U	3.05 U
OCDD	3173	138 J	1540 J	92.1	97.5 J	107 J	148 J	30.5 U
OCDF	187 U	9.24 J	69.3 J	6.19	62.1 J	77.5 U	55.2 U	0.12 U
TOTAL DIOXINS	4306	217 J	2320 J	137	143 J	185 U	234 J	30.5 U
TOTAL FURANS	576	21.3 J	282 J	13.9	53.9 J	77.5 U	55.2 U	30.5 U
TOTAL HPCDD	1029	74.1 J	616 J	38.9	45.1 J	38.8 U	86.2 J	15.2 U
TOTAL HPCDF	227	9.2 J	110 J	4.49	31.1 U	38.8 U	27.6 U	15.2 U
TOTAL HXCDD	100	5.16 J	157 J	6.17	31.1 U	38.8 U	27.6 U	15.2 U
TOTAL HXCDF	108	1.52 J	67.4 J	2.95	31.1 U	38.8 U	27.6 U	15.2 U
TOTAL PECDD	1.76 U	1.65 U	1.42 U	1.69 U	31.1 U	38.8 UJ	27.6 U	15.2 U
TOTAL PECDF	39.3	1.35 J	27.2 J	1.69 U	17.1 J	38.8 UJ	27.6 U	15.2 U
TOTAL TCDD	3.8	0.33 UJ	6.09 J	0.34 U	6.21 UJ	78.5 J	5.52 U	3.05 U
TOTAL TCDF	15	0.33 UJ	7.58 J	0.27 J	26.9 J	7.75 UJ	5.52 UJ	3.05 U
Polyaromatic Hydrocarbons (ug/kg)								
1,6,7-TRIMETHYLNAPHTHALENE	54.9	32.1	35.5	11.5	10.5 J	5.68 J	3.7 J	1.09 J
1-METHYLNAPHTHALENE	251	118 J	115	25.2 J	45.3 J	22.1 J	9 J	7.78 J
1-METHYLPHENANTHRENE	550	266 J	346	70.4	71.8 J	30.7 J	15.2	1.16 J
2,6-DIMETHYLNAPHTHALENE	113	59.3 J	60.7	19	19.4	11.8	4.6 J	1.84 J
2-METHYLNAPHTHALENE	317	153	153	36.1	64.1 J	34 J	12.4 J	9.88 J
ACENAPHTHENE	2561	1239 J	1032 J	133	390 J	213 J	31.1 J	2.3 J
ACENAPHTHYLENE	303 J	191 J	242 J	84.6	87.9 J	27.3 J	39.4 J	1.02 J
ANTHRACENE	2205	1031	1075	196	498 J	195 J	120	2.15 J
BENZO(A)ANTHRACENE	5833	3620	3230	438 J	566 J	196 J	108	2.79 J
BENZO(A)PYRENE	8467	4055 J	3903 J	692	514 J	162 J	45.3	2.48 J
BENZO(B)FLUORANTHENE	7235	4172	4334	795 J	752 J	246 J	95.4 J	3.55 J
BENZO(E)PYRENE	3370 J	2126 J	1978 J	361 J	372 J	131 J	69.1 J	1.93 J
BENZO(G,H,I)PERYLENE	3248	2123 J	1875	343 J	273	86.7 J	22.3	1.6 J
BENZO(K)FLUORANTHENE	2332	1852	1364 J	203	275 J	101 J	45.1 J	0.87 J
BIPHENYL	66.8 J	42.6 J	41	11.1	18.6	11.2	3.6 J	1.84 J
CHRYSENE	6585	3317	3310 J	511	686 J	263 J	112 J	4.87 J
DIBENZO(A,H)ANTHRACENE	790	540	475	97.5	52.7 J	16.7 J	3.9 J	0.07 J
DIBENZOTHIOPHENE	481	279	276	33.5	63.3 J	25.2 J	6.8	0.86 J
FLUORANTHENE	13836.81 J	8200	8280	843 J	1884 J	768 J	292	19.9
FLUORENE	2434	1057	1055	117	276 J	158 J	32.5 J	3.72 J
INDENO(1,2,3-CD)PYRENE	3740	2234	2322 J	411 J	326 J	96.9 J	19.2 J	1.28 J
NAPHTHALENE	582	354	327	70.5	140 J	70.3 J	20.6 J	10.2 J
PERYLENE	1016	848 J	653	112	104 J	46.9 J	14.8 J	1.35 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 12							
	Sediment				Mussel			Lobster
Parameters	100A	200A	200A-DUP	300A	100A	100A-DUP	200A	100A
PHENANTHRENE	9952 J	5883 J	5511	552	1227 J	559 J	113	8.77 J
PYRENE	11419.54 J	6639 J	6641	790 J	1435 J	556 J	263	11.6
Pesticides/PCBs (ug/kg)								
1,2,3,4-TETRACHLOROBENZENE	0.08 J	0.06 J	0.17 J	0.01 J	0.18 U	0.5 J	0.15 U	6.2
1,2,4,5-TETRACHLOROBENZENE	1.3 U	1 U	2.8 J	0.83 U	0.79 U	1.6 U	0.84 U	0.68 U
2,4'-DDD	7.4	7.1	5.8	1.9	23 J	2.1 J	6.6	0.45 U
2,4'-DDE	0.099 U	0.1 U	0.098 U	0.11 U	0.43 UJ	0.25 J	0.4 UJ	0.63 UJ
2,4'-DDT	0.43	0.17 J	0.34 J	0.16	2.5 J	1.2 J	1.5	0.58 U
4,4'-DDD	5	1.8	2.4	1.2	5 J	1.9 J	2.8	0.55 U
4,4'-DDE	3.1	1.2	1.3	0.97	9.3 J	5.5 J	6.4	0.87
4,4'-DDT	2.8	0.98	0.9 J	0.86	1.2 J	0.82	1.2 J	0.83 UJ
ALDRIN	0.072 U	0.05 J	0.03 J	0.02 J	0.5 U	0.13 J	0.11 J	0.72 U
ALPHA-BHC	0.23	0.2	0.22 J	0.23	0.51	0.76	0.35	0.51 U
ALPHA-CHLORDANE	1.6	0.68	0.92 J	0.49	1.4	1.7	1	0.55 U
BETA-BHC	0.24 U	0.25 U	0.24 U	0.26 U	1.5 U	5.4 J	1.5 U	0.47 U
CHLORPYRIFOS	0.34 U	0.76 U	0.34 U	1.4 U	3.2 U	2.8 U	3 U	4.7 U
CIS-NONACHLOR	0.67	0.37	0.5 J	0.33	2	1.3	1.7	0.5 U
DELTA-BHC	0.054 U	0.055 U	0.054 U	0.059 U	0.2 U	0.17 U	0.18 U	0.29 U
DIELDRIN	0.33	0.08 J	0.08 UJ	0.05 J	1.5 J	0.51 J	0.89 J	1.2 J
ENDOSULFAN II	0.35	0.4 J	0.11 UJ	0.26	1.4 J	0.33 UJ	0.48	0.55 U
ENDRIN	0.16 U	0.16 U	0.16 U	0.18 U	1 U	0.89 U	0.95 U	1.5 U
GAMMA-BHC (LINDANE)	0.29 U	0.29 U	0.29 U	0.31 U	0.31 U	0.11 J	0.29 U	0.08 J
GAMMA-CHLORDANE	0.081 U	0.15 J	0.08 UJ	0.22	0.41	0.62	0.39	0.58 U
HEPTACHLOR	0.21 U	0.21 U	0.21 U	0.23 U	0.56 U	0.24 J	0.52 U	0.82 U
HEPTACHLOR EPOXIDE	0.036 U	0.036 U	0.036 U	0.039 U	0.4 U	0.35 U	0.37 U	0.58 U
HEXACHLOROBENZENE	0.054 U	0.055 U	0.01 J	0.059 U	0.23 J	0.25 J	0.22 J	0.19 J
MIREX	0.036 U	0.036 U	0.036 U	0.039 U	0.91 U	0.79 U	0.84 U	1.3 U
OXYCHLORDANE	0.72	0.018 UJ	0.31 J	0.05	0.42 U	0.36 U	0.39 U	0.25 J
PCB-101/90	7.9	4.1	6.7	2.9	19	12	15	1.7 U
PCB-105	2	0.9 J	3.8 J	0.91 J	8.8 J	2.8 J	6.5 J	0.23 J
PCB-114	0.22 U	0.22 U	0.21 U	0.24 U	1.4 U	1.2 U	1.3 U	2 U
PCB-118	10	4.5	5.1	2.3	17 J	9.7 J	7.8	1.1 J
PCB-126	0.15 J	0.22 U	0.21 U	0.24 U	1.4 UJ	1.2 U	1.3 UJ	2 U
PCB-128	1.8	1.1	1.3	0.97	4.4	2.8	3.4	1.5 U
PCB-138/160	9.2	7.6 J	15 J	6.5	30	19	30	1.7 U
PCB-149/123	4.9	5 J	9.7 J	3.8	21 J	11 J	25	0.07 J
PCB-153/132	12	12 J	25 J	7.9	42	28	43	2.2 U
PCB-156	9.9	2.3	2.1 J	1.1	2.8 J	1.3 J	2.7	2 U
PCB-167	3.2	1.8	2.5	0.54	2.7 J	1.5 J	1.9	2 U
PCB-169	0.22 U	0.03 U	0.01 U	0.01 U	1.4 U	1.2 U	0.06 U	0.03 J
PCB-170/190	98 J	57 J	68 J	1.4 J	2.3 U	1 U	1.6 U	0.99 U
PCB-18/17	2.5	0.11 UJ	1 J	0.12 U	5 J	3.1 UJ	3.3 U	0.34 J
PCB-180	8.6	11	17	6.5	13 J	7 U	12 J	0.58 U
PCB-187	6.6	5.6 J	11 J	4.1	21 J	13 J	18	0.57 J
PCB-189	0.75	0.77	0.82	0.35	1.4 U	1.2 U	0.21 J	2 U
PCB-195/208	6.4	3.3	3.4 J	1.4	0.28 J	0.12 J	1.1 U	1.7 U
PCB-201/157/173	4.13	2.46	2.06	0.84	2	1.7	1.9	1.5 U
PCB-206	11	4.4	5.3 J	1.7	1.2 U	1 U	1.1 U	1.7 U
PCB-209	34	2.2	1.6	2.3	1.6 U	0.89 J	1.4 U	2.3 U
PCB-28	4.3	2	1.9	1	3.5 J	2.7 U	1.4	0.56 U
PCB-44	3.5	1.3	1.9	0.78	4.1 U	3.3 U	1.3 U	1.2 U
PCB-52	6.4	3.4	2.2	1.7	7	4.7	3.3	1.4 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 12							
	Sediment				Mussel			Lobster
Parameters	**100A**	**200A**	**200A-DUP**	**300A**	**100A**	**100A-DUP**	**200A**	**100A**
PCB-66	7.8	2.6	2.1	1.2	6.3 J	3.2 J	2.3	0.14 J
PCB-77	0.17 U	0.2 U	0.02 J	0.05 U	2.8 J	1.2 UJ	0.46 J	2 U
PCB-8/5	7.8	2.1	2.2	0.71	6.1 J	2.3 J	6.1	0.51 J
PCB-81	0.18 J	0.21 J	0.32	0.24 U	0.26 J	0.11 J	1.3 U	2 U
PENTACHLOROANISOLE	0.09 U	0.56 U	0.08 U	0.15 U	0.88 U	0.46 U	0.76 U	0.27 U
PENTACHLOROBENZENE	0.27 U	0.35 U	0.53 U	0.3 U	0.78 U	2.8 U	0.72 U	4.5 U
TRANS-NONACHLOR	0.48	0.046 UJ	0.05 J	0.13	0.95	1.2	0.76	0.1 J
Metals (mg/kg)								
ALUMINUM	47914	44621	50651	51367	325	345 J	291	3 U
ARSENIC	14.9	10.7	10.8	18.6	6.84	7.48	5.62	4.92 J
CADMIUM	0.59 J	0.27 J	0.33 J	0.57 J	1.16	1.22	1.35	0.0419
CHROMIUM	125	77.5	100	93.2	3.23	4.21	3.17	0.54
COPPER	375 J	128 J	254 J	76.5 J	11.8	9.16	9.19	47.7
IRON	30833 J	17959 J	29130 J	23639 J	857	811	530	9.61 J
LEAD	330 J	142 J	204 J	201 J	12.8 J	9.6	9.59 J	0.13 U
MANGANESE	442	328	432	370	15.3	15	24.9	3.04
MERCURY	0.64	0.29	0.32	0.48	0.24	0.28	0.27	0.48
NICKEL	72.8 J	28.1 J	50 J	28.4 J	2.2 U	4.76 U	1.97 U	1.83 U
SILVER	3.88	3.21	3.48	3.85	0.32 U	0.52 U	0.32 U	1.16 J
ZINC	1497 J	399 J	1164 J	189 J	120	98.4	85	91.3 J
Miscellaneous Parameters (%)								
% LIPID					5.8	2.6	4.1	2.3
TOTAL ORGANIC CARBON	1.38 J	1.17 J	1.22 J	1.42 J				

Notes:

MS-12 includes the following samples:
OU4-SD-M12-100A
OU4-SD-M12-200A
OU4-FD-006-000A (duplicate of OU4-SD-M12-200A)
OU4-SD-M12-300A
OU4-MU-M12-100A
OU4-MU-M12-100A-LD
OU4-MU-M12-200A
OU4-LJ-M12-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 13						
	Sediment			Mussel			Lobster
Parameters	100A	200A	300A	100A	100A-DUP	300A	100A
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	65.4 J	18	22.8	105	94.1	5.6 J	1.94 J
1-METHYLNAPHTHALENE	22.3 J	27.5 J	23.9 J	109	88.7	16.5	10.2 J
1-METHYLPHENANTHRENE	508 J	63.3	51.8	553	457	7.93	6.24 J
2,6-DIMETHYLNAPHTHALENE	48 J	21.5	22.2	154	130	10.6	2.76 J
2-METHYLNAPHTHALENE	29.8 J	40.2 J	37.8 J	161	130	31.5	14.5 J
ACENAPHTHENE	1033 J	29 J	71.4 J	1269 J	1093 J	11.4 J	6.71 J
ACENAPHTHYLENE	215 J	150	131	180	289 J	31.4 J	1.11 J
ANTHRACENE	1283 J	340	359	1996 J	2022 J	74.8 J	10.8 J
BENZO(A)ANTHRACENE	1778 J	631	585	4333	3540	65.9	33.3
BENZO(A)PYRENE	1321 J	150 J	160 J	3461 J	2835	25.6 J	16.2
BENZO(B)FLUORANTHENE	1461 J	1008 J	949 J	4479	3622	87.5	28.6
BENZO(E)PYRENE	764 J	518	509	2075	1681	67.7	15.3
BENZO(G,H,I)PERYLENE	426 J	417 J	433 J	907	793	21.3	5.6
BENZO(K)FLUORANTHENE	475 J	298	324	131	1198 J	29.1	9.63
BIPHENYL	13.4 J	9.12	13	86.9	72.7	2.19 J	2.21 J
CHRYSENE	1733 J	867	684	4976	4491	76.6	41.4
DIBENZO(A,H)ANTHRACENE	106 J	109 J	113 J	353	273	2.91	0.7 J
DIBENZOTHIOPHENE	269 J	20.2	29.9	239	199 J	3.47	3.06 J
FLUORANTHENE	8447 J	1075	1256	8955	7958	186	127
FLUORENE	834 J	65	116	1870 J	1668 J	21 J	10.8 J
INDENO(1,2,3-CD)PYRENE	425 J	435	488	1207	985 J	18.3	8.12 J
NAPHTHALENE	84.2 J	50 J	60.1 J	128 J	104 J	22.2 J	15.4 J
PERYLENE	270 J	134	174	563	522	23.4 J	9.55
PHENANTHRENE	4389 J	289	359	6561	5222 J	78.2	62.5 J
PYRENE	5957 J	946 J	1166 J	5747	5246	152	89
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	0.1 U	0.07 U	0.93	0.52	0.48	0.26 J	9.2
1,2,4,5-TETRACHLOROBENZENE	0.44 U	0.5 U	0.87 J	0.31 J	4.8 U	2.5	0.58 U
2,4'-DDD	6.6	1.8	2.3	364 J	1.4 J	2.5	0.67
2,4'-DDE	0.16 U	0.08 J	0.17 U	0.34 UJ	0.6 J	0.79	0.59 UJ
2,4'-DDT	0.08	0.05	0.05	0.33 J	1.4 J	1	0.54 U
4,4'-DDD	1.4	0.98	2	4.3	3.5	2.2	0.51 U
4,4'-DDE	1.5	1	1.3	11	8	7.1	2.4
4,4'-DDT	2.4	0.79	0.62	3.5 J	1.3 J	2.7	0.78 UJ
ALDRIN	0.12 U	0.1 U	0.12 U	0.39 UJ	0.59 J	0.39 U	0.68 U
ALPHA-BHC	0.05 J	0.05 J	0.06 J	2	1.7	0.45	0.48 U
ALPHA-CHLORDANE	1.3	0.48	0.33	3.2 J	1.7 J	1.4	0.51 U
BETA-BHC	0.3 J	1.8	1.3	6.3	8	1.1	0.44 U
CHLORPYRIFOS	0.56 U	0.48 U	0.58 U	2.6 U	2.5 U	2.6 U	4.4 U
CIS-NONACHLOR	0.31	0.15	0.18	2	2.1	1.3	0.47 U
DELTA-BHC	0.088 U	0.08	0.11	0.16 U	0.03 J	0.16 U	0.27 U
DIELDRIN	0.13 U	0.04 J	0.04 J	0.31 UR	0.3 U	0.69	1.7 J
ENDOSULFAN II	3.8	0.87	0.76	6.3 J	1.4 J	0.15 J	0.51 U
ENDRIN	0.26 U	0.23 U	0.27 U	0.81 U	0.8 U	0.81 U	1.4 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 13						
	Sediment			Mussel			Lobster
Parameters	100A	200A	300A	100A	100A-DUP	300A	100A
GAMMA-BHC (LINDANE)	0.25 J	0.4 U	0.49 U	0.24 U	0.18 J	0.05 J	0.05 J
GAMMA-CHLORDANE	0.13 U	0.06 J	0.09 J	0.31 UJ	0.82 J	0.51	0.54 U
HEPTACHLOR	0.34 U	0.29 U	0.35 U	0.44 U	0.31 J	0.45 U	0.77 U
HEPTACHLOR EPOXIDE	0.058 U	0.05 U	0.061 U	0.31 U	0.31 U	0.32 U	0.54 U
HEXACHLOROBENZENE	0.63	0.07 J	0.25	0.63 J	0.13 J	0.27 J	0.25 J
MIREX	0.058 U	0.05 U	0.061 U	0.71 U	0.06 J	0.72 U	1.2 U
OXYCHLORDANE	0.029 U	0.12	0.24	19 J	1.5 J	0.08 J	0.11 J
PCB-101/90	2.3	1.5	3.7	16	10	13	0.63 J
PCB-105	1.1 J	0.93 J	2 J	6.5 J	2.4 J	4.8	0.75 J
PCB-114	0.35 U	0.3 U	0.36 U	1.1 U	1.1 U	1.1 U	1.9 U
PCB-118	1.9	1.4	3	24 J	12 J	11	3.2
PCB-126	0.35 U	0.3 U	0.36 U	1.1 UR	1.1 U	1.1 U	1.9 U
PCB-128	0.77	0.49	0.94	3.1	2.9	2.5	0.58 J
PCB-138/160	4.2	2.5	5.5	21	17	17	3.8 U
PCB-149/123	3.8	1.4	4.3	11	10	9.2	0.25 J
PCB-153/132	4.4	2.1	5.8	26	23	22	5.8 U
PCB-156	2.8	1.3	1.5	1.7	2.2	0.66 J	1.9 U
PCB-167	2.4	2	2	5.9 J	2.7 J	1.6	1.9 U
PCB-169	0.09 U	0.3 U	0.04 U	1.1 U	1.1 U	0.12 J	1.9 U
PCB-170/190	65 J	20 J	24 J	49 J	16 J	0.43 J	1.5 U
PCB-18/17	0.92	0.13 J	1.9	38 J	2.8 UJ	0.37 J	0.84 J
PCB-180	2.9	1.4	4.2	11 J	8 U	7.9	2.8 U
PCB-187	1.6	1.4	2.9	11	8.3	7.8	8.1
PCB-189	0.56	0.47	0.3 J	1.1 U	0.72 J	1.1 U	1.9 U
PCB-195/208	1.6	0.69	1	1.1 J	0.65 J	0.91 U	8.1
PCB-201/157/173	1.3	0.36	0.43	1.1 J	2.2 J	0.52 J	1.5 U
PCB-206	1.3	0.54	1.6	0.94 U	0.93 U	0.95 U	19
PCB-209	1.5	0.95	1.4	1.2 U	1.2 U	1.2 U	4.2
PCB-28	1.5	0.78	3.4	3.7	5.2 U	2.9	0.81 U
PCB-44	0.79	0.39	1.8	2.4 U	2.2 U	2.8	0.27 J
PCB-52	2.9	1.2	4	4.8 J	8.8 J	5.7	1.3 U
PCB-66	1.3	0.5	1.7	6.2 J	2.7 J	3.8	0.63 J
PCB-77	0.28 U	0.05 U	0.08 U	0.53 U	1.1 U	0.3 J	1.9 U
PCB-8/5	1.2	0.68	1.9	36 J	1.7 UJ	7.5	0.54 J
PCB-81	0.31 J	0.3 U	0.36 U	0.25 J	0.17 J	1.1 U	1.9 U
PENTACHLOROANISOLE	0.24 U	0.09 U	0.19 U	3.1 U	0.85 U	1.1	0.27 U
PENTACHLOROBENZENE	0.22 U	0.23 U	0.33 U	0.86 U	2.8 U	1.8	3.9 U
TRANS-NONACHLOR	0.1	0.05 J	0.05 J	1.5	1.2	1.4	0.33 U
Metals (mg/kg)							
ALUMINUM	56558	54863	56930	415	457 J	288	19.9 U
ARSENIC	18.7	17.3	20.6	4.19	4.97	4.01	3.31 J
CADMIUM	0.48 J	0.58 J	0.59 J	1.42	1.48	1.51	0.0329
CHROMIUM	84.1	81.7	104	3.74	3.04	2.39	0.98
COPPER	44.5 J	35.7 J	87.3 J	32.8 J	34.5 J	6.98	60.5
IRON	33229 J	30133 J	35859 J	675	745	399	27.7 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 13						
	Sediment			Mussel			Lobster
Parameters	**100A**	**200A**	**300A**	**100A**	**100A-DUP**	**300A**	**100A**
LEAD	70.7 J	63.5 J	88.4 J	4.55	4.59	3.19 J	1.5
MANGANESE	360	346	365	49.9	50.4	13.9	6.07
MERCURY	0.19	0.35	0.23	0.26	0.27	0.21	0.61
NICKEL	24.9 J	22.9 J	28.8 J	4.74 U	3.49 U	0.3 U	1.94 U
SILVER	3.44	3.92	3.9	0.32 U	0.45 U	1.33 U	0.84 J
ZINC	107 J	94.1 J	147 J	129 J	121	81.6	98.6 J
Miscellaneous Parameters (%)							
% LIPID				7.4	4.6	6.4	2.1
TOTAL ORGANIC CARBON	2.18 J	1.73 J	2.13 J				

Notes:

MS-13 includes the following samples:

OU4-SD-M13-100A
OU4-SD-M13-200A
OU4-SD-M13-300A
OU4-MU-M13-100A
OU4-MU-M13-100A-LD
OU4-MU-M13-300A
OU4-LJ-M13-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 14					
	Sediment			Mussel		Lobster
Parameters	100A	200A	300A	100A	200A	100A
Polyaromatic Hydrocarbons (ug/kg)						
1,6,7-TRIMETHYLNAPHTHALENE	9.08	57.9	25.3	0.89 J	2.18 J	1.63 J
1-METHYLNAPHTHALENE	18.9 J	304 J	22.6 J	4.09 J	3.21 J	13 J
1-METHYLPHENANTHRENE	57	1257	109	3.04 J	2.55 J	2.68 J
2,6-DIMETHYLNAPHTHALENE	16	73.9	22.2	0.93 J	3.03 J	2.32 J
2-METHYLNAPHTHALENE	35.8 J	353 J	34.4	5.84	6.06	18.3 J
ACENAPHTHENE	15.3 J	100 J	32.5	1.55 J	3.72 J	4 J
ACENAPHTHYLENE	117	189	130 J	0.14 J	13.3 J	2.61 J
ANTHRACENE	166	433	353	5.49 J	23.9 J	6.55 J
BENZO(A)ANTHRACENE	321	838	511 J	19.2	20.8	12.4
BENZO(A)PYRENE	182 J	359 J	742 J	20.5 J	15.1 J	17.3
BENZO(B)FLUORANTHENE	524 J	880 J	625	22.8	28.6	15.6
BENZO(E)PYRENE	335	590	288	11.9	27.8	9.83
BENZO(G,H,I)PERYLENE	310 J	540 J	279	6.88	11.8	6.28
BENZO(K)FLUORANTHENE	137	291	248	9.41 J	10	7.54
BIPHENYL	8.56	20.5	9.21 J	2.14 J	1.42 J	2.81 J
CHRYSENE	331	738	533	26.7	23.6	19.4
DIBENZO(A,H)ANTHRACENE	71.9 J	135 J	69.8 J	1.73 J	1.42 J	0.23 J
DIBENZOTHIOPHENE	15.5	24.4	27.1	0.94 J	0.65 J	1.71 J
FLUORANTHENE	518	967	919	43.4	45.7	37.9
FLUORENE	34.9	142	84.5	2.98 J	4.96 J	8.22 J
INDENO(1,2,3-CD)PYRENE	349	504	337 J	8.9	8.44	5.78 J
NAPHTHALENE	55.7 J	367 J	64	8.84 J	6.31 J	16.3 J
PERYLENE	86.7	111	173 J	6.4	13.9 J	6.24
PHENANTHRENE	188	1253	468	15.7	8.92	24.5 J
PYRENE	502 J	1169 J	856	32.4	58.1	34.4
Pesticides/PCBs (ug/kg)						
1,2,3,4-TETRACHLOROBENZENE	0.24 U	0.23 U	0.16 J	13	0.41	1.9
1,2,4,5-TETRACHLOROBENZENE	0.89	1	2.6 U	0.81 J	2.2	0.84 U
2,4'-DDD	1.2	1.3	2.1	0.32 U	0.72	0.44 U
2,4'-DDE	0.13 U	0.099 U	0.1 J	0.44 U	1	0.62 UJ
2,4'-DDT	0.04	0.05	0.17	0.41 U	0.99	0.57 U
4,4'-DDD	0.44	0.38	2	0.31 J	1.4	0.07 J
4,4'-DDE	2.6	0.37	1.5	5.3	4.8	2
4,4'-DDT	0.65	0.19	1.4	0.59 UJ	0.72	0.83 UJ
ALDRIN	0.093 U	0.072 U	0.04 J	0.51 U	0.22 J	0.71 U
ALPHA-BHC	0.04 J	0.03 J	0.32	0.36 U	0.42	0.51 U
ALPHA-CHLORDANE	0.15	0.13	0.64	0.38 U	1.4	0.23 J
BETA-BHC	0.08 J	0.44	0.32 U	0.43	1.7	0.46 U
CHLORPYRIFOS	0.44 U	0.34 U	1.2 U	3.3 U	2.6 U	4.7 U
CIS-NONACHLOR	0.07	0.04	0.25	0.35 U	0.81	0.49 U
DELTA-BHC	0.07 U	0.03 J	0.072 U	0.2 U	0.16 U	0.29 U
DIELDRIN	0.1 U	0.09	0.14	2.5 J	0.52	1.3 J
ENDOSULFAN II	1.1	0.91	0.23	0.38 U	0.21 J	0.54 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 14					
	Sediment			Mussel		Lobster
Parameters	100A	200A	300A	100A	200A	100A
ENDRIN	0.21 U	0.16 U	0.22 U	1 U	0.82 U	1.5 U
GAMMA-BHC (LINDANE)	0.37 U	0.29 U	0.38 U	0.32 U	0.07 J	0.44 U
GAMMA-CHLORDANE	0.03 J	0.081 U	0.18	0.41 U	0.39	0.57 U
HEPTACHLOR	0.08 J	0.21 U	0.27 U	0.57 U	0.45 U	0.81 U
HEPTACHLOR EPOXIDE	0.047 U	0.036 U	0.048 U	0.09 J	0.32 U	0.57 U
HEXACHLOROBENZENE	0.08	0.04 J	0.072 U	0.08 J	0.57	0.19 J
MIREX	0.047 U	0.036 U	0.048 U	0.92 U	0.72 U	1.3 U
OXYCHLORDANE	0.16	0.18	0.25	3.3	0.05 J	0.49 J
PCB-101/90	0.86	0.34	2.3	0.71 J	9	0.53 J
PCB-105	0.42 J	0.2 J	0.97 J	1 J	2.6	0.52 J
PCB-114	0.28 U	0.22 U	0.29 U	1.4 U	1.1 U	2 U
PCB-118	1.3	0.36	2.9	3.4	8	2.7 J
PCB-126	0.28 U	0.22 U	0.29 U	1.4 UR	1.1 U	2 U
PCB-128	0.07 J	0.24	0.71	0.63 J	1.5	0.44 J
PCB-138/160	0.79	0.86	3.5	5.2 U	10	2.8 U
PCB-149/123	0.76	0.63	1.7	0.32 J	4.6	0.1 J
PCB-153/132	1.5	0.57	3.3	7 U	15	4 U
PCB-156	0.64	0.37	1.1	1.4 U	0.54 J	2 U
PCB-167	1.7	2.4	0.23 J	1.4 U	1.1 J	2 U
PCB-169	0.09 U	0.06 U	0.03 U	1.4 U	0.73 J	2 U
PCB-170/190	13 J	6 J	11 J	0.49 U	0.31 J	0.64 U
PCB-18/17	0.34	0.04 J	0.16	1.3 J	2.9 U	5.2 U
PCB-180	0.57	0.31	1.8	2.5 U	5.5	0.99 U
PCB-187	0.31	0.3	1.2	2.7	5.2	1 J
PCB-189	0.19 J	0.3	0.11 J	1.4 U	1.1 U	2 U
PCB-195/208	0.44	0.18	0.58	0.27 J	0.92 U	1.7 U
PCB-201/157/173	0.22	0.15	0.77	1.1 U	0.24 J	1.5 U
PCB-206	0.61	0.24	0.75	0.33 J	0.95 U	1.7 U
PCB-209	0.54	0.32	1.3	1.6 U	1.2 U	2.2 U
PCB-28	0.29 J	0.2 J	1	1.1 U	1.2	0.61 U
PCB-44	0.37	0.01 J	0.68	0.82 U	0.87	1.2 U
PCB-52	0.22	0.23	1.7	0.96 U	2.1	1.4 U
PCB-66	0.54	0.64	0.76	0.39 J	0.99 J	0.45 J
PCB-77	0.08 U	0.02 U	0.71 U	1.4 U	0.28 J	0.41 J
PCB-8/5	1.2	0.33 J	2.1	0.35 J	11	2.2 J
PCB-81	0.28 U	0.03 J	0.29 U	1.4 U	1.1 U	0.25 J
PENTACHLOROANISOLE	0.08 U	0.04 U	0.15 U	0.22 U	1.5	0.3 U
PENTACHLOROBENZENE	0.22 U	0.1 U	0.3 U	0.39 U	1.3	3.9 U
TRANS-NONACHLOR	0.18	0.045 U	0.16	0.25 U	0.97	0.2 J
Metals (mg/kg)						
ALUMINUM	49074	48057	50238	304	252	2.91 U
ARSENIC	11.6	11.1	12.3	6.61	4.79	3.43 J
CADMIUM	0.32 J	0.33 J	0.45 J	1.29	1.67	0.0386
CHROMIUM	65.4	53.3	92.1	3.37 U	2.33	0.62

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 14					
	Sediment			Mussel		Lobster
Parameters	**100A**	**200A**	**300A**	**100A**	**200A**	**100A**
COPPER	44 J	16.3 J	28.9 J	7.85 J	6.01	48.5
IRON	20920 J	18299 J	24139 J	609	388	8.45 J
LEAD	94.3 J	53.7 J	67.1 J	3.81	4.45 J	0.13 U
MANGANESE	340	297	307	10.6	11.7	9.3
MERCURY	0.34	0.26	0.24	0.31	0.31	0.66
NICKEL	22.5 J	16.6 J	24.7 J	1.8 U	1.93 U	1.79 U
SILVER	3.43	2.83	3.31	0.3 U	0.32 U	0.92 J
ZINC	60.4 J	58.7 J	77.3 J	94.4 J	101	90.7 J
Miscellaneous Parameters (%)						
% LIPID				5.8	4.8	1.9
TOTAL ORGANIC CARBON	4.64 J	1.61 J	2.1 J			

Notes:

MS-14 includes the following samples:

OU4-SD-M14-100A
OU4-SD-M14-200A
OU4-SD-M14-300A
OU4-MU-M14-100A
OU4-MU-M14-200A
OU4-LJ-M14-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 01						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	400A	300A	400A	100A
Dioxins/Furans (ng/kg)							
1,2,3,4,6,7,8-HPCDD	28	6.88 J	4	56	25.9 UR	20.1 J	13.2 U
1,2,3,4,6,7,8-HPCDF	9.49	2.21 J	1.28	14.5	25.9 U	25.1 U	13.2 U
1,2,3,4,7,8,9-HPCDF	0.09 J	0.43 J	1.07 U	0.75 J	25.9 UJ	25.1 U	13.2 U
1,2,3,4,7,8-HXCDD	2.05 U	1.16 UJ	1.07 U	0.55 J	25.9 U	25.1 U	13.2 UJ
1,2,3,4,7,8-HXCDF	2.05 U	1.16 UJ	1.07 U	0.66 J	25.9 U	25.1 U	13.2 U
1,2,3,6,7,8-HXCDD	1.47 J	1.16 UJ	1.07 U	2.39	25.9 U	25.1 U	13.2 UJ
1,2,3,6,7,8-HXCDF	0.4 J	1.16 UJ	1.07 U	0.48 J	25.9 U	25.1 U	13.2 U
1,2,3,7,8,9-HXCDD	0.98 J	1.16 UJ	1.07 U	1.76	25.9 U	25.1 U	13.2 UJ
1,2,3,7,8,9-HXCDF	2.05 U	1.16 UJ	1.07 U	0.08 J	25.9 U	25.1 U	13.2 U
1,2,3,7,8-PECDD	2.05 U	1.16 UJ	1.07 U	0.35 J	25.9 U	25.1 U	13.2 UJ
1,2,3,7,8-PECDF	0.5 U	1.16 UJ	1.07 U	0.33 U	25.9 U	25.1 U	13.2 U
2,3,4,6,7,8-HXCDF	2.05 U	1.16 UJ	1.07 U	0.87	25.9 U	25.1 U	13.2 U
2,3,4,7,8-PECDF	0.67 U	1.16 UJ	1.07 U	0.32 U	25.9 U	25.1 U	13.2 U
2,3,7,8-TCDD	0.41 U	0.23 UJ	0.21 U	0.26	5.18 UR	5.03 UR	2.63 U
2,3,7,8-TCDF	1.26	0.23 UJ	0.21 U	0.81	9.2 J	5.03 U	1.77 J
OCDD	160	48.8 J	27.2	543	89.8 J	96.2 J	6.41 J
OCDF	7.77	3.48 J	2.14	22.4	51.8 U	50.3 U	26.3 U
TOTAL DIOXINS	261	69.4 J	36	690	89.8 J	184 J	15.2 J
TOTAL FURANS	50.7	6.11 J	4.1	78.5	54.9 J	71 J	1.77 U
TOTAL HPCDD	79	17.4 J	8.79	134	25.9 U	65.9 J	8.78 J
TOTAL HPCDF	19.3	2.63 J	1.28	33.5	25.9 U	25.1 U	13.2 U
TOTAL HXCDD	22.2	3.24 J	1.07 U	5.71	25.9 U	25.1 U	13.2 U
TOTAL HXCDF	14.7	1.16 UJ	0.68 J	15	25.9 U	25.1 U	13.2 U
TOTAL PECDD	2.05 U	1.16 UJ	1.07 U	1.75	25.9 U	25.1 U	13.2 U
TOTAL PECDF	3.99	1.16 UJ	1.07 U	4.75	27.6 J	42.3 J	13.2 U
TOTAL TCDD	0.41 U	0.23 UJ	0.21 U	5.69 U	5.18 U	21.6 J	2.63 U
TOTAL TCDF	4.86	0.23 UJ	0.21 U	2.9	27.3 J	28.7 J	1.77 J
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	9.06	1.02	0.65	2.72	1.7 J	2.37 J	0.72 J
1-METHYLNAPHTHALENE	18.3 J	1.6 J	1.04 J	4.77 J	5.6 J	6.01	5.81 J
1-METHYLPHENANTHRENE	61.9	3.44	2.78	13.1	2.9 J	2.3 J	0.6 J
2,6-DIMETHYLNAPHTHALENE	13.4	1.55	1.1 J	3.35	1.9 J	3.14 J	2.2 J
2-METHYLNAPHTHALENE	30.8 J	2.6 J	1.57 J	7.34 J	6.5 J	9.58	7.27
ACENAPHTHENE	20.4 J	1.87	0.67	3.85 J	4.6 J	2.29 J	1.16 J
ACENAPHTHYLENE	155	7.82	5.27	34.6	15.6 J	18.1 J	0.84 J
ANTHRACENE	146 J	12.2	10.7	35.7 J	25.9	38.8 J	0.81 J
BENZO(A)ANTHRACENE	407	19.2 J	18.2 J	92.3	14.3	28.7	1.7 J
BENZO(A)PYRENE	127 J	35.3	25.2	104 J	11.6	15.6 J	2.14 J
BENZO(B)FLUORANTHENE	551	32.3 J	23 J	128	27.1 J	44.2	3.09 J
BENZO(E)PYRENE	329	16.9 J	11.9 J	70.5	33.5 J	34.1	3.03 J
BENZO(G,H,I)PERYLENE	317	18.5 J	11.7 J	70	10	13.9	1.85 J
BENZO(K)FLUORANTHENE	214	11.2	6.63	40	9.1 J	16.9	2.31 J
BIPHENYL	9.27	0.98 J	0.49 J	2.23	2.1 J	1.93 J	2.12 J
CHRYSENE	415	22.4	18.3	93.3	32.8 J	57.6	5.16 J
DIBENZO(A,H)ANTHRACENE	77.8	4.26	2.69	16.6	1.3 J	2.1	0.07 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 01						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	400A	300A	400A	100A
DIBENZOTHIOPHENE	17	0.98	0.72	2.82	0.7 J	0.72 J	0.38 J
FLUORANTHENE	566	25.8 J	39.3 J	121	45.5	48	11.4
FLUORENE	40.1	2.95	2.05	7.45	4.1 J	8.34 J	1.78 J
INDENO(1,2,3-CD)PYRENE	346	20.6 J	13.9 J	76.5	5.7 J	11.2	0.71 J
NAPHTHALENE	58.1	5.47	3.14 J	13.2	11.5 J	8.74 J	7.86 J
PERYLENE	91	10.7	5.71	29.8	23.4 J	15.5 J	3.55 J
PHENANTHRENE	183	13	13.1	37.4	5.4 J	9.23	3.05 J
PYRENE	634	24.6 J	34.3 J	127	55.8	51.3	10.3
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	0.42 U	0.04 J	0.19 U	0.01 U	0.2 U	0.58	7.1
1,2,4,5-TETRACHLOROBENZENE	1 U	0.53 U	0.53 U	0.43 U	1.1 U	2.4	0.73 U
2,4'-DDD	2.2	0.26	0.07	0.48	1.9	1.2	0.41 U
2,4'-DDE	0.07 J	0.05 J	0.07	0.08	0.28 J	0.36 U	0.58 UJ
2,4'-DDT	0.01 J	0.57	0.02 U	0.07	0.47	1.8	0.53 U
4,4'-DDD	0.77	0.38	0.04 J	0.31	3.1	1.7	0.5 U
4,4'-DDE	0.83	0.3	0.05	0.31	8.6	5.8	2
4,4'-DDT	1.2	1.7	0.033 U	0.13	0.83 J	0.74	0.77 UJ
ALDRIN	0.03 J	0.01 J	0.01 J	0.02 J	0.42 U	0.24 J	0.67 U
ALPHA-BHC	0.07 J	0.02 U	0.02 U	0.04 J	0.32	0.33	0.47 U
ALPHA-CHLORDANE	0.33	0.01 J	0.06 U	0.2	1.1	0.82	0.21 J
BETA-BHC	0.4 U	0.18 U	0.18 U	0.18 U	0.51 U	0.42	0.43 U
CHLORPYRIFOS	1.2 U	0.65 U	0.43 U	0.3 U	2.8 U	2.7 U	4.3 U
CIS-NONACHLOR	0.21	0.03 J	0.02 J	0.12	1.4	1.2	0.46 U
DELTA-BHC	0.18	0.02 J	0.01 J	0.03 J	0.17 U	0.17 U	0.27 U
DIELDRIN	0.14	0.061 U	0.06 U	0.02 J	0.96 J	0.53	1.4 J
ENDOSULFAN II	0.8	0.081 U	0.08 U	0.19	0.22 J	0.08 J	0.5 U
ENDRIN	0.27 U	0.12 U	0.12 U	0.12 U	0.87 U	0.87 U	1.4 U
GAMMA-BHC (LINDANE)	0.39 J	0.08 J	0.21 U	0.22 U	0.26 U	0.26 U	0.41 U
GAMMA-CHLORDANE	0.13 U	0.04 J	0.06 U	0.03 J	0.56	0.41	0.53 U
HEPTACHLOR	0.34 U	0.16 U	0.15 U	0.04 J	0.48 U	0.27 J	0.75 U
HEPTACHLOR EPOXIDE	0.059 U	0.027 U	0.027 U	0.027 U	0.34 U	0.34 U	0.53 U
HEXACHLOROBENZENE	0.089 U	0.25	0.04 U	0.03 J	0.18 J	0.36 J	0.17 J
MIREX	0.059 U	0.027 U	0.027 U	0.027 U	0.77 U	0.77 U	1.2 U
OXYCHLORDANE	0.06	0.013 U	0.013 U	0.013 U	0.36 U	0.35 U	0.61
PCB-101/90	0.51	0.22	0.05	0.35	8.2	7.1	0.9 J
PCB-105	0.17 J	0.09 J	0.02 J	0.14 J	3.9 J	2.7	0.56 J
PCB-114	0.36 U	0.16 U	0.16 U	0.16 U	1.2 U	1.2 U	1.8 U
PCB-118	0.59	0.2	0.07 J	0.36	9.7	8.3	2.6 J
PCB-126	0.36 U	0.16 U	0.16 U	0.16 U	1.2 UJ	1.2 U	1.8 U
PCB-128	0.03 J	0.06	0.01 J	0.06	2.1	1.7	0.45 J
PCB-138/160	0.62 U	0.31	0.15	0.76	13	12	3.4 U
PCB-149/123	0.38	0.11 U	0.04 U	0.25	6.3	5.5	0.25 J
PCB-153/132	0.67 U	0.3 U	0.16 U	0.59	16	16	4.5 U
PCB-156	0.43	0.05 J	0.02 J	0.15 J	1.2 J	0.59 J	1.8 U
PCB-167	3.1	0.02 J	0.02 J	0.7	1.1 J	1.1 J	1.8 U
PCB-169	0.08 U	0.01 U	0.02 U	0.04 U	1.2 U	1.2 U	1.8 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 01						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	400A	300A	400A	100A
PCB-170/190	2 U	0.79 J	0.54 J	0.92 U	0.37 U	0.22 J	0.93 U
PCB-18/17	0.18 U	0.09	0.08 U	0.36	0.27 J	3.1 U	4.8 U
PCB-180	0.4	0.14 U	0.11 U	0.23	6.8 J	5.9	1.3 U
PCB-187	0.09 J	0.07 J	0.1 J	0.17	5.2	5.7	1.9
PCB-189	0.36 J	0.16 U	0.16 U	0.11 J	1.2 U	1.2 U	1.8 U
PCB-195/208	0.32	0.08	0.03 J	0.09	0.98 U	0.97 U	1.5 U
PCB-201/157/173	0.59	0.02022 U	0.02	0.09	0.3 J	0.34 J	1.4 U
PCB-206	0.36	0.074 U	0.073 U	0.05 J	1 U	1 U	1.6 U
PCB-209	0.77	0.08	0.07 J	0.34	1.3 U	1.3 U	2.1 U
PCB-28	0.7 U	0.09 U	0.03 U	0.19 U	0.66 J	0.97	0.59 U
PCB-44	0.33	0.09 J	0.04 J	0.13 J	0.81 U	0.72	0.15 J
PCB-52	0.92	0.09 J	0.03 J	0.32	2.1 U	3.1	1.3 U
PCB-66	0.18 J	0.11 U	0.11 U	0.05 J	1.6	1 J	0.44 J
PCB-77	0.01 J	0.01 U	0.02 U	0.01 J	1.2 U	0.23 J	0.08 J
PCB-8/5	0.65 U	0.08 U	0.05 U	0.11 J	4.2	21	1.8 J
PCB-81	0.36 U	0.16 U	0.16 U	0.16 U	1.2 U	1.2 U	1.8 U
PENTACHLOROANISOLE	0.12 U	0.02 U	0.02 U	0.08 U	0.66 U	2.4	0.29 U
PENTACHLOROBENZENE	0.08 U	0.16 U	0.12 U	0.06 U	0.73 U	1.9	5 U
TRANS-NONACHLOR	0.27	0.034 U	0.033 U	0.03 J	1.2	0.9	0.16 J
Metals (mg/kg)							
ALUMINUM	49202	36205	38101	41501	315	338	3.04 U
ARSENIC	13.8	4.72	6.47	9.91	5.09	5.95	4.52 J
CADMIUM	0.53	0.0689 J	0.0954 J	0.21	1.54	1.29	0.0248
CHROMIUM	69.4	19.3	28.8	30.9	3.09	3.82	0.62
COPPER	21.1 J	3.41 J	6.75 J	6.58	5.33	7.34	55.4
IRON	23744 J	8866 J	11209 J	12014	478	696	24.9 J
LEAD	96.6	21 J	47 J	28.8	2.76 J	3.2 J	0.11 U
MANGANESE	335	438	336	322	16.8	10.8	3.82
MERCURY	0.31	0.0862 U	0.0669 U	0.1	0.29	0.28	0.96
NICKEL	17.5 J	4.73 U	8.5 U	8.51 J	1.83 U	2.41 U	1.86 U
SILVER	3.88 J	2.17	2.34	1.86	0.49 J	0.32 U	1.63 J
ZINC	85.1 J	13.4 J	21.8 J	29.6	70.4	76.8	95.3 J
Miscellaneous Parameters (%)							
% LIPID					1.7	3.5	2
TOTAL ORGANIC CARBON	3.24 J	0.22 J	0.2 J	0.64 J			

Notes:

RF-1 includes the following samples:

OU4-SD-R01-100A
OU4-SD-R01-200A
OU4-SD-R01-300A
OU4-SD-R01-400A
OU4-MU-R01-300A
OU4-MU-R01-400A
OU4-LJ-R01-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 02						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	400A	300A	400A	100A
Dioxins/Furans (ng/kg)							
1,2,3,4,6,7,8-HPCDD	29 U	7.67	22.6	2.13 U	22.9 UR	27 U	13.3 U
1,2,3,4,6,7,8-HPCDF	7.3 U	1.85	6.31	2.13 U	22.9 U	27 U	13.3 U
1,2,3,4,7,8,9-HPCDF	0.91 UJ	1 U	1.29 U	2.13 U	22.9 UJ	27 U	13.3 U
1,2,3,4,7,8-HXCDD	0.91 UJ	1 U	0.45 J	2.13 U	22.9 U	27 UJ	13.3 UJ
1,2,3,4,7,8-HXCDF	0.91 UJ	1 U	1.29 U	2.13 U	22.9 U	27 U	13.3 U
1,2,3,6,7,8-HXCDD	0.91 UJ	1 U	0.68 J	2.13 U	22.9 U	27 UJ	13.3 UJ
1,2,3,6,7,8-HXCDF	0.91 UJ	1 U	1.29 U	2.13 U	22.9 U	27 U	13.3 U
1,2,3,7,8,9-HXCDD	0.91 UJ	1 U	0.83 J	2.13 U	22.9 U	27 UJ	13.3 UJ
1,2,3,7,8,9-HXCDF	0.91 UJ	1 U	1.29 U	2.13 U	22.9 U	27 U	13.3 U
1,2,3,7,8-PECDD	0.91 UJ	1 U	1.29 U	2.13 U	22.9 U	27 UJ	13.3 UJ
1,2,3,7,8-PECDF	1.2 J	1 U	0.94 J	2.13 U	22.9 U	27 U	13.3 U
2,3,4,6,7,8-HXCDF	0.91 UJ	1 U	1.29 U	2.13 U	22.9 U	27 U	13.3 U
2,3,4,7,8-PECDF	0.91 UJ	1 U	1.23 J	2.13 U	22.9 U	27 U	13.3 U
2,3,7,8-TCDD	0.18 UJ	0.2 U	0.26 U	0.43 U	4.59 UR	5.41 U	2.66 U
2,3,7,8-TCDF	0.18 UJ	0.24	0.26 U	0.43 U	4.59 U	10.3 J	2.87 J
OCDD	257 U	53.1	524	52 U	45.9 U	54.1 U	26.6 U
OCDF	1.82 UJ	3.22	7.68	4.5 U	45.9 U	54.1 U	26.6 U
TOTAL DIOXINS	333 U	74.1	601	62.1 U	71.8 J	54.1 U	4.11 J
TOTAL FURANS	45.5 U	11.8	26.9	5.5 U	23.2 J	10.3 U	2.87 U
TOTAL HPCDD	64.5 U	17.8	57.8	8.2 U	33.2 J	27 U	13.3 U
TOTAL HPCDF	14.4 U	4.83	6.31	2.13 U	22.9 U	27 U	13.3 U
TOTAL HXCDD	10.3 J	3.14	16.6	1.9 J	22.9 U	27 U	13.3 U
TOTAL HXCDF	8.7 J	1.63	5.65	1 J	23.2 J	27 U	13.3 U
TOTAL PECDD	0.91 UJ	1 U	1.29 U	2.13 U	22.9 U	27 U	13.3 U
TOTAL PECDF	6.1 J	1.88	3.18	2.13 U	22.9 U	27 U	13.3 U
TOTAL TCDD	1.2 J	0.2 U	1.72	0.43 U	38.6 J	5.41 U	4.11 J
TOTAL TCDF	3.4 J	0.24	4.11	0.43 U	4.59 U	10.3 J	2.87 J
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	12	9.89	17.1	15.7	2.4 J	114	1.07 J
1-METHYLNAPHTHALENE	19.4 J	9.53 J	35.7	35.2 J	6.7 J	104	4.22 J
1-METHYLPHENANTHRENE	93.6	44.7	102	94.7	3 J	547	1.18 J
2,6-DIMETHYLNAPHTHALENE	11.2	8.76	28.4	19.3	2.9 J	160	1.71 J
2-METHYLNAPHTHALENE	24.8	15.4	73.9	53.7	8.8 J	150	6.23 J
ACENAPHTHENE	16.3	22.1	36 J	26.3	6.3 J	1368	1.02 J
ACENAPHTHYLENE	164 J	63.5	180	163 J	18.6 J	192	0.74 J
ANTHRACENE	294	146	355	295	28	2103 J	1.22 J
BENZO(A)ANTHRACENE	599 J	344 J	715	506 J	22.7	4302	4.73 J
BENZO(A)PYRENE	831 J	496	797	338 J	18.2	3430	8.32
BENZO(B)FLUORANTHENE	899	465 J	1227	896	37.9 J	4383	10.1
BENZO(E)PYRENE	506	210 J	558 J	400	39.9 J	2012	7.01
BENZO(G,H,I)PERYLENE	415	189 J	438	357	13.5	843 J	3.56 J
BENZO(K)FLUORANTHENE	327	116	258 J	189	18.4 J	1398 J	3.98 J
BIPHENYL	4.97 J	3.88	16.8	10.1 J	2.5 J	90.5	2.03 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 02						
	Sediment				Mussel		Lobster
Parameters	**100A**	**200A**	**300A**	**400A**	**300A**	**400A**	**100A**
CHRYSENE	667	285	665	625	38.7 J	5443	15.1
DIBENZO(A,H)ANTHRACENE	123 J	55.6	131	96.1 J	1.6 J	310 J	0.24 J
DIBENZOTHIOPHENE	24.5	14.6	44.8	22.6	1.1 J	251	0.35 J
FLUORANTHENE	1155	414 J	1396 J	860	61.7	9053	20.7
FLUORENE	50.2	47.2	111	53.7	5.6 J	1974 J	1.76 J
INDENO(1,2,3-CD)PYRENE	467 J	229 J	561	419 J	9.8 J	1068 J	3.42 J
NAPHTHALENE	28.4	33.3	155	79.9	11.5 J	122 J	8.48 J
PERYLENE	108 J	101	192	104 J	19.4 J	602 J	4.51 J
PHENANTHRENE	440	269	345	342	10.8	6477	3.43 J
PYRENE	950	367 J	1285 J	818	69.7	6226	18.6
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	0.03 J	0.19 J	0.19 J	0.18 J	0.13 U	2.9	3.9
1,2,4,5-TETRACHLOROBENZENE	0.98 U	0.59 U	2.4	1.6 U	0.76 U	1.4	0.48 U
2,4'-DDD	1.2	1	3	2.3	2	357 J	0.41 U
2,4'-DDE	0.04 J	0.05 J	0.097 U	0.04 J	0.11 J	0.39 U	0.57 UJ
2,4'-DDT	0.32	0.01 J	0.026 U	0.07	1	1.5	0.19 J
4,4'-DDD	0.49	0.61	0.48	1.3	3.1	5.9	0.49 U
4,4'-DDE	0.81	0.21	0.29	1.6	6.5	11	3.9
4,4'-DDT	2.4	0.35	0.17 J	1.1	0.93 J	3.5	0.76 UJ
ALDRIN	0.054 U	0.01 J	0.03 J	0.075 U	0.39 U	0.45 U	0.65 U
ALPHA-BHC	0.16	0.1	0.12 J	0.2	0.31	2.1	0.46 U
ALPHA-CHLORDANE	0.75	0.21	0.52 J	0.75	0.99	2	0.49 U
BETA-BHC	0.37	0.18 U	0.24 U	0.25 U	1.3 U	6.2	0.42 U
CHLORPYRIFOS	0.75 U	0.52 U	0.33 U	0.64 U	2.6 U	2.9 U	4.3 U
CIS-NONACHLOR	0.08	0.08	0.21 J	0.34	1.1	2.3	0.1 J
DELTA-BHC	0.04 U	0.041 U	0.053 U	0.056 U	0.16 U	0.18 U	0.26 U
DIELDRIN	0.02 J	0.21	0.079 U	0.05 J	0.82 J	0.37	1.8 J
ENDOSULFAN II	0.12	0.06 J	0.33	0.16	0.19 J	11	0.49 U
ENDRIN	0.12 U	0.12 U	0.16 U	0.17 U	0.81 U	0.93 U	1.4 U
GAMMA-BHC (LINDANE)	0.21 U	0.22 U	0.28 U	0.3 U	0.08 J	0.03 J	0.41 U
GAMMA-CHLORDANE	0.43	0.07	0.079 U	0.39	0.42	0.36 U	0.52 U
HEPTACHLOR	0.07 J	0.16 U	0.2 U	0.57	0.45 U	0.53	0.74 U
HEPTACHLOR EPOXIDE	0.027 U	0.027 U	0.035 U	0.037 U	0.32 U	0.36 U	0.52 U
HEXACHLOROBENZENE	0.04 U	0.041 U	0.05 J	0.056 U	0.21 J	0.92	0.27 J
MIREX	0.027 U	0.027 U	0.035 U	0.037 U	0.72 U	0.82 U	1.2 U
OXYCHLORDANE	0.09	0.08	0.08	0.07	0.33 U	9.7	0.86
PCB-101/90	0.6	0.91	0.79	3.1	7.7	12	0.42 J
PCB-105	0.33 J	0.37 J	0.25 J	1.4	2.9 J	6.5	1.2 J
PCB-114	0.16 U	0.16 U	0.21 U	0.22 U	1.1 U	1.3 U	1.8 U
PCB-118	0.74	0.95	0.83	3.6	9.2	22	5
PCB-126	0.16 U	0.16 U	0.21 U	0.22 U	1.1 UJ	1.3 U	1.8 U
PCB-128	0.19	0.2	0.053 U	1.1	2	5.3	0.91 J
PCB-138/160	1.3	0.91	0.42 U	4.7	13	21	5.6 U
PCB-149/123	0.84	0.43	0.24	1.9	5.6	14	0.15 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 02						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	400A	300A	400A	100A
PCB-153/132	1.2	0.91	0.2 U	4.3	17	27	7.4 U
PCB-156	0.6	0.35	0.87 J	1.1	1.1 U	1.2 J	1.8 U
PCB-167	0.16 J	0.09 J	3.1	0.38	1.1	6.5	0.55 J
PCB-169	0.03 U	0.16 U	0.01 U	0.04 U	1.1 U	1.3 U	0.05 J
PCB-170/190	10 J	3.7 J	9 J	15 J	0.37 U	53	0.82 U
PCB-18/17	0.08 U	0.081 U	0.11 U	0.11 U	0.48 J	28	0.88 J
PCB-180	0.98	0.48	0.14 U	1.4	7.9 J	12	1.8 U
PCB-187	0.5	0.14 J	0.16 J	1	6	12	2.4
PCB-189	0.15 J	0.09 J	0.18 J	0.36	1.1 U	0.59 J	1.8 U
PCB-195/208	0.34	0.11	0.08 J	0.47	0.91 U	1.1	0.16 J
PCB-201/157/173	0.33	0.27	0.37	0.58	0.31 J	1.1	1.4 U
PCB-206	0.02 J	0.04 J	0.17 J	0.59	0.95 U	1.1 U	0.07 J
PCB-209	0.61	0.17	0.27	1.1	1.2 U	1.4 U	2 U
PCB-28	0.45	0.24	0.24 U	1	0.66 J	3.6	0.05 U
PCB-44	0.2	0.21	0.18 U	0.4	0.82 U	2.5	0.63 J
PCB-52	13	0.59	0.05 J	3.1	2.3 U	5.3	1.2 U
PCB-66	0.2	0.39	0.44	1.3	1.4	5.6	0.81 J
PCB-77	0.14 U	0.03 U	0.01 J	0.55 U	0.23 J	0.53 J	1.8 U
PCB-8/5	0.62	0.24 U	0.2 U	0.36 U	6	46	1.4 J
PCB-81	0.02 J	0.03 J	0.21 U	0.22 U	1.1 U	0.55 J	1.8 U
PENTACHLOROANISOLE	0.39 J	0.07 U	0.04 U	0.15 U	0.89 U	4	0.24 U
PENTACHLOROBENZENE	0.4 U	0.22 U	0.6 U	0.34 U	0.99 U	0.52	2.5 U
TRANS-NONACHLOR	0.31	0.07	0.07 J	0.23	0.94	1.3	0.18 J
Metals (mg/kg)							
ALUMINUM	44541	49863	46164	55986	353	401	3.1 U
ARSENIC	8.56	11.8	9.4	14.8	4.22	5.14	4.13 J
CADMIUM	0.12 J	0.33 J	0.26 J	0.44 J	1.22	1.03	0.0202
CHROMIUM	37.2	51.6	64	86.1	3.79	3.76	0.61
COPPER	13.9 J	29.2 J	12.8 J	28.3 J	8.3 J	6.44 J	31.8
IRON	15229 J	21926 J	18220 J	25988 J	563	695	9.56 J
LEAD	86.1 J	88.6 J	45.2 J	107 J	3.54	5.31	0.15 U
MANGANESE	217	380	401	367	12.6	11.8	3.8
MERCURY	0.0756 U	0.23	0.4	0.28	0.26	0.29	0.74
NICKEL	16.6 J	17.3 J	14.9 J	24.6 J	5.03 U	1.93 U	1.9 U
SILVER	1.98	3.15	3.15	4.15	0.29 U	0.32 U	0.8 J
ZINC	64 J	70.7 J	34.6 J	75.3 J	87.9 J	76.4 J	84.2 J
Miscellaneous Parameters (%)							
% LIPID					4.5	3	1.6
TOTAL ORGANIC CARBON	0.88 J	0.48 J	1.54 J	2 J			

Notes:

RF-2 includes the following samples:

OU4-SD-R02-100A
OU4-SD-R02-200A
OU4-SD-R02-300A
OU4-SD-R02-400A
OU4-MU-R02-300A
OU4-MU-R02-400A
OU4-LJ-R02-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 03						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	400A	300A	400A	100A
Dioxins/Furans (ng/kg)							
1,2,3,4,6,7,8-HPCDD	320 J	4.6 U	84.6 U	147	13.7 J	22.5 UR	11.9 U
1,2,3,4,6,7,8-HPCDF	79.4 J	1.6 U	21.8 U	37.1	24.9 U	22.5 U	11.9 U
1,2,3,4,7,8,9-HPCDF	2.24 J	1.62 UJ	1.12 U	1.44 U	24.9 UJ	22.5 UJ	11.9 U
1,2,3,4,7,8-HXCDD	7.91 U	1.62 UJ	1.12 U	1.44 U	24.9 U	22.5 U	11.9 UJ
1,2,3,4,7,8-HXCDF	7.91 U	1.62 UJ	1.12 U	1.44 U	24.9 U	22.5 U	11.9 U
1,2,3,6,7,8-HXCDD	13 J	1.62 UJ	1.12 U	6.64	24.9 U	22.5 U	11.9 UJ
1,2,3,6,7,8-HXCDF	3.38 J	1.62 UJ	1.12 U	1.66	24.9 U	22.5 U	11.9 U
1,2,3,7,8,9-HXCDD	4.93 J	1.62 UJ	1.12 U	1.44 U	24.9 U	22.5 U	11.9 UJ
1,2,3,7,8,9-HXCDF	7.91 U	1.62 UJ	1.12 U	1.44 U	24.9 U	22.5 U	11.9 U
1,2,3,7,8-PECDD	1.7 J	1.62 UJ	0.8 J	1.44 U	24.9 U	22.5 U	11.9 UJ
1,2,3,7,8-PECDF	2.34 J	1.62 UJ	1.12 U	1.07 J	24.9 U	22.5 U	11.9 U
2,3,4,6,7,8-HXCDF	5.19 J	1.62 UJ	1.12 U	1.44 U	24.9 U	22.5 U	11.9 U
2,3,4,7,8-PECDF	2.84 J	1.62 UJ	1.12 U	1.44 U	24.9 U	22.5 U	11.9 U
2,3,7,8-TCDD	1.58 U	0.32 UJ	0.22 U	0.29 U	4.98 UR	4.5 UR	0.37 J
2,3,7,8-TCDF	6 J	0.32 UJ	1.2	1.43	7.5 J	4.5 U	1.33 R
OCDD	2410 J	47.5 U	945	1437	89.9 J	45 U	23.8 U
OCDF	98.7 J	3.24 UJ	43.7 U	63.5	49.8 U	45 U	0.19 U
TOTAL DIOXINS	3274 J	59 U	1193	1882	104 J	68.2 J	0.37 J
TOTAL FURANS	368 J	4.4 U	104 U	205	7.5 J	39.4 J	1.52 U
TOTAL HPCDD	694 J	10.3 U	203	345	13.7 J	22.5 U	11.9 U
TOTAL HPCDF	170 J	3.4 U	50.9 U	83.6	24.9 U	22.5 U	11.9 U
TOTAL HXCDD	162 J	1.1 J	40.6	93	24.9 U	22.5 U	11.9 U
TOTAL HXCDF	57.8 J	1 J	1.12 U	35.8	24.9 U	21.9 J	11.9 U
TOTAL PECDD	1.7 J	1.62 UJ	0.8 J	3.41	24.9 U	22.5 U	11.9 U
TOTAL PECDF	27.4 J	1.62 UJ	3.5	17.2	24.9 U	22.5 U	11.9 U
TOTAL TCDD	6.56 J	0.32 UJ	4.5	3.38	4.98 U	68.2 J	0.37 J
TOTAL TCDF	13.8 J	0.32 UJ	5.6	5.43	7.5 J	17.5 J	1.33 J
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	8.78	30.2	14.6 J	13.1 J	5.8 J	5.4 J	1.15 J
1-METHYLNAPHTHALENE	13.6 J	18.5 J	26.5 J	10.2 J	8 J	6.3 J	3.4 J
1-METHYLPHENANTHRENE	65.6	161	67.3 J	90.6 J	6.4	7.6	1.5 J
2,6-DIMETHYLNAPHTHALENE	9.69	20.7	13.5 J	9.11 J	5.3 J	4 J	1.53 J
2-METHYLNAPHTHALENE	16.3 J	29.3	27.4 J	14.8 J	11.4 J	8.3 J	4.95 J
ACENAPHTHENE	79.8 J	38.9	49.5 J	27.3 J	5.3 J	7.5 J	0.72 J
ACENAPHTHYLENE	65.1	124 J	43.4 J	87 J	14.6 J	18.6 J	0.67 J
ANTHRACENE	136 J	402	152 J	181 J	24.2	34.8	1.39 J
BENZO(A)ANTHRACENE	700	714 J	308 J	499 J	13.1	17.3	4.94 J
BENZO(A)PYRENE	429 J	838 J	428 J	721 J	9.7	13.8	8.07
BENZO(B)FLUORANTHENE	1281	795	399 J	671 J	26.1 J	27.4 J	7.25
BENZO(E)PYRENE	616	375	186 J	309 J	26.8 J	32.3 J	4.95 J
BENZO(G,H,I)PERYLENE	578	353	156 J	269 J	9.1	12.9	2.8 J
BENZO(K)FLUORANTHENE	318	211	99.9 J	192 J	9.2 J	9.8 J	4.67 J
BIPHENYL	5.27	8.4 J	4.91 J	4.02 J	2.8 J	2 J	1.82 J
CHRYSENE	809	583	282 J	431 J	26.1 J	34.6 J	11.2

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 03						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	400A	300A	400A	100A
DIBENZO(A,H)ANTHRACENE	141	92.9 J	45.7 J	68.5 J	0.3 J	0.9 J	0.07 J
DIBENZOTHIOPHENE	36.3	43.1	25.2 J	19.3 J	1.6 J	1.4 J	0.4 J
FLUORANTHENE	1669	1094	461 J	943 J	51.7	64.5	16.5
FLUORENE	99.8	114	73.9 J	49.8 J	5.9 J	7 J	1.91 J
INDENO(1,2,3-CD)PYRENE	692	461 J	184 J	345 J	5.1 J	7.5 J	2.72 J
NAPHTHALENE	26.3	52.1	37.1 J	28.8 J	14 J	11.3 J	6.15 J
PERYLENE	185	164 J	78.3 J	133 J	15.4 J	19.1 J	4.14 J
PHENANTHRENE	691	670	414 J	367 J	11	13.9	4.11 J
PYRENE	1357	933	448 J	812 J	50.6	60.6	14.3
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	0.64 U	0.12 J	0.05 J	0.46	0.16 U	0.25 U	13
1,2,4,5-TETRACHLOROBENZENE	4.3 U	1.6 U	1.1 U	3.1	0.93 U	0.8 U	0.71 U
2,4'-DDD	5.2 J	2.4	1.4	2.4	1.7	2.3	0.41 U
2,4'-DDE	0.8 J	0.14	0.16	0.081 U	0.24 J	0.17 J	0.58 UJ
2,4'-DDT	0.44 J	0.03 J	0.01 J	0.02 J	0.22 J	0.52	0.53 U
4,4'-DDD	4 J	1.1	0.54	0.71	2.9	4.5	0.5 U
4,4'-DDE	9.7 J	0.6	0.46	0.75	6.8	10	1.8
4,4'-DDT	2.1 J	0.27	0.28	0.44 J	0.77 J	1.5 J	0.77 UJ
ALDRIN	0.82 J	0.02 J	0.04 J	0.12	0.07 J	0.09 J	0.67 U
ALPHA-BHC	0.11 J	0.2	0.08 U	0.15 J	0.38	0.42	0.47 U
ALPHA-CHLORDANE	0.76 J	0.67	0.28	0.33 J	1.1	1.5	0.5 U
BETA-BHC	0.46 UJ	0.24 U	0.21 U	0.2 U	0.83 U	3.2 U	0.43 U
CHLORPYRIFOS	2.8 U	0.99 U	0.61 U	0.28 U	2.7 U	2.7 U	4.3 U
CIS-NONACHLOR	2 J	0.31	0.11	0.22 J	0.86	1.5	0.13 J
DELTA-BHC	0.1 UJ	0.054 U	0.02 J	0.044 U	0.17 U	0.17 U	0.27 U
DIELDRIN	0.15 UJ	0.1	0.01 J	0.066 U	0.85 J	1.1 J	1.4 J
ENDOSULFAN II	2.3 J	0.66	0.095 U	0.64	0.14 J	0.08 J	0.5 U
ENDRIN	0.45 J	0.16 U	0.14 U	0.13 U	0.86 U	0.87 U	1.4 U
GAMMA-BHC (LINDANE)	0.78 J	0.29 U	0.25 U	0.24 U	0.12 J	0.16 J	0.41 U
GAMMA-CHLORDANE	0.38 J	0.13	0.06 J	0.066 U	0.4	0.57	0.53 U
HEPTACHLOR	0.17 J	0.12 J	0.09 J	0.17 U	0.47 U	0.48 U	0.75 U
HEPTACHLOR EPOXIDE	0.068 UJ	0.036 U	0.032 U	0.029 U	0.33 U	0.34 U	0.53 U
HEXACHLOROBENZENE	0.1 UJ	0.054 U	0.047 U	0.03 J	0.24 J	0.19 J	0.15 J
MIREX	0.51 J	0.036 U	0.032 U	0.029 U	0.76 U	0.77 U	1.2 U
OXYCHLORDANE	0.41 J	0.47	0.11	0.05	0.35 U	0.35 U	1.6
PCB-101/90	3.2 J	2	0.51	1.5	7	9.6	0.38 J
PCB-105	2 J	0.94	0.19 J	0.75 J	2.7 J	3.8 J	0.54 J
PCB-114	0.41 UJ	0.21 U	0.19 U	0.18 U	1.2 U	1.2 U	1.8 U
PCB-118	4 J	2.6	0.78	1.3	6.5	11	1.7 J
PCB-126	0.41 UJ	0.21 U	0.19 U	0.18 U	1.2 UJ	1.6 J	1.8 U
PCB-128	3.2 J	0.57	0.13	0.22	1.7	2.6	0.37 J
PCB-138/160	2.6 J	2.1	0.75	1.5	11	17	2.2 U
PCB-149/123	2.5 J	1.3	0.29	0.73	4.7	7.3 U	0.12 J
PCB-153/132	4.6 J	2	0.78	1.3	14	21	0.29 U
PCB-156	1.7 J	0.71	0.46	0.37 J	0.19 J	1.2 U	0.32 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 03						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	400A	300A	400A	100A
PCB-167	1.2 J	0.22	0.04 J	2.3	0.96 J	1.4	1.8 U
PCB-169	0.11 U	0.03 U	0.02 U	0.01 U	1.2 U	0.11 U	1.8 U
PCB-170/190	2.3 UJ	8.9 J	6.1 J	13 J	0.6 U	0.46 U	0.64 U
PCB-18/17	5.4 J	0.27	0.43	0.088 U	0.57 J	1.2 J	4.8 U
PCB-180	2.3 J	1.1	0.53	0.64	7.2 J	11 J	0.81 U
PCB-187	1.3 J	0.46	0.29	0.46	6.3	7.3	1 J
PCB-189	0.45 J	0.29	0.11 J	0.24	1.2 U	1.2 U	1.8 U
PCB-195/208	1.2 J	0.27	0.19	0.27 J	0.97 U	0.97 U	1.5 U
PCB-201/157/173	1.41 J	0.57	0.24	0.49	0.89 U	0.43 J	1.4 U
PCB-206	0.44 J	0.15	0.09	0.28 J	1 U	1 U	1.6 U
PCB-209	0.78 J	0.62	0.4	1	1.3 U	1.3 U	2.1 U
PCB-28	0.95 J	0.59	0.19 J	0.14 U	0.7 J	0.81 J	0.52 U
PCB-44	1.3 J	0.17 J	0.1 J	0.64	0.75 U	0.93 U	0.08 U
PCB-52	5.2 J	1.1	0.49	0.38	1.9 U	2.7 U	1.3 U
PCB-66	1.4 J	0.41	0.19	0.34	1.1	1.2	0.32 J
PCB-77	0.07 J	0.01 U	0.06 U	0.03 J	1.2 U	0.68 J	1.8 U
PCB-8/5	2.4 J	1.9	0.45	0.32 U	3.6	3.9	0.52 J
PCB-81	0.41 UJ	0.02 J	0.19 J	0.18 U	0.14 J	1.2 U	1.8 U
PENTACHLOROANISOLE	0.52 U	0.55 U	0.07 U	0.06 U	0.61 U	1.1 U	0.25 U
PENTACHLOROBENZENE	0.62 U	0.28 U	0.25 U	0.62 U	0.89 U	0.38 U	4.1 U
TRANS-NONACHLOR	1 J	0.28	0.04 J	0.13 J	1.1	1.4	0.22 J
Metals (mg/kg)							
ALUMINUM	41983	46959	48769	44345	280	477	6.9 U
ARSENIC	14.4	11.1	10.2	10.3	4.63	5.27	4.15 J
CADMIUM	0.81	0.33 J	0.23 J	0.24 J	1.51	1.14	0.0332
CHROMIUM	89.3	54.8	60.6	62.4	3.5 U	4.88	0.87
COPPER	24.5	13.7 J	10.5 J	12.5 J	19.8 J	15.4 J	41.6
IRON	20001	18147 J	18435 J	18770 J	382	805	14.8 J
LEAD	82.9	50.7 J	38.4 J	42.2 J	3.95	3.39	0.42 U
MANGANESE	343	299	396	463	9.4	14.1	2.34
MERCURY	0.26	0.13	0.1	0.14	0.29	0.22	0.74
NICKEL	21.5 J	15.5 J	17.2 J	16.4 J	3.53 U	5.4 U	2.12 U
SILVER	2.64	2.82	2.78	3.23	0.33 U	0.33 U	0.72 J
ZINC	90.2	47.8 J	40.6 J	34.6 J	95.8 J	86.4 J	77.1 J
Miscellaneous Parameters (%)							
% LIPID					4.7	.7	2.6
TOTAL ORGANIC CARBON	5.69 J	1.17 J	0.99 J	0.84 J			

Notes:

RF-3 includes the following samples:

OU4-SD-R03-100A
OU4-SD-R03-200A
OU4-SD-R03-300A
OU4-SD-R03-400A
OU4-MU-R03-300A
OU4-MU-R03-400A
OU4-LJ-R03-100A

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 04						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	400A	300A	400A	100A
Dioxins/Furans (ng/kg)							
1,2,3,4,6,7,8-HPCDD	81.6	7.8 U	4.8 U	4.5 U	22.1 UR	21.9 U	4.35 U
1,2,3,4,6,7,8-HPCDF	23.2	2.3 U	1.08 U	0.98 U	22.1 U	21.9 U	2.85 U
1,2,3,4,7,8,9-HPCDF	1.07 J	1.03 U	1.08 U	0.98 U	22.1 UJ	21.9 U	18.7 U
1,2,3,4,7,8-HXCDD	0.86 J	1.03 U	1.08 U	0.98 U	22.1 U	21.9 UJ	18.7 U
1,2,3,4,7,8-HXCDF	1.45 J	1.03 U	1.08 U	0.98 U	22.1 U	21.9 U	18.7 U
1,2,3,6,7,8-HXCDD	3.52	1.03 U	1.08 U	0.98 U	22.1 U	21.9 UJ	18.7 U
1,2,3,6,7,8-HXCDF	0.98 J	1.03 U	1.08 U	0.98 U	22.1 U	21.9 U	18.7 U
1,2,3,7,8,9-HXCDD	3.32	1.03 U	1.08 U	0.98 U	22.1 U	21.9 UJ	18.7 U
1,2,3,7,8,9-HXCDF	0.17 J	1.03 U	1.08 U	0.98 U	22.1 U	21.9 U	18.7 U
1,2,3,7,8-PECDD	0.5 J	1.03 U	1.08 U	0.98 U	22.1 U	21.9 UJ	18.7 U
1,2,3,7,8-PECDF	2.05 U	1.03 U	1.08 U	0.98 U	22.1 U	8.25 J	1.78 U
2,3,4,6,7,8-HXCDF	0.54 J	1.03 U	1.08 U	0.98 U	22.1 U	21.9 U	18.7 U
2,3,4,7,8-PECDF	2.05 U	1.03 U	1.08 U	0.98 U	22.1 U	21.9 U	18.7 U
2,3,7,8-TCDD	0.7	0.21 U	0.22 U	0.2 U	4.42 UR	4.39 U	3.75 U
2,3,7,8-TCDF	1.15	0.21 U	0.2	0.2 U	4.42 U	4.39 U	3.75 U
OCDD	633	78.8 U	42.1 U	34 U	79.4 J	43.9 U	16.1 U
OCDF	33.7	2.06 U	2.2 U	1.96 U	44.2 U	43.9 U	6.51 U
TOTAL DIOXINS	861	97.5 U	55.3 U	44.5 U	137 J	29 J	26.09 J
TOTAL FURANS	116	6.5 U	4.7 U	1.5 U	44.5 J	8.25 U	17.77 J
TOTAL HPCDD	177	17.9 U	10.8 U	10.3 U	22.1 U	21.9 U	9.98 U
TOTAL HPCDF	50.2	4.5 U	1.5 U	1.5 U	22.1 U	21.9 U	2.85 U
TOTAL HXCDD	44.8	1.03 U	1.7	0.98 U	22.1 U	21.9 U	18.7 U
TOTAL HXCDF	24.4	1.8	1.08 U	0.98 U	13.7 J	21.9 U	5.38 U
TOTAL PECDD	0.5 J	1.03 U	1.08 U	0.98 U	22.1 U	21.9 U	18.7 U
TOTAL PECDF	3.95	0.3 J	0.6 J	0.98 U	15.2 J	8.25 J	1.78 U
TOTAL TCDD	5.96 U	0.8	0.8	0.2 J	57.5 J	29 J	3.75 U
TOTAL TCDF	3.39	0.21 U	0.5	0.2 U	15.6 J	4.39 U	1.24 J
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	1.8	0.32	0.4	0.47	3.2 J	3.94 J	1.52 J
1-METHYLNAPHTHALENE	3.34 J	0.69 J	0.65 J	0.81 J	4.5 J	3.21	9.13 J
1-METHYLPHENANTHRENE	7.49	0.89	1.2	1.3	5.2	5.43	0.62 J
2,6-DIMETHYLNAPHTHALENE	3.16	1.34	1.64	0.82 J	3.6 J	4.32 J	1.63 J
2-METHYLNAPHTHALENE	4.66 J	1.11 J	1 J	1.33 J	6.5 J	6.84	10.2 J
ACENAPHTHENE	3.88 J	0.24 J	0.24 J	0.45 J	5.2 J	2.42 J	0.71 J
ACENAPHTHYLENE	16.1	1.84	2.68	2.46	8.3 J	4.77 J	0.64 J
ANTHRACENE	22.4 J	2.35	3.25	3.33	13.6	11.4 J	0.84 J
BENZO(A)ANTHRACENE	53.9	2.82 J	5.49 J	5.65 J	9.3	13.5	1.17 J
BENZO(A)PYRENE	71.7 J	5.01 J	7.68 J	6.86 J	5.4	10.8	1.63 J
BENZO(B)FLUORANTHENE	93	6.31 J	9.11 J	7.43 J	15 J	20.4	2.75 J
BENZO(E)PYRENE	47	3.4	4.47	3.97	16.2 J	17.8	1.8 J
BENZO(G,H,I)PERYLENE	47.1	3.61 U	4.78 U	4.17 U	7.9	9.71 J	0.73 J
BENZO(K)FLUORANTHENE	29.4	1.86	2.62	1.94	4.6 J	8.4 J	2.31 J
BIPHENYL	1.68	0.41 J	0.41 J	0.56 J	1.7 J	2.61 J	1.34 J
CHRYSENE	59.2	4.01	6.73	6.63	17.3 J	22.2	4.83 J
DIBENZO(A,H)ANTHRACENE	10.8	0.59 J	0.91 J	0.72 J	0.6 J	1.3 J	0.08 J

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 04						
	Sediment				Mussel		Lobster
Parameters	100A	200A	300A	400A	300A	400A	100A
DIBENZOTHIOPHENE	2.44	0.27	0.35	0.37	1 J	0.81 J	0.36 J
FLUORANTHENE	102	6.11 J	8.82 J	12.9 J	30.1	32.8	9.78
FLUORENE	6.61	0.75	0.93	0.94	4.3 J	4.44 J	2.15 J
INDENO(1,2,3-CD)PYRENE	55.6	3.62	5.09	4.01	4.3 J	7.02 J	0.73 J
NAPHTHALENE	7.78	1.77 J	1.63 J	1.96 J	8.6 J	4.33 J	9.05 J
PERYLENE	15.4	2.52 J	4.02	2.86 J	10.4 J	7.18 J	1.97 J
PHENANTHRENE	45.8	3.21	3.9	3.89	8	11.1	3.99 J
PYRENE	95.4	6.28 J	8.13 J	11.4 J	26.9	28.5	7.84
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	0.43 U	0.18 U	0.17 U	0.02 J	0.17 U	0.03 J	13
1,2,4,5-TETRACHLOROBENZENE	2.8 U	0.56 U	0.43 U	0.53 U	0.33 U	0.65 J	0.7 U
2,4'-DDD	0.4	0.05 U	0.04 J	0.055 U	1.2	1.6	0.42 U
2,4'-DDE	0.09	0.11	0.08	0.15	0.15 J	0.39	0.59 UJ
2,4'-DDT	0.3	0.08	0.04	0.02	0.27 J	0.7	0.54 U
4,4'-DDD	0.68	0.19	0.14	0.16	1.7	2.1	0.51 U
4,4'-DDE	1.3	0.08	0.1	0.15	5.1	6.5	3.4
4,4'-DDT	0.43	0.01 J	0.031 U	0.035 U	0.56 J	0.51	0.78 UJ
ALDRIN	0.18	0.05 U	0.05 U	0.055 U	0.05 J	0.35 U	0.68 U
ALPHA-BHC	0.03 J	0.04 U	0.06 U	0.03 U	0.27 J	0.25 U	0.48 U
ALPHA-CHLORDANE	0.16	0.1	0.09	0.062 U	0.94	0.74	0.21 J
BETA-BHC	0.2 U	0.17 U	0.17 U	0.19 U	0.98 U	1.5	0.44 U
CHLORPYRIFOS	1.1 U	0.47 U	0.42 U	0.46 U	2.8 U	2.3 U	4.4 U
CIS-NONACHLOR	0.06	0.03	0.02 J	0.01 J	0.56	0.95	0.47 U
DELTA-BHC	0.045 U	0.01 J	0.02 J	0.03 J	0.17 U	0.14 U	0.27 U
DIELDRIN	0.067 U	0.057 U	0.056 U	0.062 U	0.61 J	0.03 J	1.3 J
ENDOSULFAN II	0.28	0.075 U	0.074 U	0.083 U	0.17 J	0.12 J	0.51 U
ENDRIN	0.13 U	0.11 U	0.11 U	0.12 U	0.9 U	0.73 U	1.4 U
GAMMA-BHC (LINDANE)	0.09 J	0.2 U	0.2 U	0.22 U	0.09 J	0.11 J	0.42 U
GAMMA-CHLORDANE	0.02 J	0.057 U	0.02 J	0.02 J	0.26 J	0.25 J	0.54 U
HEPTACHLOR	0.35	0.02 J	0.03 J	0.04 J	0.49 U	0.4 U	0.77 U
HEPTACHLOR EPOXIDE	0.03 U	0.025 U	0.025 U	0.028 U	0.35 U	0.28 U	0.54 U
HEXACHLOROBENZENE	0.045 U	0.038 U	0.037 U	0.041 U	0.1 J	0.17 J	0.25 J
MIREX	0.05	0.025 U	0.025 U	0.028 U	0.79 U	0.64 U	1.2 U
OXYCHLORDANE	0.015 U	0.013 U	0.012 U	0.014 U	0.37 U	0.3 U	0.69
PCB-101/90	0.73	0.2	0.15	0.06	4.8	5	0.48 J
PCB-105	0.28 J	0.02 J	0.02 J	0.02 J	2 J	2.2	1.1 J
PCB-114	0.18 U	0.15 U	0.15 U	0.17 U	1.2 U	0.98 U	1.9 U
PCB-118	0.66	0.05 J	0.06 J	0.05 J	4.5	5	3.9
PCB-126	0.18 U	0.15 U	0.15 U	0.17 U	1.2 UJ	0.98 U	1.9 U
PCB-128	0.42	0.038 U	0.01 J	0.041 U	1.2	1.3	0.68 J
PCB-138/160	0.32 U	0.17 U	0.16 U	0.12 U	7.5	8.4	4.4 U
PCB-149/123	0.72	0.09 J	0.05 J	0.04 J	3.8 U	4.4	0.12 J
PCB-153/132	0.99	0.13 U	0.13 U	0.1 U	9.7 U	10	5.6 U
PCB-156	0.12 J	0.01 J	0.03 J	0.02 J	1.2 U	0.47 J	0.59 J
PCB-167	0.2	0.15 U	0.05 J	0.17 U	0.72 J	0.64 J	0.32 J
PCB-169	0.18 U	0.01 U	0.15 U	0.17 U	0.16 U	0.13 J	1.9 U

TABLE 3-2

SUMMARY OF ROUND 3 ANALYTICAL DATA FOR SEDIMENT, MUSSEL, AND LOBSTER SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 04						
	Sediment				Mussel		Lobster
Parameters	**100A**	**200A**	**300A**	**400A**	**300A**	**400A**	**100A**
PCB-170/190	1 U	0.48 J	0.54 J	0.48 J	0.27 U	0.26 J	0.88 U
PCB-18/17	1.3	0.075 U	0.074 U	0.083 U	0.55 J	2.6 U	4.9 U
PCB-180	0.41	0.07 U	0.09 U	0.06 U	3.4 U	3.9	1.3 U
PCB-187	0.15 J	0.03 J	0.03 J	0.02 J	3.4	3.7	1.6
PCB-189	0.18 U	0.15 U	0.15 U	0.17 U	1.2 U	0.98 U	1.9 U
PCB-195/208	0.16	0.01 J	0.01 J	0.048 U	1 U	0.81 U	0.14 J
PCB-201/157/173	0.09	0.02 U	0.02 U	0.02 U	0.93 U	0.75 U	1.4 U
PCB-206	0.15	0.069 U	0.068 U	0.076 U	1 U	0.85 U	0.12 J
PCB-209	0.3	0.24	0.24	0.07 J	1.4 U	1.1 U	2.1 U
PCB-28	0.35 U	0.06 U	0.17 U	0.19 U	0.43 J	0.55 J	0.5 U
PCB-44	0.53	0.04 J	0.04 J	0.02 J	0.55 U	0.46 J	1.1 U
PCB-52	0.78	0.16	0.11 J	0.19	1.1 U	1.6	1.3 U
PCB-66	0.2	0.11 U	0.11 U	0.12 U	0.65 J	0.64 J	0.53 J
PCB-77	0.01 J	0.01 U	0.02 U	0.01 U	0.31 J	0.98 U	1.9 U
PCB-8/5	1.8	0.1 U	0.11 U	0.03 U	2.8	3.7	0.87 J
PCB-81	0.18 U	0.15 U	0.02 J	0.17 U	1.2 U	0.12 J	1.9 U
PENTACHLOROANISOLE	0.08 U	0.02 U	0.04 U	0.04 U	0.47 U	1.6	0.23 U
PENTACHLOROBENZENE	0.29 U	0.12 U	0.13 U	0.17 U	0.32 U	0.48	2.7 U
TRANS-NONACHLOR	0.78	0.09	0.03 J	0.03	0.75	0.85	0.2 J
Metals (mg/kg)							
ALUMINUM	44211	41040	46199	35399	218	579	3.19 U
ARSENIC	8.7	5.36	6.3	3.32	5.38	5.01	4.11 J
CADMIUM	0.25	0.0532 J	0.0845 J	0.0841 J	1.65	1.26	0.0282
CHROMIUM	51.3	31.5	37	25.3	3.21 U	5.17	0.67
COPPER	8.47	2.54 J	3.01 J	2.1 J	14.5 J	33 J	41.4
IRON	15978	11176 J	14785 J	7086 J	387	808	10.7 J
LEAD	53.6	16.2 J	18.4 J	16.1 J	4.2	5.19	0.66
MANGANESE	316	266	272	277	8.08	15.4	1.66
MERCURY	0.13	0.0798 U	0.0839 U	0.0946 U	0.34	0.28	0.64
NICKEL	10.5 J	11.5 J	20.8 J	9.17 U	1.85 U	2.24 U	1.96 U
SILVER	2.37	1.69	2.03	1.54 U	0.3 U	0.29 U	1.03 J
ZINC	34.8	17.1 U	24 U	14.7 J	87.4 J	105 J	101 J
Miscellaneous Parameters (%)							
% LIPID					3.8	4.9	2.3
TOTAL ORGANIC CARBON	1.82 J	0.21 J	0.19 J	0.15 J			

Notes:

RF-4 includes the following samples:

OU4-SD-R04-100A
OU4-SD-R04-200A
OU4-SD-R04-300A
OU4-SD-R04-400A
OU4-MU-R04-300A
OU4-MU-R04-400A
OU4-LJ-R04-100A

TABLE 3-3

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR THE SEDIMENT SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Monitoring Station 01				Monitoring Station 02			Monitoring Station 03		
	100A	200A	300A	300A-DUP	100A	200A	300A	100A	200A	300A
Alkylated PAHs (ug/kg)										
C1-CHRYSENES	1211 J	288	1661 J	2386	29.8	249	119	370	168	242
C1-DIBENZOTHIOPHENES	112 J	13.5	54.7 J	44	2.45	19.9	8.61	20	15.9	19
C1-FLUORANTHENES/PYRENES	2563 J	317	3364 J	2720	34.9	257	159	537	293	393
C1-FLUORENES	277 U	35.6	249 J	349	4.91 U	38.6	16.5	40.7	21.9	37.3
C1-NAPHTHALENES	265 J	94.6	223 J	140	8.28	74.3 J	22.4	69.2	49.5	65.4
C1-PHENANTHRENES/ANTHRACENES	1549 J	139	932 J	670	19.7	155	76.5	182	111	190
C2-CHRYSENES	423 J	135	769 J	893	13.6	113	42.5	151	68.9	87
C2-DIBENZOTHIOPHENES	78.3 J	17.7	114 J	123	3.24	29	12	32.3	19.5	21.6
C2-FLUORENES	119 J	53.5	285 J	344	6.71	64.7	23.6	56	32.9	41.7
C2-NAPHTHALENES	236 J	89.4	283 J	152 J	8.99	79.4	27.2	67.5	43.1	52.2
C2-PHENANTHRENES/ANTHRACENES	859 J	110	1062 J	1088	13.5	113	48.9	127	69.7	136
C3-CHRYSENES	12 J	7.32	12.9 J	0.27 J	2.3	9.89	5.01	15	8.64	5.69
C3-DIBENZOTHIOPHENES	54.6 J	13.1	140 J	161	2.39	20.3	9.9	38.4	20.2	16
C3-FLUORENES	63.2 U	41.1	315 J	388	6.26 U	53.6	18.4	28.2	18.8	24.2
C3-NAPHTHALENES	235 J	63.3	215 J	146	8.06 U	91.8	21.3	52.3	41.7	56.6
C3-PHENANTHRENES/ANTHRACENES	375 J	64.8	824 J	888	8.96	56.6	41.4	90.4	48.2	80.2
C4-CHRYSENES	8.27 J	8.05	18.2 J	8.31 J	2.93	8.97	13.2	38.2	7.16	4
C4-NAPHTHALENES	127 U	39.8	157 J	130	10.5 U	38.8	22.4	34.7	20.4	26
C4-PHENANTHRENES/ANTHRACENES	133 J	48.7	432 J	415	4.98	34.9	20	78	47.9	41

TABLE 3-3

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR THE SEDIMENT SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 04			Monitoring Station 05				Monitoring Station 06		
Parameter	100A	200A	300A	100A	100A-DUP	200A	300A	100A	200A	300A
Alkylated PAHs (ug/kg)										
C1-CHRYSENES	712	227	93.2	150 J	285 J	246	174	150	342	8.82
C1-DIBENZOTHIOPHENES	46.9	16.1	4.64 U	10 J	20.3 J	17.7	12.6	10.5	22.3	0.96 U
C1-FLUORANTHENES/PYRENES	1002	313	127	169 J	431 J	372	293	255	525	17.7
C1-FLUORENES	64.9	29.7	5.66	18.1 J	36.9 J	34.5	25.2	16.9 U	42.9	1.97
C1-NAPHTHALENES	139	38.8	7.95	32.4 J	63.6 J	64.2	37	27.4	53.9	2.18
C1-PHENANTHRENES/ANTHRACENES	479	134	45.5	89.1 J	171 J	152	117	90.5	201	6.84
C2-CHRYSENES	224	99.9	28.7	52.4	113 J	103	66.5	71.2	142	3.66
C2-DIBENZOTHIOPHENES	51.8	19.6	5.93	14.5 J	31.8 J	25.1	16.3	14.6	32.9	1.39
C2-FLUORENES	75.2	33.4	9.65	20.1 J	54.6 J	45.5	33.1	32.2	46.2	2.9
C2-NAPHTHALENES	161	44.6	11.2	29.2 J	65.3 J	77.7	50	31.8	68.7	3.14
C2-PHENANTHRENES/ANTHRACENES	271	94.3	32.6	65.2 J	137 J	118	91.4	54.2	164	4.52
C3-CHRYSENES	26.8	6.35	2.63	5.22 J	7.54	7.86	5.92	3.85	8.5	1.58
C3-DIBENZOTHIOPHENES	35.1	18.2	4.95	9.76 J	28.9 J	21	12.1	11.5	27.7	1.23
C3-FLUORENES	35.2	20.7	7.6	10.8 J	35.5 J	24.7	15.6	13.9	45.9	0.94 J
C3-NAPHTHALENES	139	53	9.42	23.8 J	71.2 J	73.7	49.8	28.8	67.1	3.49
C3-PHENANTHRENES/ANTHRACENES	133	60.2	15.5	31.4 J	115 J	72.1	49.9	35	107	6.52
C4-CHRYSENES	28.9	5.14	4.83	6.61	7.72	6.44	6.08	6.1	9.2	2.89
C4-NAPHTHALENES	56.5	26.5	6.84	11.2 J	38.8 J	32.2	21.1	17.8	31.6	1.48
C4-PHENANTHRENES/ANTHRACENES	106	44.4	17.7	14.8 J	71.5 J	66	15.9	43.9	73.9	4.04

TABLE 3-3

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR THE SEDIMENT SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 07			Monitoring Station 08				Monitoring Station 09			
Parameter	100A	200A	300A	100A	100A-DUP	200A	300A	100A	200A	300A	300A-DUP
Alkylated PAHs (ug/kg)											
C1-CHRYSENES	120	14.1	233	294 J	164 J	243	47.9	16.7	213	365	476
C1-DIBENZOTHIOPHENES	7.02	25.4	18.6	18.2	15.3	19.7	3.19	3.83	12.1	25	29.7
C1-FLUORANTHENES/PYRENES	169	182	371	427 J	221 J	412	69.8	16.3	285	542	655
C1-FLUORENES	13.2 U	43.6	35.1	32	30.6	34.2	4.42 U	10.1	24.5	45.5	57.1
C1-NAPHTHALENES	15	45.3	40.2	74.5	59.7	54.9	11 J	98.3	44 J	82.1	86.1
C1-PHENANTHRENES/ANTHRACENES	68.4	161	165	169	136	188	28.8	21.9	114	231	287
C2-CHRYSENES	49.2	18.8	102	114	73.6	95.5	24.4	9.72	88.7	134	196
C2-DIBENZOTHIOPHENES	10.3	33	28.6	23.6	17.2	25.2	4.78	3.67	15.1	30.5	37
C2-FLUORENES	20.9	60.5	54	40.5	46.7	36.8	8.23	14.7	34.9	71.6	59.2
C2-NAPHTHALENES	20.9	32.4	43.6	84.3	63.3	57.5	9.79	102	43.9	84.3	53.6
C2-PHENANTHRENES/ANTHRACENES	48.2	145	152	150 J	71.9 J	137	15.6	14	78.8	152	187
C3-CHRYSENES	3.14	1.33 J	7.84	8.91 J	5.15 J	6.45	4.31	0.77 J	7.74	10	11.6
C3-DIBENZOTHIOPHENES	9.83	25.5	24	27.1 J	10.6 J	31.4	6.78	1.77	14.3	27.7	30.1
C3-FLUORENES	13.9	59.2	25.4	45.7	45.3	21.1	5.94 U	11	24	21 J	49.9 J
C3-NAPHTHALENES	20.1	33.4	64.1	71.7	57.9	65.5	12.4	75.6	39.3	82.4	77.1
C3-PHENANTHRENES/ANTHRACENES	29.6	96.7	93.8	196 J	39.8 J	67.5	10.3	5.64	43.8	85.6	103
C4-CHRYSENES	2.28	6.91	7.75	8.61 J	5.06 J	10	1.68	0.44 J	5.88	11.6	13.1
C4-NAPHTHALENES	10.6 U	18.8	31.6	51.6	31.4	24.2	9.31 U	22.3	27.5	34.7	39.1
C4-PHENANTHRENES/ANTHRACENES	19.7	145	45.9	110 J	19.6 J	37.7	11.4	3.03	24.5	63.6	102

TABLE 3-3

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR THE SEDIMENT SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 10				Monitoring Station 11	Monitoring Station 12			
Parameter	100A	100A-DUP	200A	300A	300A	100A	200A	200A-DUP	300A
Alkylated PAHs (ug/kg)									
C1-CHRYSENES	83.2	80.9	439	349 J	75.8	2119	1288	1606	238
C1-DIBENZOTHIOPHENES	6.36	8.34	31.3	16.3	13.2	180	116	117	23.9
C1-FLUORANTHENES/PYRENES	76.5	111	701	437	105	3584	1931	2007	308
C1-FLUORENES	11.4 U	12.8	100	35.2	18.7	423	318	269	52.8
C1-NAPHTHALENES	29.6 J	24.4	55.6	47.5 J	55.9	568	272	269	61.3
C1-PHENANTHRENES/ANTHRACENES	52	71.6	386	142	84	1901	1107	1231	197
C2-CHRYSENES	52.3	67.9	137	144 J	33.3	489	362	404	106
C2-DIBENZOTHIOPHENES	6.84	9.76	30.9	20.1	16.2	101	52.6	57.4	25.9
C2-FLUORENES	15.3	19	76.6	36.3	32.7	303	122	180	62.1
C2-NAPHTHALENES	33.7	28.6	128	58.9	61.5	465	164	252	71.3
C2-PHENANTHRENES/ANTHRACENES	27.7	41.1	208	104	54.8	730	465	566	104
C3-CHRYSENES	10.8	8.77	7.02	8.31 J	2	44.4 J	16.8 J	9.14 J	1.73
C3-DIBENZOTHIOPHENES	4.61	6.57	18.1	17.2	11.2	76.4	37.4 J	37	21.2
C3-FLUORENES	13.6	20.5	45.3	36.1	27.3	293	77.3 J	155 J	50.3
C3-NAPHTHALENES	31.9	27.2	178	54.4	68.4	284	114	129	58.8
C3-PHENANTHRENES/ANTHRACENES	14.5	20.6	85.3	62.1	34.9	292	183	209	62.1
C4-CHRYSENES	3.48	2.51	4.47	6.06 J	0.71 J	45.4 J	4.82 J	109 J	0.49 J
C4-NAPHTHALENES	13.1	13.6	89.8	35	48.4	84.5	47.5	60.1	30.2
C4-PHENANTHRENES/ANTHRACENES	10.6	9.24	51.3	57.4	19.9	88.5	47 J	67	36.3

TABLE 3-3

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR THE SEDIMENT SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 13			Monitoring Station 14			Reference Station 01			
Parameter	100A	200A	300A	100A	200A	300A	100A	200A	300A	400A
Alkylated PAHs (ug/kg)										
C1-CHRYSENES	842 J	519	475	318	1018	263	347	13.5	7.28	75.8
C1-DIBENZOTHIOPHENES	158 J	20.4	28.8	20.5	39.5	34.8	29.6	1.43	0.85	4.78 U
C1-FLUORANTHENES/PYRENES	2502 J	664	723	462	1192	502	586	13.1	11.4	113
C1-FLUORENES	447 J	41.5	61.8	36.3	191	94.3	40.6	2.74	2.3	7.57
C1-NAPHTHALENES	52 J	67.7 J	61.7 J	54.7 J	657 J	57	49.1	4.2	2.61	12.1
C1-PHENANTHRENES/ANTHRACENES	1690 J	190	47.2	180	1463	331	191	9.42	8.07	36.7
C2-CHRYSENES	229 J	190	164	126	404	122	105	5.29	2.46	28.1
C2-DIBENZOTHIOPHENES	113 J	37.4	62.4	26.9	52.4	43.7	50.9	2.17	0.98	8.36
C2-FLUORENES	185 J	44.4	81.4	59.4	190	90.2	47.8	9.66	5.51	11.8
C2-NAPHTHALENES	132 J	85.6	76.3	59.4	492	93.1	43.7	5	3.31	14.2
C2-PHENANTHRENES/ANTHRACENES	773 J	159	173	126	869	225	150	7.07	4.46	36.8
C3-CHRYSENES	7.47 J	10.1	9.74	8.05	15	1.79 J	6.21	0.06 J	0.02 J	2.29
C3-DIBENZOTHIOPHENES	65.7 J	43.7	177	20.4	38.9	48.2	31.1	1.38	0.49 J	6.53
C3-FLUORENES	166 J	60.6	120	41.4	85	59.1	27.2	5.18	2.19	9.08
C3-NAPHTHALENES	228 J	80.1	101	48.1	291	98.9	51.1	4.68	4.06	14.1
C3-PHENANTHRENES/ANTHRACENES	290 J	115	130	110	678	114	87.7	3.96	1.86	24.4
C4-CHRYSENES	9.74 J	3.91	12.2	6.85	10.4	4.78	12.8	0.04 J	0.01 J	1.62
C4-NAPHTHALENES	136 J	61.8	74.3	21	264	59.5	22.9	3.59	4.13	7.72
C4-PHENANTHRENES/ANTHRACENES	152 J	89.9	121	95.9	220	65.6	48	2.06	0.94	13.4

TABLE 3-3

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR THE SEDIMENT SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 02				Reference Station 03				Reference Station 04			
Parameter	100A	200A	300A	400A	100A	200A	300A	400A	100A	200A	300A	400A
Alkylated PAHs (ug/kg)												
C1-CHRYSENES	369	158	524	293	388	327	113	5.77	39.6	2.19	4.48	2.98
C1-DIBENZOTHIOPHENES	31.8	16.4	47.8	32.3	24.1	44.7	22.7	28.7	3.3 U	0.42 J	0.49 J	0.54 J
C1-FLUORANTHENES/PYRENES	439	188	822	461	196	486	231	111	57.6	2.62	5.66	5.1
C1-FLUORENES	78.7	40.4	88.3	73.4	47.9	142	72.4	53.2	6.89	1.27	2.17	2.06
C1-NAPHTHALENES	44.2	24.9	110	88.9	29.9	47.8	53.9	25	8	1.8	1.65	2.14 J
C1-PHENANTHRENES/ANTHRACENES	276	148	312	270	243	422	214	275	26.5	2.34	3.47	3.49
C2-CHRYSENES	166	64.2	189	177	108	143	91.3	0.19 J	15.9	1.37	1.89	1.11
C2-DIBENZOTHIOPHENES	41.7	18.9	99.1	45.6	21.6	55.8	20.2	36.1	3.73	0.58	0.99	0.84
C2-FLUORENES	55.1	44.5	114	58.9	46	115	53.9	75	12.2	3.61	3.94	3.23
C2-NAPHTHALENES	61.3	33.7	115	76	43.2	79.7	69.2	31.7	8.34	3.39	3.65	3.5
C2-PHENANTHRENES/ANTHRACENES	195	87.9	320	222	141	313	123	211	18.6	2.15	3.78	3.36
C3-CHRYSENES	0.81 J	0.05 J	6.03	0.51 J	10.8	0.18 J	2.85	0.87 J	2.25	0.97 U	0.01 J	0.01 J
C3-DIBENZOTHIOPHENES	34.5	8.25	96	31.5	15.9	24.7	11.5	22.8	2.79	0.39 J	0.79	0.81
C3-FLUORENES	66.6	36.8	126	58	27.2	80.1	38.6	58	4.9	1.96	2.26	3.23
C3-NAPHTHALENES	58	36.7	102	82	44.2	149	77.1	48.9	7.87	2.16	1.88	3.17
C3-PHENANTHRENES/ANTHRACENES	114	37.9	228	162	63.6	190	56.1	130	11.1	0.95	2.04	1.62
C4-CHRYSENES	10.2	1.6	7.45	4.23	12.1	5.42	2.66	6.2	1.15 J	0.01 J	0.01 J	0.02 J
C4-NAPHTHALENES	43.1	21.3	65.2	48.4	18.9	79.8	37.9	38.8	6.25	0.85	1.5	1
C4-PHENANTHRENES/ANTHRACENES	39.7	15.1	74.5	46	160	61.6	15	37.7	10.4	0.02 J	0.88	0.83 J

Notes:
- This table includes the following monitoring station samples:
  - -OU4-SD-(M01 through M10 and M12 through M14)-(100A through 300A)
  - -OU4-SD-M11-300A
  - -OU4-SD-M01-300A-D
  - -OU4-SD-M05-100A-D
  - -OU4-SD-M08-100A-D
  - -OU4-SD-M09-300A-D
  - -OU4-SD-M10-100A-D
  - -OU4-SD-M12-200A-D
- This table includes the following reference station samples:
  - -OU4-SD-(R01 through R04)-(100A through 400A)

TABLE 3-4a

DESCRIPTIVE STATISTICS OF THE ROUND 3 SEDIMENT DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
Dioxins/Furans (ng/kg)							
1,2,3,4,6,7,8-HPCDD	12/16	7.62	370	67	OU4-SD-M09-300A-D	97	1.44
1,2,3,4,6,7,8-HPCDF	10/16	2.48	116	20	OU4-SD-M09-300A-D	21	1.08
1,2,3,4,7,8,9-HPCDF	10/16	0.08	6.9	1.80	OU4-SD-M11-300A	1.92	1.07
1,2,3,4,7,8-HXCDD	9/16	0.12	5.43	1.24	OU4-SD-M09-300A-D	1.12	0.91
1,2,3,4,7,8-HXCDF	11/16	0.11	9.06	2.12	OU4-SD-M09-300A-D	2.28	1.07
1,2,3,6,7,8-HXCDD	12/16	0.28	17.7	3.85	OU4-SD-M09-300A-D	4.04	1.05
1,2,3,6,7,8-HXCDF	9/16	0.14	33.2	3.79	OU4-SD-M11-300A	8.04	2.12
1,2,3,7,8,9-HXCDD	12/16	0.12	11	2.49	OU4-SD-M09-300A-D	2.67	1.07
1,2,3,7,8,9-HXCDF	3/16	0.19	1.12	0.71	OU4-SD-M12-200A-D	0.27	0.38
1,2,3,7,8-PECDD	7/16	0.06	5.81	0.80	OU4-SD-M09-300A-D	0.82	1.02
1,2,3,7,8-PECDF	6/16	2.1	17.8	2.05	OU4-SD-M11-300A	4.29	2.09
2,3,4,6,7,8-HXCDF	11/16	0.12	39.4	4.33	OU4-SD-M11-300A	9.63	2.23
2,3,4,7,8-PECDF	6/16	0.14	41.3	4.01	OU4-SD-M11-300A	10	2.52
2,3,7,8-TCDD	6/16	0.07	1.81	0.25	OU4-SD-M09-300A-D	0.27	1.07
2,3,7,8-TCDF	12/16	0.23	17.5	2.22	OU4-SD-M11-300A	4.32	1.94
OCDD	12/16	64.3	3173	573	OU4-SD-M12-100A	837	1.46
OCDF	10/16	3.98	130	25	OU4-SD-M09-300A-D	27	1.09
TOTAL DIOXINS	12/16	85.1	4306	797	OU4-SD-M12-100A	1,139	1.43
TOTAL FURANS	13/16	8.48	947	179	OU4-SD-M11-300A	259	1.45
TOTAL HPCDD	12/16	19.2	1029	178	OU4-SD-M12-100A	265	1.49
TOTAL HPCDF	13/16	4.49	246	53	OU4-SD-M09-300A-D	66	1.25
TOTAL HXCDD	16/16	0.5	228	40	OU4-SD-M09-300A-D	39	0.98
TOTAL HXCDF	16/16	0.57	166	37	OU4-SD-M11-300A	46	1.26
TOTAL PECDD	8/16	0.06	25.1	2.64	OU4-SD-M09-300A-D	5.60	2.12
TOTAL PECDF	12/16	1.3	296	31	OU4-SD-M11-300A	72	2.29
TOTAL TCDD	8/16	1	31	3.33	OU4-SD-M09-300A-D	4.59	1.38
TOTAL TCDF	16/16	0.23	286	30	OU4-SD-M11-300A	71	2.34
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	40/40	0.6	65.4	17	OU4-SD-M13-100A	16	0.98
1-METHYLNAPHTHALENE	40/40	0.85	304	39	OU4-SD-M14-200A	61	1.56
1-METHYLPHENANTHRENE	40/40	1.43	1257	117	OU4-SD-M14-200A	225	1.92
2,6-DIMETHYLNAPHTHALENE	40/40	0.68	113	23	OU4-SD-M12-100A	23	0.99
2-METHYLNAPHTHALENE	40/40	1.33	353	54	OU4-SD-M14-200A	73	1.34
ACENAPHTHENE	40/40	0.56	2561	166	OU4-SD-M12-100A	466	2.80
ACENAPHTHYLENE	40/40	4.58	453	106	OU4-SD-M01-300A-D	87	0.82
ANTHRACENE	40/40	5.55	2205	322	OU4-SD-M12-100A	448	1.39
BENZO(A)ANTHRACENE	40/40	10.9	5833	670	OU4-SD-M12-100A	1,065	1.59
BENZO(A)PYRENE	40/40	16.3	8467	683	OU4-SD-M12-100A	1,505	2.20

TABLE 3-4a

DESCRIPTIVE STATISTICS OF THE ROUND 3 SEDIMENT DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
BENZO(B)FLUORANTHENE	40/40	15.8	7235	897	OU4-SD-M12-100A	1,284	1.43
BENZO(E)PYRENE	40/40	10.4	3370	475	OU4-SD-M12-100A	636	1.34
BENZO(G,H,I)PERYLENE	40/40	11	3248	448	OU4-SD-M12-100A	597	1.33
BENZO(K)FLUORANTHENE	40/40	6.69	2332	291	OU4-SD-M12-100A	435	1.50
BIPHENYL	40/40	0.75	66.8	11	OU4-SD-M12-100A	13	1.17
C1-CHRYSENES	40/40	8.82	2386	415	OU4-SD-M01-300A-D	498	1.20
C1-DIBENZOTHIOPHENES	38/40	2.45	180	31	OU4-SD-M12-100A	40	1.30
C1-FLUORANTHENES/PYRENES	40/40	16.3	3584	662	OU4-SD-M12-100A	853	1.29
C1-FLUORENES	35/40	1.97	447	73	OU4-SD-M13-100A	108	1.48
C1-NAPHTHALENES	40/40	2.18	657	94	OU4-SD-M14-200A	134	1.43
C1-PHENANTHRENES/ANTHRACENES	40/40	6.84	1901	339	OU4-SD-M12-100A	493	1.45
C2-CHRYSENES	40/40	3.66	893	148	OU4-SD-M01-300A-D	159	1.07
C2-DIBENZOTHIOPHENES	40/40	1.39	123	32	OU4-SD-M01-300A-D	28	0.87
C2-FLUORENES	40/40	2.9	344	67	OU4-SD-M01-300A-D	70	1.04
C2-NAPHTHALENES	40/40	3.14	492	93	OU4-SD-M14-200A	105	1.12
C2-PHENANTHRENES/ANTHRACENES	40/40	4.52	1088	211	OU4-SD-M01-300A-D	267	1.27
C3-CHRYSENES	40/40	0.27	44.4	8.25	OU4-SD-M12-100A	7.57	0.92
C3-DIBENZOTHIOPHENES	40/40	1.23	177	30	OU4-SD-M13-300A	35	1.16
C3-FLUORENES	37/40	0.94	388	53	OU4-SD-M01-300A-D	71	1.35
C3-NAPHTHALENES	39/40	3.49	291	83	OU4-SD-M14-200A	72	0.87
C3-PHENANTHRENES/ANTHRACENES	40/40	5.64	888	123	OU4-SD-M01-300A-D	170	1.38
C4-CHRYSENES	40/40	0.44	109	10	OU4-SD-M12-200A-D	12	1.19
C4-NAPHTHALENES	36/40	1.48	264	45	OU4-SD-M14-200A	47	1.06
C4-PHENANTHRENES/ANTHRACENES	40/40	3.03	432	69	OU4-SD-M01-300A	74	1.08
CHRYSENE	40/40	11.6	6585	698	OU4-SD-M12-100A	1,141	1.63
DIBENZO(A,H)ANTHRACENE	40/40	2.12	790	111	OU4-SD-M12-100A	146	1.31
DIBENZOTHIOPHENE	40/40	0.59	481	46	OU4-SD-M12-100A	95	2.09
FLUORANTHENE	40/40	20.4	13837	1,489	OU4-SD-M12-100A	2,770	1.86
FLUORENE	40/40	1.41	2434	175	OU4-SD-M12-100A	431	2.46
INDENO(1,2,3-CD)PYRENE	40/40	10.9	3740	450	OU4-SD-M12-100A	658	1.46
NAPHTHALENE	40/40	2.14	582	83	OU4-SD-M12-100A	113	1.36
PERYLENE	40/40	3.38	1016	153	OU4-SD-M12-100A	193	1.26
PHENANTHRENE	40/40	7.73	9952	896	OU4-SD-M12-100A	1,952	2.18
PYRENE	39/40	17.6	11420	1,297	OU4-SD-M12-100A	2,226	1.72

TABLE 3-4a

DESCRIPTIVE STATISTICS OF THE ROUND 3 SEDIMENT DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	9/40	0.01	0.93	0.15	OU4-SD-M13-300A	0.20	1.27
1,2,4,5-TETRACHLOROBENZENE	13/40	0.42	2.8	0.65	OU4-SD-M12-200A-D	0.43	0.67
2,4'-DDD	40/40	0.09	43	5.07	OU4-SD-M08-100A-D	6.47	1.28
2,4'-DDE	29/40	0.03	2.2	0.27	OU4-SD-M08-100A-D	0.39	1.46
2,4'-DDT	40/40	0.03	23	2.45	OU4-SD-M04-100A	5.60	2.28
4,4'-DDD	40/40	0.13	105	10	OU4-SD-M08-100A-D	18	1.68
4,4'-DDE	40/40	0.29	114	6.46	OU4-SD-M04-300A	18.12	2.80
4,4'-DDT	40/40	0.03	104	14	OU4-SD-M04-100A	27	1.95
ALDRIN	13/40	0.01	0.07	0.04	OU4-SD-M08-200A	0.01	0.42
ALPHA-BHC	38/40	0.02	0.32	0.09	OU4-SD-M14-300A	0.07	0.80
ALPHA-CHLORDANE	38/40	0.06	6.1	0.86	OU4-SD-M10-100A-D	1.11	1.30
BETA-BHC	20/40	0.08	1.8	0.40	OU4-SD-M01-100A, OU4-SD-M13-200A	0.48	1.19
CHLORPYRIFOS	1/40	4.2	4.2	0.41	OU4-SD-M09-300A-D	0.45	1.09
CIS-NONACHLOR	40/40	0.03	1.4	0.32	OU4-SD-M01-300A-D	0.27	0.85
DELTA-BHC	21/40	0.01	0.21	0.05	OU4-SD-M09-300A-D	0.04	0.84
DIELDRIN	29/40	0.01	32	1.52	OU4-SD-M01-200A	5.41	3.55
ENDOSULFAN II	40/40	0.01	5.3	0.86	OU4-SD-M01-300A	0.86	1.00
ENDRIN	3/40	0.14	0.63	0.11	OU4-SD-M01-200A	0.10	0.92
GAMMA-BHC (LINDANE)	10/40	0.06	0.43	0.16	OU4-SD-M01-300A	0.06	0.41
GAMMA-CHLORDANE	27/40	0.03	6.2	0.57	OU4-SD-M10-100A-D	1.19	2.08
HEPTACHLOR	14/40	0.04	0.97	0.18	OU4-SD-M03-100A	0.19	1.04
HEPTACHLOR EPOXIDE	2/40	0.01	0.05	0.02	OU4-SD-M09-100A	0.01	0.39
HEXACHLOROBENZENE	30/40	0.01	8.5	0.31	OU4-SD-M03-100A	1.33	4.32
MIREX	4/40	0.02	0.16	0.02	OU4-SD-M04-100A	0.02	0.98
OXYCHLORDANE	30/40	0.02	0.82	0.11	OU4-SD-M01-300A	0.15	1.34
PCB-101/90	40/40	0.09	41	3.20	OU4-SD-M08-100A	4.63	1.45
PCB-105	40/40	0.1	22	1.38	OU4-SD-M08-100A	1.98	1.43
PCB-118	40/40	0.16	32	2.41	OU4-SD-M08-100A	3.25	1.34
PCB-126	4/40	0.15	6.5	0.37	OU4-SD-M04-100A	1.16	3.10
PCB-128	40/40	0.05	9.2	0.91	OU4-SD-M08-100A	0.97	1.06
PCB-138/160	39/40	0.44	39	5.51	OU4-SD-M08-100A	6.53	1.18
PCB-149/123	40/40	0.18	20	3.31	OU4-SD-M03-100A	3.81	1.15
PCB-153/132	39/40	0.42	35	5.63	OU4-SD-M08-100A	6.70	1.19
PCB-156	40/40	0.11	9.9	1.29	OU4-SD-M12-100A	1.68	1.30
PCB-167	40/40	0.02	9.1	1.28	OU4-SD-M01-300A	1.41	1.10
PCB-169	1/40	0.4	0.4	0.05	OU4-SD-M05-100A	0.05	1.14

TABLE 3-4a

DESCRIPTIVE STATISTICS OF THE ROUND 3 SEDIMENT DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
PCB-170/190	34/40	0.17	98	13	OU4-SD-M12-100A	20	1.54
PCB-18/17	31/40	0.03	2.7	0.47	OU4-SD-M08-100A-D	0.60	1.26
PCB-180	40/40	0.25	26	4.10	OU4-SD-M03-100A	5.19	1.26
PCB-187	39/40	0.17	19	3.01	OU4-SD-M03-100A	3.99	1.33
PCB-189	39/40	0.01	1.5	0.35	OU4-SD-M01-300A	0.27	0.78
PCB-195/208	40/40	0.04	6.4	1.41	OU4-SD-M12-100A	1.63	1.16
PCB-201/157/173	40/40	0.01	4.1	0.73	OU4-SD-M12-100A	0.82	1.12
PCB-206	39/40	0.08	15	2.33	OU4-SD-M08-100A	3.24	1.39
PCB-209	40/40	0.03	34	2.19	OU4-SD-M12-100A	5.45	2.49
PCB-28	34/40	0.02	4.3	0.81	OU4-SD-M12-100A	0.89	1.09
PCB-44	40/40	0.01	9.7	0.77	OU4-SD-M08-100A	1.09	1.42
PCB-52	39/40	0.12	27	1.80	OU4-SD-M08-100A	2.63	1.47
PCB-66	39/40	0.04	7.8	0.95	OU4-SD-M12-100A	1.36	1.43
PCB-77	15/40	0.01	0.15	0.06	OU4-SD-M04-100A	0.06	1.10
PCB-8/5	34/40	0.05	7.8	0.74	OU4-SD-M12-100A	1.26	1.70
PCB-81	19/40	0.01	3.6	0.35	OU4-SD-M04-100A	0.76	2.19
PENTACHLOROANISOLE	4/40	0.17	0.35	0.07	OU4-SD-M11-300A	0.06	0.85
TRANS-NONACHLOR	38/40	0.01	2.7	0.32	OU4-SD-M10-100A-D	0.47	1.49
Inorganics (mg/kg)							
ALUMINUM	40/40	34560	62766	50,465	OU4-SD-M05-100A	6,876	0.14
ARSENIC	40/40	7.97	27.6	15.04	OU4-SD-M04-100A	3.82	0.25
CADMIUM	40/40	0.10	0.91	0.44	OU4-SD-M04-100A	0.21	0.46
CHROMIUM	40/40	38.6	155	85	OU4-SD-M08-300A	28	0.33
COPPER	40/40	12.70	20507.00	679	OU4-SD-M04-100A	3,237	4.77
IRON	40/40	14164	89742	30,990	OU4-SD-M04-100A	14,874	0.48
LEAD	40/40	25.90	1265.00	150	OU4-SD-M11-300A	220	1.47
MANGANESE	40/40	282	1503	462	OU4-SD-M01-200A	235	0.51
MERCURY	33/40	0.0898	2.41	0.35	OU4-SD-M04-100A	0.41	1.16
NICKEL	40/40	12.90	197.00	37	OU4-SD-M04-100A	36	0.97
SILVER	40/40	2.21	8.11	3.84	OU4-SD-M04-100A	1.09	0.28
ZINC	40/40	28.50	2633.00	255	OU4-SD-M04-100A	480	1.88
Total Organic Carbon (%)							
TOTAL ORGANIC CARBON	40/40	0.2	4.64	1.58	OU4-SD-M14-100A	0.98	0.62

Notes:
- The mean, standard deviation, and coefficient of variation were calculated using 1/2 the detection limit for non-detects and the average of duplicate samples.
- The sample and duplicate were counted as two separate samples when determining the minimum and maximum detected concentrations, but were only counted as one sample when determining the frequency of detection.
- This table includes the following monitoring station samples:
  -OU4-SD-(M01 through M10 and M12 through M14)-(100A through 300A)

TABLE 3-4a

DESCRIPTIVE STATISTICS OF THE ROUND 3 SEDIMENT DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
-OU4-SD-M11-300A	-OU4-SD-M09-300A-D						
-OU4-SD-M01-300A-D	-OU4-SD-M10-100A-D						
-OU4-SD-M05-100A-D	-OU4-SD-M12-200B-D						
-OU4-SD-M08-100A-D							

TABLE 3-4b

DESCRIPTIVE STATISTICS OF THE ROUND 3 SEDIMENT DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
Dioxins/Furans (ng/kg)							
1,2,3,4,6,7,8-HPCDD	9/16	4	320	46	OU4-SD-R03-100A	83	1.78
1,2,3,4,6,7,8-HPCDF	9/16	1.28	79.4	12	OU4-SD-R03-100A	21	1.70
1,2,3,4,7,8,9-HPCDF	5/16	0.09	2.24	0.71	OU4-SD-R03-100A	0.47	0.66
1,2,3,4,7,8-HXCDD	3/16	0.45	0.86	0.85	OU4-SD-R04-100A	0.85	1.00
1,2,3,4,7,8-HXCDF	2/16	0.66	1.45	0.91	OU4-SD-R04-100A	0.86	0.94
1,2,3,6,7,8-HXCDD	6/16	0.68	13	2.11	OU4-SD-R03-100A	3.33	1.58
1,2,3,6,7,8-HXCDF	5/16	0.4	3.38	0.85	OU4-SD-R03-100A	0.75	0.88
1,2,3,7,8,9-HXCDD	5/16	0.83	4.93	1.16	OU4-SD-R03-100A	1.24	1.07
1,2,3,7,8,9-HXCDF	2/16	0.08	0.17	0.79	OU4-SD-R04-100A	0.88	1.12
1,2,3,7,8-PECDD	4/16	0.35	1.7	0.70	OU4-SD-R03-100A	0.33	0.48
1,2,3,7,8-PECDF	4/16	0.94	2.34	0.79	OU4-SD-R03-100A	0.51	0.65
2,3,4,6,7,8-HXCDF	3/16	0.54	5.19	0.94	OU4-SD-R03-100A	1.15	1.22
2,3,4,7,8-PECDF	2/16	1.23	2.84	0.77	OU4-SD-R03-100A	0.62	0.80
2,3,7,8-TCDD	2/16	0.26	0.7	0.22	OU4-SD-R04-100A	0.21	0.99
2,3,7,8-TCDF	8/16	0.2	6	0.83	OU4-SD-R03-100A	1.47	1.76
OCDD	10/16	27.2	2410	440	OU4-SD-R03-100A	668	1.52
OCDF	9/16	2.14	98.7	17	OU4-SD-R03-100A	28	1.62
TOTAL DIOXINS	10/16	36	3274	579	OU4-SD-R03-100A	895	1.54
TOTAL FURANS	9/16	4.1	368	60	OU4-SD-R03-100A	99	1.66
TOTAL HPCDD	10/16	8.79	694	112	OU4-SD-R03-100A	183	1.63
TOTAL HPCDF	9/16	1.28	170	26	OU4-SD-R03-100A	45	1.75
TOTAL HXCDD	13/16	1.1	162	25	OU4-SD-R03-100A	44	1.73
TOTAL HXCDF	12/16	0.68	57.8	11	OU4-SD-R03-100A	16	1.53
TOTAL PECDD	5/16	0.5	3.41	0.96	OU4-SD-R03-400A	0.77	0.81
TOTAL PECDF	11/16	0.3	27.4	4.77	OU4-SD-R03-100A	7.32	1.53
TOTAL TCDD	8/16	0.2	6.56	1.62	OU4-SD-R03-100A	1.93	1.19
TOTAL TCDF	10/16	0.24	13.8	2.81	OU4-SD-R03-100A	3.62	1.29
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	16/16	0.32	30.2	8.61	OU4-SD-R03-200A	8.42	0.98
1-METHYLNAPHTHALENE	16/16	0.65	35.7	12	OU4-SD-R02-300A	12	0.97
1-METHYLPHENANTHRENE	16/16	0.89	161	51	OU4-SD-R03-200A	49	0.97

TABLE 3-4b

DESCRIPTIVE STATISTICS OF THE ROUND 3 SEDIMENT DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
2,6-DIMETHYLNAPHTHALENE	16/16	0.82	28.4	9.19	OU4-SD-R02-300A	8.28	0.90
2-METHYLNAPHTHALENE	16/16	1	73.9	19	OU4-SD-R02-300A	21	1.09
ACENAPHTHENE	16/16	0.24	79.8	20	OU4-SD-R03-100A	22	1.10
ACENAPHTHYLENE	16/16	1.84	180	70	OU4-SD-R02-300A	67	0.96
ANTHRACENE	16/16	2.35	402	137	OU4-SD-R03-200A	136	0.99
BENZO(A)ANTHRACENE	16/16	2.82	715	312	OU4-SD-R02-300A	284	0.91
BENZO(A)PYRENE	16/16	5.01	838	329	OU4-SD-R03-200A	325	0.99
BENZO(B)FLUORANTHENE	16/16	6.31	1281	468	OU4-SD-R03-100A	451	0.96
BENZO(E)PYRENE	16/16	3.4	616	228	OU4-SD-R03-100A	217	0.95
BENZO(G,H,I)PERYLENE	13/16	11.7	578	202	OU4-SD-R03-100A	190	0.94
BENZO(K)FLUORANTHENE	16/16	1.86	327	126	OU4-SD-R02-100A	118	0.94
BIPHENYL	16/16	0.41	16.8	4.65	OU4-SD-R02-300A	4.56	0.98
C1-CHRYSENES	16/16	2.19	524	167	OU4-SD-R02-300A	178	1.07
C1-DIBENZOTHIOPHENES	14/16	0.42	47.8	18	OU4-SD-R02-300A	17	0.95
C1-FLUORANTHENES/PYRENES	16/16	2.62	822	233	OU4-SD-R02-300A	251	1.08
C1-FLUORENES	16/16	1.27	142	41	OU4-SD-R03-200A	42	1.01
C1-NAPHTHALENES	16/16	1.65	110	32	OU4-SD-R02-300A	33	1.03
C1-PHENANTHRENES/ANTHRACE	16/16	2.34	422	153	OU4-SD-R03-200A	140	0.92
C2-CHRYSENES	16/16	0.19	189	69	OU4-SD-R02-300A	71	1.03
C2-DIBENZOTHIOPHENES	16/16	0.58	99.1	25	OU4-SD-R02-300A	28	1.09
C2-FLUORENES	16/16	3.23	115	41	OU4-SD-R03-200A	37	0.90
C2-NAPHTHALENES	16/16	3.31	115	37	OU4-SD-R02-300A	35	0.93
C2-PHENANTHRENES/ANTHRACE	16/16	2.15	320	115	OU4-SD-R02-300A	112	0.97
C3-CHRYSENES	15/16	0.01	10.8	2.09	OU4-SD-R03-100A	3.08	1.47
C3-DIBENZOTHIOPHENES	16/16	0.39	96	18	OU4-SD-R02-300A	24	1.34
C3-FLUORENES	16/16	1.96	126	34	OU4-SD-R02-300A	36	1.05
C3-NAPHTHALENES	16/16	1.88	149	43	OU4-SD-R03-200A	43	1.00
C3-PHENANTHRENES/ANTHRACE	16/16	0.95	228	70	OU4-SD-R02-300A	75	1.07
C4-CHRYSENES	16/16	0.01	12.8	4.10	OU4-SD-R01-100A	4.48	1.09
C4-NAPHTHALENES	16/16	0.85	79.8	25	OU4-SD-R03-200A	25	0.99
C4-PHENANTHRENES/ANTHRACE	16/16	0.02	160	33	OU4-SD-R03-100A	41	1.26
CHRYSENE	16/16	4.01	809	311	OU4-SD-R03-100A	290	0.93

TABLE 3-4b

DESCRIPTIVE STATISTICS OF THE ROUND 3 SEDIMENT DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
DIBENZO(A,H)ANTHRACENE	16/16	0.59	141	54	OU4-SD-R03-100A	51	0.94
DIBENZOTHIOPHENE	16/16	0.27	44.8	16	OU4-SD-R02-300A	16	0.99
FLUORANTHENE	16/16	6.11	1669	555	OU4-SD-R03-100A	560	1.01
FLUORENE	16/16	0.75	114	41	OU4-SD-R03-200A	41	0.99
INDENO(1,2,3-CD)PYRENE	16/16	3.62	692	243	OU4-SD-R03-100A	230	0.95
NAPHTHALENE	16/16	1.63	155	33	OU4-SD-R02-300A	40	1.19
PERYLENE	16/16	2.52	192	77	OU4-SD-R02-300A	68	0.89
PHENANTHRENE	16/16	3.21	691	240	OU4-SD-R03-100A	238	0.99
PYRENE	16/16	6.28	1357	494	OU4-SD-R03-100A	479	0.97
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	9/16	0.02	0.46	0.14	OU4-SD-R03-400A	0.12	0.85
1,2,4,5-TETRACHLOROBENZENE	2/16	2.4	3.1	0.87	OU4-SD-R03-400A	0.90	1.03
2,4'-DDD	14/16	0.04	5.2	1.40	OU4-SD-R03-100A	1.44	1.03
2,4'-DDE	14/16	0.04	0.8	0.13	OU4-SD-R03-100A	0.18	1.46
2,4'-DDT	14/16	0.01	0.57	0.13	OU4-SD-R01-200A	0.18	1.42
4,4'-DDD	16/16	0.04	4	0.74	OU4-SD-R03-100A	0.93	1.25
4,4'-DDE	16/16	0.05	9.7	1.10	OU4-SD-R03-100A	2.34	2.13
4,4'-DDT	13/16	0.01	2.4	0.66	OU4-SD-R02-100A	0.79	1.19
ALDRIN	11/16	0.01	0.82	0.09	OU4-SD-R03-100A	0.20	2.23
ALPHA-BHC	10/16	0.03	0.2	0.08	OU4-SD-R02-400A, OU4-SD-R03-200A	0.07	0.83
ALPHA-CHLORDANE	14/16	0.01	0.76	0.33	OU4-SD-R03-100A	0.28	0.85
BETA-BHC	1/16	0.37	0.37	0.13	OU4-SD-R02-100A	0.08	0.58
CIS-NONACHLOR	16/16	0.01	2	0.24	OU4-SD-R03-100A	0.48	2.00
DELTA-BHC	8/16	0.01	0.18	0.03	OU4-SD-R01-100A	0.04	1.20
DIELDRIN	7/16	0.01	0.21	0.05	OU4-SD-R02-200A	0.05	0.97
ENDOSULFAN II	10/16	0.06	2.3	0.36	OU4-SD-R03-100A	0.58	1.59
ENDRIN	1/16	0.45	0.45	0.09	OU4-SD-R03-100A	0.10	1.03
GAMMA-BHC (LINDANE)	4/16	0.08	0.78	0.17	OU4-SD-R03-100A	0.18	1.03
GAMMA-CHLORDANE	11/16	0.02	0.43	0.11	OU4-SD-R02-100A	0.15	1.31
HEPTACHLOR	10/16	0.02	0.57	0.13	OU4-SD-R02-400A	0.14	1.08
HEXACHLOROBENZENE	4/16	0.03	0.25	0.04	OU4-SD-R01-200A	0.06	1.34

TABLE 3-4b

DESCRIPTIVE STATISTICS OF THE ROUND 3 SEDIMENT DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
MIREX	2/16	0.05	0.51	0.05	OU4-SD-R03-100A	0.12	2.53
OXYCHLORDANE	9/16	0.05	0.47	0.09	OU4-SD-R03-200A	0.14	1.54
PCB-101/90	16/16	0.05	3.2	0.93	OU4-SD-R03-100A	1.01	1.09
PCB-105	16/16	0.02	2	0.44	OU4-SD-R03-100A	0.57	1.30
PCB-118	16/16	0.05	4	1.05	OU4-SD-R03-100A	1.25	1.19
PCB-128	13/16	0.01	3.2	0.39	OU4-SD-R03-100A	0.80	2.05
PCB-138/160	10/16	0.15	4.7	1.00	OU4-SD-R02-400A	1.25	1.25
PCB-149/123	14/16	0.04	2.5	0.61	OU4-SD-R03-100A	0.72	1.17
PCB-153/132	9/16	0.59	4.6	1.09	OU4-SD-R03-100A	1.43	1.30
PCB-156	16/16	0.01	1.7	0.44	OU4-SD-R03-100A	0.47	1.08
PCB-167	14/16	0.02	3.1	0.73	OU4-SD-R01-100A, OU4-SD-R02-300A	1.10	1.50
PCB-170/190	12/16	0.48	15	4.48	OU4-SD-R02-400A	5.09	1.14
PCB-18/17	6/16	0.09	5.4	0.52	OU4-SD-R03-100A	1.34	2.57
PCB-180	10/16	0.23	2.3	0.55	OU4-SD-R03-100A	0.63	1.15
PCB-187	16/16	0.02	1.3	0.31	OU4-SD-R03-100A	0.37	1.18
PCB-189	10/16	0.09	0.45	0.18	OU4-SD-R03-100A	0.12	0.70
PCB-195/208	15/16	0.01	1.2	0.23	OU4-SD-R03-100A	0.29	1.28
PCB-201/157/173	12/16	0.02	1.41	0.32	OU4-SD-R03-100A	0.37	1.15
PCB-206	11/16	0.02	0.59	0.16	OU4-SD-R02-400A	0.17	1.09
PCB-209	16/16	0.07	1.1	0.44	OU4-SD-R02-400A	0.33	0.75
PCB-28	6/16	0.19	1	0.28	OU4-SD-R02-400A	0.31	1.12
PCB-44	15/16	0.02	1.3	0.27	OU4-SD-R03-100A	0.33	1.22
PCB-52	16/16	0.03	13	1.66	OU4-SD-R02-100A	3.32	2.00
PCB-66	11/16	0.05	1.4	0.34	OU4-SD-R03-100A	0.42	1.25
PCB-77	6/16	0.01	0.07	0.04	OU4-SD-R03-100A	0.07	1.89
PCB-8/5	6/16	0.11	2.4	0.52	OU4-SD-R03-100A	0.78	1.49
PCB-81	5/16	0.02	0.19	0.09	OU4-SD-R03-300A	0.06	0.64
PENTACHLOROANISOLE	1/16	0.39	0.39	0.08	OU4-SD-R02-100A	0.12	1.40
TRANS-NONACHLOR	14/16	0.03	1	0.21	OU4-SD-R03-100A	0.29	1.35

TABLE 3-4b

DESCRIPTIVE STATISTICS OF THE ROUND 3 SEDIMENT DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
Inorganics (mg/kg)							
ALUMINUM	16/16	35399	55986	44,404.25	OU4-SD-R02-400A	5,370.11	0.12
ARSENIC	16/16	3.32	14.8	9.32	OU4-SD-R02-400A	3.45	0.37
CADMIUM	16/16	0.05	0.81	0.26	OU4-SD-R03-100A	0.20	0.78
CHROMIUM	16/16	19.3	89.3	49.97	OU4-SD-R03-100A	21.22	0.42
COPPER	16/16	2.10	29.20	12.46	OU4-SD-R02-200A	9.01	0.72
IRON	16/16	7086	25988	16,348.38	OU4-SD-R02-400A	5,332.86	0.33
LEAD	16/16	16.10	107.00	52.43	OU4-SD-R02-200A	30.58	0.58
MANGANESE	16/16	217	463	339.25	OU4-SD-R03-400A	66.20	0.20
MERCURY	10/16	0.10	0.40	0.15	OU4-SD-R02-300A	0.12	0.80
NICKEL	13/16	8.51	24.60	14.00	OU4-SD-R02-400A	6.49	0.46
SILVER	15/16	1.69	4.15	2.56	OU4-SD-R02-400A	0.85	0.33
ZINC	14/16	13.40	90.20	42.36	OU4-SD-R03-100A	27.00	0.64
Total Organic Carbon (%)							
TOTAL ORGANIC CARBON	16/16	0.15	5.69	1.27	OU4-SD-R03-100A	1.45	1.15

Notes:
- The mean, standard deviation, and coefficient of variation were calculated using 1/2 the detection limit for non-detects and the average of duplicate sampl
- The sample and duplicate were counted as two separate samples when determining the minimum and maximum detected concentrations, but were only counted as one sample when determining the frequency of detection.
- This table includes the following reference station samples:
  - OU4-SD-(R01 through R04)-(100A through 400A)

TABLE 3-5

GRAIN SIZE AND PERCENT MOISTURE RESULTS FOR THE SEDIMENT SAMPLES
FOR THE MONITORING AND REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Percent Sand	Percent Silt	Percent Clay	Percent Moisture
Monitoring Stations				
OU4-SD-M01-100A	80.8	8.2	11.1	35.8
OU4-SD-M01-200A	97.4	2.4	0.3	19.2
OU4-SD-M01-300A	60.4	22.0	17.6	45.8
OU4-SD-M01-300A-D	51.4	31.4	17.2	46.9
OU4-SD-M02-100A	53.1	25.2	21.7	31.9
OU4-SD-M02-200A	86.9	7.7	5.4	27.0
OU4-SD-M02-300A	30.0	52.1	17.9	64.8
OU4-SD-M03-100A	29.4	22.8	47.9	58.8
OU4-SD-M03-200A	77.6	13.1	9.3	24.9
OU4-SD-M03-300A	63.9	22.7	13.3	43.2
OU4-SD-M04-100A	96.0	2.2	1.8	27.7
OU4-SD-M04-200A	51.6	33.0	15.4	53.2
OU4-SD-M04-300A	92.4	4.9	2.7	21.1
OU4-SD-M05-100A	19.1	50.0	30.9	60.5
OU4-SD-M05-100A-D	18.5	50.9	30.6	60.3
OU4-SD-M05-200A	29.3	39.7	31.0	62.2
OU4-SD-M05-300A	76.2	8.1	15.7	29.2
OU4-SD-M06-100A	86.3	9.7	4.1	25.2
OU4-SD-M06-200A	29.5	41.8	28.7	62.9
OU4-SD-M06-300A	81.6	15.0	3.4	27.6
OU4-SD-M07-100A	80.4	14.2	5.4	30.1
OU4-SD-M07-200A	34.3	47.1	18.6	55.9
OU4-SD-M07-300A	45.0	38.0	17.0	52.6
OU4-SD-M08-100A	81.0	13.6	5.4	30.2
OU4-SD-M08-100A-D	79.4	11.8	8.8	31.3
OU4-SD-M08-200A	49.7	38.8	11.5	50.9
OU4-SD-M08-300A	99.7	0.3	0.0	5.2
OU4-SD-M09-100A	98.1	1.2	0.6	10.2
OU4-SD-M09-200A	76.9	14.8	8.2	37.2
OU4-SD-M09-300A	16.4	57.8	25.9	63.4
OU4-SD-M09-300A-D	11.5	56.4	32.1	63.3
OU4-SD-M10-100A	97.7	1.2	1.2	29.0
OU4-SD-M10-100A-D	97.1	0.4	2.5	33.5
OU4-SD-M10-200A	79.8	11.5	8.8	40.1
OU4-SD-M10-300A	28.7	46.8	24.5	58.6
OU4-SD-M11-300A	96.4	1.3	2.3	12.4
OU4-SD-M12-100A	55.8	30.9	13.3	45.4
OU4-SD-M12-200A	72.6	16.9	10.5	45.6
OU4-SD-M12-200A-D	71.5	20.5	8.0	43.9
OU4-SD-M12-300A	46.3	33.1	20.7	48.9
OU4-SD-M13-100A	19.8	45.6	34.6	65.6
OU4-SD-M13-200A	31.9	36.2	31.9	60.8
OU4-SD-M13-300A	29.0	36.3	34.7	66.9
OU4-SD-M14-100A	32.7	52.4	15.0	57.4

TABLE 3-5

GRAIN SIZE AND PERCENT MOISTURE RESULTS FOR THE SEDIMENT SAMPLES
FOR THE MONITORING AND REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Percent Sand	Percent Silt	Percent Clay	Percent Moisture
OU4-SD-M14-200A	64.3	23.4	12.3	45.1
OU4-SD-M14-300A	39.1	38.5	22.4	57.9
Reference Stations				
OU4-SD-R01-100A	23.6	73.8	2.6	66.1
OU4-SD-R01-200A	94.7	2.8	2.5	27.0
OU4-SD-R01-300A	96.9	0.6	2.4	24.7
OU4-SD-R01-400A	86.0	8.7	5.3	26.0
OU4-SD-R02-100A	95.3	3.0	1.7	24.8
OU4-SD-R02-200A	92.2	2.6	5.2	25.6
OU4-SD-R02-300A	67.9	14.9	17.2	42.8
OU4-SD-R02-400A	32.6	44.7	22.7	46.3
OU4-SD-R03-100A	26.5	24.5	49.0	71.5
OU4-SD-R03-200A	67.1	20.8	12.1	43.9
OU4-SD-R03-300A	71.2	18.9	9.9	36.5
OU4-SD-R03-400A	74.8	14.5	10.7	32.4
OU4-SD-R04-100A	73.4	14.4	12.2	34.2
OU4-SD-R04-200A	96.8	1.2	2.0	21.7
OU4-SD-R04-300A	95.3	1.4	3.3	20.5
OU4-SD-R04-400A	96.0	0.5	3.5	28.0

TABLE 3-6

COMPARISON OF SIMULTANEOUSLY EXTRACTED METALS TO ACID VOLATILE SULFIDE (0 TO 10 CM)
FOR THE MONITORING AND REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	SEM Concentration (0 to 10 cm)					Total SEM Concentration (umol/g)	AVS (0-10 cm) Concentration (umol/g)	SEM-AVS (umol/g)
	Cadmium (umol/g)	Copper (umol/g)	Lead (umol/g)	Nickel (umol/g)	Zinc (umol/g)			
Monitoring Stations								
OU4-SD-M01-100A	0.00064	0.30	0.27	0.062	0.89	1.5	8.0	-6.5
OU4-SD-M01-200A	0.00045	0.15	0.37	0.038	0.42	0.98	0.0094	0.97
OU4-SD-M01-300A	0.00073	0.29	0.51	0.088	0.95	1.8	7.3	-5.4
OU4-SD-M01-300A-D	0.00040	0.095	0.20	0.037	0.47	0.79	8.2	-7.4
OU4-SD-M02-100A	0.00053	0.22	0.081	0.11	0.46	0.86	3.7	-2.8
OU4-SD-M02-200A	0.00053	0.22	0.32	0.062	0.66	1.3	2.8	-1.5
OU4-SD-M02-300A	0.0034	0.17	0.40	0.25	1.2	2.0	0.24	1.7
OU4-SD-M03-100A	0.0022	0.020	0.47	0.15	2.2	2.8	7.8	-5.0
OU4-SD-M03-200A	0.0011	7.4	0.55	0.34	5.7	14	2.2	12
OU4-SD-M03-300A	0.00061	0.00070	0.11	0.044	0.71	0.87	3.9	-3.0
OU4-SD-M04-100A	0.00048	150	2.0	2.2	14	168	0.079	168
OU4-SD-M04-200A	0.00080	0.16	0.15	0.063	0.65	1.0	0.32	0.71
OU4-SD-M04-300A	0.00052	6.1	0.38	0.076	0.56	7.1	0.12	7.0
OU4-SD-M05-100A	0.0038	0.034	0.38	0.097	1.6	2.1	8.5	-6.4
OU4-SD-M05-100A-D	0.0020	0.37	0.43	0.11	1.4	2.3	7.6	-5.4
OU4-SD-M05-200A	0.0028	0.15	0.19	0.090	0.91	1.3	9.0	-7.6
OU4-SD-M05-300A	0.0018	0.088	0.097	0.061	0.42	0.67	4.6	-3.9
OU4-SD-M06-100A	0.00051	0.10	0.13	0.037	0.50	0.77	0.69	0.083
OU4-SD-M06-200A	0.0034	0.13	0.15	0.053	0.71	1.0	11	-9.9
OU4-SD-M06-300A	0.00041	0.051	0.042	0.078	0.076	0.25	0.13	0.12
OU4-SD-M07-100A	0.00058	0.13	0.094	0.060	0.63	0.92	5.6	-4.7
OU4-SD-M07-200A	0.0035	0.17	0.18	0.068	0.95	1.4	9.5	-8.2
OU4-SD-M07-300A	0.0020	0.11	0.13	0.058	0.69	0.99	7.9	-6.9
OU4-SD-M08-100A	0.00054	2.3	0.61	0.52	8.8	12	6.2	6.0
OU4-SD-M08-100A-D	0.00037	0.88	0.33	0.31	4.9	6.5	6.6	-0.11
OU4-SD-M08-200A	0.0024	0.17	0.20	0.074	1.3	1.8	8.0	-6.3
OU4-SD-M08-300A	0.00039	3.4	0.39	0.69	6.8	11	0.076	11
OU4-SD-M09-100A	0.0019	1.9	0.25	0.16	0.82	3.2	0.016	3.2
OU4-SD-M09-200A	0.00063	0.53	0.20	0.13	1.2	2.0	7.5	-5.5

TABLE 3-6

COMPARISON OF SIMULTANEOUSLY EXTRACTED METALS TO ACID VOLATILE SULFIDE (0 TO 10 CM)
FOR THE MONITORING AND REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	SEM Concentration (0 to 10 cm)					Total SEM Concentration (umol/g)	AVS (0-10 cm) Concentration (umol/g)	SEM-AVS (umol/g)
	Cadmium (umol/g)	Copper (umol/g)	Lead (umol/g)	Nickel (umol/g)	Zinc (umol/g)			
OU4-SD-M09-300A	0.0046	0.40	0.32	0.12	1.8	2.7	7.6	-4.9
OU4-SD-M09-300A-D	0.0036	0.47	0.33	0.12	1.5	2.4	12	-9.3
OU4-SD-M10-100A	0.00050	0.13	0.11	0.063	0.64	0.95	2.8	-1.9
OU4-SD-M10-100A-D	0.00032	0.052	0.063	0.039	0.17	0.33	5.8	-5.5
OU4-SD-M10-200A	0.00056	0.11	0.20	0.055	1.5	1.9	6.1	-4.2
OU4-SD-M10-300A	0.00087	0.25	0.43	0.11	2.0	2.8	8.0	-5.2
OU4-SD-M11-300A	0.00042	3.0	0.66	0.26	0.96	4.9	0.0069	4.9
OU4-SD-M12-100A	0.0011	0.81	0.43	0.21	6.9	8.3	6.3	2.0
OU4-SD-M12-200A	0.00039	0.49	0.32	0.17	4.3	5.3	7.8	-2.5
OU4-SD-M12-200A-D	0.00037	0.22	0.33	0.20	5.3	6.1	7.8	-1.7
OU4-SD-M12-300A	0.0011	0.094	0.24	0.045	0.83	1.2	8.5	-7.3
OU4-SD-M13-100A	0.00098	0.058	0.17	0.11	1.0	1.4	11	-9.4
OU4-SD-M13-200A	0.00089	0.23	0.19	0.11	1.2	1.8	9.6	-7.8
OU4-SD-M13-300A	0.0042	0.045	0.24	0.15	2.3	2.8	4.8	-2.0
OU4-SD-M14-100A	0.00039	0.10	0.13	0.028	0.079	0.34	0.44	-0.11
OU4-SD-M14-200A	0.00036	0.031	0.067	0.023	0.35	0.47	6.2	-5.7
OU4-SD-M14-300A	0.00038	0.027	0.077	0.028	0.49	0.62	7.3	-6.7
Reference Stations								
OU4-SD-R01-100A	0.0015	0.096	0.24	0.095	0.96	1.4	0.47	0.93
OU4-SD-R01-200A	0.00035	0.011	0.018	0.0082	0.052	0.090	0.36	-0.27
OU4-SD-R01-300A	0.00030	0.0054	0.011	0.0031	0.036	0.055	0.033	0.022
OU4-SD-R01-400A	0.00048	0.042	0.048	0.025	0.51	0.63	4.3	-3.6
OU4-SD-R02-100A	0.00032	0.059	0.12	0.019	0.44	0.64	0.072	0.56
OU4-SD-R02-200A	0.00036	0.028	0.067	0.015	0.076	0.19	1.9	-1.8
OU4-SD-R02-300A	0.00045	0.0012	0.13	0.018	0.48	0.62	9.4	-8.8
OU4-SD-R02-400A	0.00098	0.082	0.19	0.027	0.45	0.74	1.2	-0.45
OU4-SD-R03-100A	0.0014	0.089	0.13	0.52	0.79	1.5	0.024	1.5
OU4-SD-R03-200A	0.00038	0.024	0.061	0.020	0.15	0.26	5.6	-5.4
OU4-SD-R03-300A	0.00039	0.039	0.048	0.020	0.13	0.24	8.1	-7.9
OU4-SD-R03-400A	0.00042	0.030	0.063	0.019	0.11	0.22	3.4	-3.2

TABLE 3-6

COMPARISON OF SIMULTANEOUSLY EXTRACTED METALS TO ACID VOLATILE SULFIDE (0 TO 10 CM)
FOR THE MONITORING AND REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	SEM Concentration (0 to 10 cm)					Total SEM Concentration (umol/g)	AVS (0-10 cm) Concentration (umol/g)	SEM-AVS (umol/g)
	Cadmium (umol/g)	Copper (umol/g)	Lead (umol/g)	Nickel (umol/g)	Zinc (umol/g)			
OU4-SD-R04-100A	0.00062	0.039	0.12	0.042	0.45	0.65	4.0	-3.4
OU4-SD-R04-200A	0.00036	0.0057	0.023	0.0085	0.034	0.071	0.79	-0.72
OU4-SD-R04-300A	0.00039	0.010	0.012	0.0070	0.044	0.074	0.29	-0.22
OU4-SD-R04-400A	0.00037	0.0046	0.0069	0.0030	0.024	0.039	0.085	-0.046

Notes:
AVS - Acid Volatile Sulfides
SEM - Simultaneously Extracted Metals
1 - SEM - AVS Difference is the AVS (0 to 10 cm) concentration subtracted from the SEM concentration
1/2 the detection limit for non-detects

TABLE 3-7

COMPARISON OF ACID VOLATILE SULFIDE (0 TO 2 CM)
FOR THE MONITORING AND REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Total SEM Concentration (umol/g)	AVS (0-2 cm) Concentration (umol/g)	SEM-AVS (umol/g)
Monitoring Stations			
OU4-SD-M01-100A-2	1.5	0.32	1.2
OU4-SD-M01-200A-2	0.98	0.0035	0.97
OU4-SD-M01-300A-2	1.8	8.7	-6.9
OU4-SD-M01-300A-2-D	0.79	7.6	-6.8
OU4-SD-M02-100A-2	0.86	2.4	-1.6
OU4-SD-M02-200A-2	1.3	4.5	-3.3
OU4-SD-M02-300A-2	2.0	0.14	1.8
OU4-SD-M03-100A-2	2.8	12	-8.7
OU4-SD-M03-200A-2	14	6.1	7.9
OU4-SD-M03-300A-2	0.87	0.060	0.81
OU4-SD-M04-100A-2	168	3.7	164.26
OU4-SD-M04-200A-2	1.0	2.6	-1.6
OU4-SD-M04-300A-2	7.1	0.074	7.0
OU4-SD-M05-100A-2	2.1	12	-10
OU4-SD-M05-100A-2-D	2.3	8.3	-6.0
OU4-SD-M05-200A-2	1.3	12	-11
OU4-SD-M05-300A-2	0.67	0.20	0.46
OU4-SD-M06-100A-2	0.77	1.4	-0.64
OU4-SD-M06-200A-2	1.0	12	-11
OU4-SD-M06-300A-2	0.25	0.018	0.23
OU4-SD-M07-100A-2	0.92	4.8	-3.9
OU4-SD-M07-200A-2	1.4	2.3	-0.96
OU4-SD-M07-300A-2	0.99	7.8	-6.8
OU4-SD-M08-100A-2	12	5.8	6.4
OU4-SD-M08-100A-2-D	6.5	5.9	0.60
OU4-SD-M08-200A-2	1.8	8.6	-6.8
OU4-SD-M08-300A-2	11	0.090	11
OU4-SD-M09-100A-2	3.2	0.077	3.1
OU4-SD-M09-200A-2	2.0	4.2	-2.2
OU4-SD-M09-300A-2	2.7	12	-9.7
OU4-SD-M09-300A-2-D	2.4	9.0	-6.6
OU4-SD-M10-100A-2	0.95	0.32	0.63
OU4-SD-M10-100A-2-D	0.33	2.9	-2.6
OU4-SD-M10-200A-2	1.9	7.6	-5.7
OU4-SD-M10-300A-2	2.8	12	-8.8
OU4-SD-M11-300A-2	4.9	0.0036	4.9
OU4-SD-M12-100A-2	8.3	6.1	2.2
OU4-SD-M12-200A-2	5.3	7.4	-2.1
OU4-SD-M12-200A-2-D	6.1	6.9	-0.81
OU4-SD-M12-300A-2	1.2	9.3	-8.1
OU4-SD-M13-100A-2	1.4	14	-13
OU4-SD-M13-200A-2	1.8	10	-8.3
OU4-SD-M13-300A-2	2.8	12	-9.5
OU4-SD-M14-100A-2	0.34	0.061	0.28
OU4-SD-M14-200A-2	0.47	7.0	-6.5

TABLE 3-7

COMPARISON OF ACID VOLATILE SULFIDE (0 TO 2 CM)
FOR THE MONITORING AND REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Total SEM Concentration (umol/g)	AVS (0-2 cm) Concentration (umol/g)	SEM-AVS (umol/g)
OU4-SD-M14-300A-2	0.62	8.7	-8.1
Reference Stations			
OU4-SD-R01-100A-2	1.4	0.24	1.2
OU4-SD-R01-200A-2	0.090	0.029	0.061
OU4-SD-R01-300A-2	0.055	0.14	-0.089
OU4-SD-R01-400A-2	0.63	0.21	0.42
OU4-SD-R02-100A-2	0.64	0.010	0.63
OU4-SD-R02-200A-2	0.19	0.092	0.10
OU4-SD-R02-300A-2	0.62	0.39	0.23
OU4-SD-R02-400A-2	0.74	4.0	-3.3
OU4-SD-R03-100A-2	1.5	0.18	1.4
OU4-SD-R03-200A-2	0.26	6.8	-6.5
OU4-SD-R03-300A-2	0.24	4.9	-4.6
OU4-SD-R03-400A-2	0.22	5.1	-4.9
OU4-SD-R04-100A-2	0.65	0.013	0.64
OU4-SD-R04-200A-2	0.071	1.5	-1.5
OU4-SD-R04-300A-2	0.074	3.7	-3.6
OU4-SD-R04-400A-2	0.039	0.032	0.0068

Notes:
AVS - Acid Volatile Sulfides
SEM - Simultaneously Extracted Metals
The SEM values were from 0 to 10 cm (see Table 3-6) while the AVS values were from 0 to 2 cm
1 - SEM - AVS Difference is the AVS (0 to 2 cm) concentration subtracted from the SEM (0 - 10 CM) concentration
1/2 the detection limit for non-detects

TABLE 3-8a

DESCRIPTIVE STATISTICS OF THE ROUND 3 MUSSEL DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
Dioxins/Furans (ng/kg)							
1,2,3,4,6,7,8-HPCDD	8/11	9.1	32.2	19	OU4-MU-M09-200A	7.36	0.39
1,2,3,4,6,7,8-HPCDF	3/15	2.55	10.1	13	OU4-MU-M09-200A	4.60	0.35
1,2,3,4,7,8-HXCDD	1/15	1.84	1.84	14	OU4-MU-M09-100A	4.43	0.32
1,2,3,6,7,8-HXCDD	2/15	0.99	2.48	13	OU4-MU-M09-100A	5.41	0.42
1,2,3,7,8-PECDF	3/15	2.06	10.2	13	OU4-MU-M07-300A	4.88	0.37
2,3,4,6,7,8-HXCDF	1/15	2.88	2.88	14	OU4-MU-M10-100A-D	4.24	0.31
2,3,4,7,8-PECDF	1/15	2.05	2.05	14	OU4-MU-M09-200A	4.39	0.32
2,3,7,8-TCDF	5/15	4.95	9.93	3.90	OU4-MU-M11-200A-D	1.89	0.49
OCDD	9/15	81	168	86	OU4-MU-M09-200A	54	0.63
OCDF	1/15	62.1	62.1	30	OU4-MU-M12-100A	12	0.40
TOTAL DIOXINS	15/15	23.4	316	126	OU4-MU-M09-100A	87	0.69
TOTAL FURANS	8/15	12.7	107	31	OU4-MU-M11-100A	26	0.83
TOTAL HPCDD	9/15	9.1	88.1	32	OU4-MU-M09-200A	27	0.85
TOTAL HPCDF	2/15	2.55	7.13	13	OU4-MU-M09-100A	5	0.34
TOTAL HXCDD	7/15	0.99	20.9	13	OU4-MU-M08-100A	6	0.43
TOTAL HXCDF	5/15	2.88	42.7	17	OU4-MU-M11-100A	10	0.61
TOTAL PECDF	5/15	4.11	39.7	14	OU4-MU-M11-100A	8	0.55
TOTAL TCDD	11/15	17.5	78.5	27	OU4-MU-M12-100A-D	21	0.77
TOTAL TCDF	8/15	4.95	42.8	11	OU4-MU-M07-300A	11	1.08
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	32/32	0.89	105	5.58	OU4-MU-M13-100A	17	3.08
1-METHYLNAPHTHALENE	32/32	1.31	109	8.23	OU4-MU-M13-100A	18	2.13
1-METHYLPHENANTHRENE	32/32	1.28	553	21	OU4-MU-M13-100A	89	4.17
2,6-DIMETHYLNAPHTHALENE	32/32	0.93	154	7.71	OU4-MU-M13-100A	25	3.20
2-METHYLNAPHTHALENE	32/32	2.27	161	13	OU4-MU-M13-100A	26	2.05
ACENAPHTHENE	32/32	1.55	1269	53	OU4-MU-M13-100A	212	3.98
ACENAPHTHYLENE	32/32	0.14	289	21	OU4-MU-M13-100A-D	41	1.97
ANTHRACENE	32/32	5.49	2022	98	OU4-MU-M13-100A-D	354	3.62
BENZO(A)ANTHRACENE	32/32	7.3	4333	159	OU4-MU-M13-100A	693	4.37
BENZO(A)PYRENE	32/32	4.89	3461	127	OU4-MU-M13-100A	554	4.36
BENZO(B)FLUORANTHENE	32/32	10.3	4479	176	OU4-MU-M13-100A	712	4.04
BENZO(E)PYRENE	32/32	11.7	2075	94	OU4-MU-M13-100A	328	3.48
BENZO(G,H,I)PERYLENE	32/32	4.6	907	47	OU4-MU-M13-100A	150	3.20
BENZO(K)FLUORANTHENE	32/32	5	1198	41	OU4-MU-M13-100A-D	118	2.91

TABLE 3-8a

DESCRIPTIVE STATISTICS OF THE ROUND 3 MUSSEL DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
BIPHENYL	32/32	1.12	86.9	4.78	OU4-MU-M13-100A	14	2.91
C1-CHRYSENES	32/32	6.5	2071	81	OU4-MU-M13-100A	327	4.03
C1-DIBENZOTHIOPHENES	32/32	0.86	113	5.77	OU4-MU-M13-100A	18	3.04
C1-FLUORANTHENES/PYRENES	32/32	11.2	2924	121	OU4-MU-M13-100A	473	3.91
C1-FLUORENES	32/32	5.85	578	36	OU4-MU-M13-100A	98	2.73
C1-NAPHTHALENES	32/32	3.58	270	21	OU4-MU-M13-100A	43	2.08
C1-PHENANTHRENES/ANTHRACENES	32/32	6.24	1767	74	OU4-MU-M13-100A	289	3.92
C2-CHRYSENES	32/32	0.3	500	25	OU4-MU-M13-100A	73	2.96
C2-DIBENZOTHIOPHENES	32/32	0.04	67.9	5.94	OU4-MU-M13-100A	11	1.81
C2-FLUORENES	32/32	5.4	236	20	OU4-MU-M13-100A	39	1.93
C2-NAPHTHALENES	32/32	3.07	301	19	OU4-MU-M13-100A	47	2.41
C2-PHENANTHRENES/ANTHRACENES	32/32	5.31	694	41	OU4-MU-M13-100A	109	2.63
C3-CHRYSENES	31/32	0.02	12.9	0.74	OU4-MU-M13-100A	2.08	2.79
C3-DIBENZOTHIOPHENES	32/32	0.04	37.9	6.28	OU4-MU-M13-100A	6.05	0.96
C3-FLUORENES	32/32	2.21	129	23	OU4-MU-M13-100A	22	0.96
C3-NAPHTHALENES	32/32	2.82	225	18	OU4-MU-M13-100A	35	1.99
C3-PHENANTHRENES/ANTHRACENES	32/32	2.59	284	23	OU4-MU-M13-100A	45	1.93
C4-CHRYSENES	32/32	0.02	112	2.91	OU4-MU-M13-100A	13	4.51
C4-NAPHTHALENES	32/32	1.07	105	14	OU4-MU-M13-100A	17	1.25
C4-PHENANTHRENES/ANTHRACENES	32/32	0.07	88.2	10	OU4-MU-M13-100A	13	1.26
CHRYSENE	32/32	12.2	4976	196	OU4-MU-M13-100A	832	4.24
DIBENZO(A,H)ANTHRACENE	32/32	0.31	353	13	OU4-MU-M13-100A	55	4.25
DIBENZOTHIOPHENE	32/32	0.4	239	9.73	OU4-MU-M13-100A	39	4.01
FLUORANTHENE	32/32	19.6	8955	370	OU4-MU-M13-100A	1,494	4.04
FLUORENE	32/32	2.64	1870	69	OU4-MU-M13-100A	313	4.53
INDENO(1,2,3-CD)PYRENE	32/32	2.9	1207	53	OU4-MU-M13-100A	194	3.66
NAPHTHALENE	32/32	3.04	140	15	OU4-MU-M12-100A	26	1.73
PERYLENE	32/32	5.3	563	32	OU4-MU-M13-100A	94	2.97
PHENANTHRENE	32/32	5.28	6561	235	OU4-MU-M13-100A	1,044	4.44
PYRENE	32/32	19.7	5747	260	OU4-MU-M13-100A	971	3.73
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	21/32	0.12	13	0.77	OU4-MU-M14-100A	2.26	2.93
1,2,4,5-TETRACHLOROBENZENE	15/32	0.24	3	1.06	OU4-MU-M05-300A	0.81	0.76
2,4'-DDD	31/32	0.57	364	9.49	OU4-MU-M13-100A	32	3.37

TABLE 3-8a

DESCRIPTIVE STATISTICS OF THE ROUND 3 MUSSEL DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
2,4'-DDE	19/32	0.1	1	0.33	OU4-MU-M08-200A, OU4-MU-M14-200A	0.24	0.71
2,4'-DDT	31/32	0.33	9.6	1.95	OU4-MU-M10-100A-D	1.76	0.90
4,4'-DDD	32/32	0.31	58	6.49	OU4-MU-M08-100A	10	1.61
4,4'-DDE	32/32	2.8	22	8.20	OU4-MU-M08-100A	4.92	0.60
4,4'-DDT	31/32	0.48	19	3.38	OU4-MU-M10-100A-D	3.73	1.10
ALDRIN	13/32	0.03	0.59	0.19	OU4-MU-M13-100A-D	0.09	0.48
ALPHA-BHC	24/32	0.15	2	0.33	OU4-MU-M13-100A	0.30	0.92
ALPHA-CHLORDANE	31/32	0.44	3.3	1.19	OU4-MU-M10-100A-D	0.64	0.54
BETA-BHC	20/32	0.43	28	2.62	OU4-MU-M10-100A-D	3.34	1.28
CIS-NONACHLOR	31/32	0.08	3.2	0.93	OU4-MU-M11-200A-D	0.64	0.70
DELTA-BHC	3/32	0.03	0.14	0.09	OU4-MU-M11-200A-D	0.02	0.23
DIELDRIN	32/32	0.28	2.5	0.79	OU4-MU-M14-100A	0.55	0.69
ENDOSULFAN II	29/32	0.09	6.3	0.40	OU4-MU-M13-100A	0.66	1.66
GAMMA-BHC (LINDANE)	26/32	0.02	0.18	0.12	OU4-MU-M13-100A-D	0.04	0.37
GAMMA-CHLORDANE	31/32	0.16	2.4	0.51	OU4-MU-M10-100A-D	0.42	0.82
HEPTACHLOR	8/32	0.14	0.79	0.26	OU4-MU-M06-300A	0.11	0.41
HEPTACHLOR EPOXIDE	1/32	0.09	0.09	0.17	OU4-MU-M14-100A	0.03	0.17
HEXACHLOROBENZENE	28/32	0.05	0.63	0.21	OU4-MU-M13-100A	0.11	0.52
MIREX	1/32	0.06	0.06	0.39	OU4-MU-M13-100A-D	0.08	0.21
OXYCHLORDANE	5/32	0.04	19	0.58	OU4-MU-M13-100A	1.85	3.16
PCB-101/90	32/32	0.71	39	10	OU4-MU-M10-300A	7.62	0.73
PCB-105	32/32	1	16	4.31	OU4-MU-M10-300A	2.98	0.69
PCB-118	32/32	2.9	33	9.08	OU4-MU-M11-200A	6.72	0.74
PCB-126	2/28	0.13	2.2	0.63	OU4-MU-M11-300A	0.33	0.52
PCB-128	32/32	0.63	9.9	2.37	OU4-MU-M11-200A	1.72	0.72
PCB-138/160	26/32	6.3	46	15	OU4-MU-M11-200A	9.03	0.60
PCB-149/123	32/32	0.32	28	9.33	OU4-MU-M03-100A	6.52	0.70
PCB-153/132	26/32	8.4	52	20	OU4-MU-M03-100A	12	0.62
PCB-156	27/32	0.16	5.1	1.02	OU4-MU-M11-200A-D	0.81	0.80
PCB-167	30/32	0.4	5.9	1.28	OU4-MU-M13-100A	0.84	0.66
PCB-169	6/32	0.05	0.73	0.36	OU4-MU-M14-200A	0.27	0.75
PCB-170/190	10/32	0.29	49	1.47	OU4-MU-M13-100A	5.68	3.87
PCB-18/17	11/32	0.1	38	1.92	OU4-MU-M13-100A	3.31	1.72
PCB-180	24/32	2.4	13	5.71	OU4-MU-M12-100A	2.97	0.52

TABLE 3-8a

DESCRIPTIVE STATISTICS OF THE ROUND 3 MUSSEL DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
PCB-187	32/32	2.5	22	8.28	OU4-MU-M03-100A	4.78	0.58
PCB-189	6/32	0.09	0.72	0.55	OU4-MU-M13-100A-D	0.18	0.33
PCB-195/208	7/32	0.05	1.1	0.46	OU4-MU-M13-100A	0.16	0.35
PCB-201/157/173	26/32	0.06	2.2	0.64	OU4-MU-M13-100A-D	0.49	0.77
PCB-206	3/32	0.09	0.33	0.49	OU4-MU-M14-100A	0.12	0.24
PCB-209	1/32	0.89	0.89	0.68	OU4-MU-M12-100A-D	0.11	0.16
PCB-28	31/32	0.21	3.7	1.10	OU4-MU-M13-100A	0.72	0.65
PCB-44	15/32	0.46	5.2	0.87	OU4-MU-M10-300A	0.92	1.06
PCB-52	28/32	1.2	15	3.23	OU4-MU-M10-300A	2.68	0.83
PCB-66	32/32	0.23	6.3	1.38	OU4-MU-M12-100A	1.11	0.80
PCB-77	20/32	0.07	2.8	0.55	OU4-MU-M12-100A	0.37	0.68
PCB-8/5	28/32	0.06	36	6.02	OU4-MU-M13-100A	5.05	0.84
PCB-81	7/32	0.11	1	0.56	OU4-MU-M07-300A	0.18	0.32
PENTACHLOROANISOLE	9/32	0.58	2.2	0.78	OU4-MU-M06-300A	0.49	0.62
PENTACHLOROBENZENE	9/32	0.99	2.1	0.80	OU4-MU-M06-300A	0.60	0.75
TRANS-NONACHLOR	31/32	0.34	1.9	0.97	OU4-MU-M08-200A	0.43	0.45
Inorganics (mg/kg)							
ALUMINUM	32/32	174	1175	396	OU4-MU-M09-100A	199	0.50
ARSENIC	32/32	4.01	8.08	6.00	OU4-MU-M07-300A	1.02	0.17
CADMIUM	32/32	1.03	2.85	1.65	OU4-MU-M05-100A	0.37	0.22
CHROMIUM	29/32	2.28	8.82	3.99	OU4-MU-M02-300A	1.83	0.46
COPPER	32/32	5.09	101	16.08	OU4-MU-M03-200A	19.01	1.18
IRON	32/32	300	1877	765	OU4-MU-M09-100A	379	0.50
LEAD	32/32	3.19	103	11	OU4-MU-M05-100A	18	1.58
MANGANESE	32/32	8.63	73.9	16	OU4-MU-M09-100A	13	0.81
MERCURY	31/32	0.19	2.31	0.34	OU4-MU-M05-100A	0.37	1.08
NICKEL	4/32	7.86	12.9	2.47	OU4-MU-M09-100A	2.86	1.16
SILVER	4/32	0.36	0.74	0.23	OU4-MU-M09-100A	0.15	0.66
ZINC	32/32	72.7	284	109	OU4-MU-M03-200A	42	0.38
Percent Lipids (%)							
% LIPID	32/32	2.4	8.8	4.79	OU4-MU-M06-100A	1.66	0.35

Notes:
- All results are presented in dry weight
- The mean, standard deviation, and coefficient of variation were calculated using 1/2 the detection limit for non-detects and the average of duplicate samples.
- The sample and duplicate were counted as two separate samples when determining the minimum and maximum detected concentrations,

TABLE 3-8a

DESCRIPTIVE STATISTICS OF THE ROUND 3 MUSSEL DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation

but were only counted as one sample when determining the frequency of detection.

-This table includes the following monitoring station samples:

- OU4-MU-M01-200A and 300A
- OU4-MU-M02-100A, 200A and 300A
- OU4-MU-M03-100A and 200A
- OU4-MU-M04-100A
- OU4-MU-M05-100A and 300A
- OU4-MU-M06-100A, 200A and 300A
- OU4-MU-M07-100A and 300A
- OU4-MU-M08-100A, 200A and 300A
- OU4-MU-M09-100A and 200A
- OU4-MU-M10-100A, 100A-FD, 200A, and 300A
- OU4-MU-M11-100A, 200A, 200A-FD and 300A
- OU4-MU-M12-100A, 100A-FD and 200A
- OU4-MU-M13-100A, 100A-FD and 300A
- OU4-MU-M14-100A and 200A

TABLE 3-8b

DESCRIPTIVE STATISTICS OF THE ROUND 3 MUSSEL DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
Dioxins/Furans (ng/kg)							
1,2,3,4,6,7,8-HPCDD	2/4	13.7	20.1	15	OU4-MU-R01-400A	3.90	0.27
1,2,3,7,8-PECDF	1/8	8.25	8.25	12	OU4-MU-R04-400A	1.63	0.14
2,3,7,8-TCDF	3/8	7.5	10.3	4.81	OU4-MU-R02-400A	3.55	0.74
OCDD	4/8	79.4	96.2	56	OU4-MU-R01-400A	35	0.63
TOTAL DIOXINS	7/8	29	184	89	OU4-MU-R01-400A	53	0.60
TOTAL FURANS	6/8	7.5	71	31	OU4-MU-R01-400A	25	0.81
TOTAL HPCDD	3/8	13.7	65.9	22	OU4-MU-R01-400A	19	0.90
TOTAL HXCDF	3/8	13.7	23.2	15	OU4-MU-R02-300A	4.66	0.31
TOTAL PECDF	4/8	8.25	42.3	18	OU4-MU-R01-400A	11	0.65
TOTAL TCDD	5/8	21.6	68.2	28	OU4-MU-R03-400A	26	0.92
TOTAL TCDF	6/8	7.5	28.7	14	OU4-MU-R01-400A	10	0.74
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	8/8	1.7	114	17	OU4-MU-R02-400A	39	2.25
1-METHYLNAPHTHALENE	8/8	3.21	104	18	OU4-MU-R02-400A	35	1.93
1-METHYLPHENANTHRENE	8/8	2.3	547	72	OU4-MU-R02-400A	192	2.65
2,6-DIMETHYLNAPHTHALENE	8/8	1.9	160	23	OU4-MU-R02-400A	55	2.39
2-METHYLNAPHTHALENE	8/8	6.5	150	26	OU4-MU-R02-400A	50	1.93
ACENAPHTHENE	8/8	2.29	1368	175	OU4-MU-R02-400A	482	2.75
ACENAPHTHYLENE	8/8	4.77	192	36	OU4-MU-R02-400A	63	1.74
ANTHRACENE	8/8	11.4	2103	285	OU4-MU-R02-400A	735	2.58
BENZO(A)ANTHRACENE	8/8	9.3	4302	553	OU4-MU-R02-400A	1,515	2.74
BENZO(A)PYRENE	8/8	5.4	3430	439	OU4-MU-R02-400A	1,208	2.75
BENZO(B)FLUORANTHENE	8/8	15	4383	573	OU4-MU-R02-400A	1,540	2.69
BENZO(E)PYRENE	8/8	16.2	2012	277	OU4-MU-R02-400A	701	2.54
BENZO(G,H,I)PERYLENE	8/8	7.9	843	115	OU4-MU-R02-400A	294	2.56
BENZO(K)FLUORANTHENE	8/8	4.6	1398	184	OU4-MU-R02-400A	490	2.66
BIPHENYL	8/8	1.7	90.5	13	OU4-MU-R02-400A	31	2.35
C1-CHRYSENES	8/8	9.5	2236	297	OU4-MU-R02-400A	783	2.64
C1-DIBENZOTHIOPHENES	8/8	1.24	119	17	OU4-MU-R02-400A	41	2.35
C1-FLUORANTHENES/PYRENES	8/8	16.2	2937	394	OU4-MU-R02-400A	1,027	2.61
C1-FLUORENES	8/8	10.1	618	93	OU4-MU-R02-400A	212	2.28
C1-NAPHTHALENES	8/8	10.1	254	44	OU4-MU-R02-400A	85	1.93

TABLE 3-8b

DESCRIPTIVE STATISTICS OF THE ROUND 3 MUSSEL DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
C1-PHENANTHRENES/ANTHRACENES	8/8	11.2	1809	243	OU4-MU-R02-400A	633	2.60
C2-CHRYSENES	8/8	5.04	607	90	OU4-MU-R02-400A	209	2.33
C2-DIBENZOTHIOPHENES	8/8	3.2	73.8	15	OU4-MU-R02-400A	24	1.65
C2-FLUORENES	8/8	10	266	50	OU4-MU-R02-400A	88	1.77
C2-NAPHTHALENES	8/8	8.56	294	49	OU4-MU-R02-400A	99	2.03
C2-PHENANTHRENES/ANTHRACENES	8/8	15	688	112	OU4-MU-R02-400A	233	2.07
C3-CHRYSENES	8/8	0.07	12.1	1.65	OU4-MU-R02-400A	4.22	2.56
C3-DIBENZOTHIOPHENES	8/8	5.2	42.1	13	OU4-MU-R02-400A	12	0.98
C3-FLUORENES	8/8	10.2	203	49	OU4-MU-R02-400A	64	1.31
C3-NAPHTHALENES	8/8	7.37	224	43	OU4-MU-R02-400A	73	1.69
C3-PHENANTHRENES/ANTHRACENES	8/8	11.8	289	56	OU4-MU-R02-400A	95	1.70
C4-CHRYSENES	8/8	0.04	112	14	OU4-MU-R02-400A	40	2.81
C4-NAPHTHALENES	8/8	6.94	89.5	30	OU4-MU-R02-400A	27	0.90
C4-PHENANTHRENES/ANTHRACENES	8/8	6.31	105	24	OU4-MU-R02-400A	33	1.39
CHRYSENE	8/8	17.3	5443	709	OU4-MU-R02-400A	1,913	2.70
DIBENZO(A,H)ANTHRACENE	8/8	0.3	310	40	OU4-MU-R02-400A	109	2.75
DIBENZOTHIOPHENE	8/8	0.7	251	32	OU4-MU-R02-400A	88	2.74
FLUORANTHENE	8/8	30.1	9053	1,173	OU4-MU-R02-400A	3,184	2.71
FLUORENE	8/8	4.1	1974	252	OU4-MU-R02-400A	696	2.76
INDENO(1,2,3-CD)PYRENE	8/8	4.3	1068	140	OU4-MU-R02-400A	375	2.68
NAPHTHALENE	8/8	4.33	122	24	OU4-MU-R02-400A	40	1.65
PERYLENE	8/8	7.18	602	89	OU4-MU-R02-400A	207	2.33
PHENANTHRENE	8/8	5.4	6477	818	OU4-MU-R02-400A	2,286	2.79
PYRENE	8/8	26.9	6226	821	OU4-MU-R02-400A	2,184	2.66
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	3/8	0.03	2.9	0.50	OU4-MU-R02-400A	0.99	1.99
1,2,4,5-TETRACHLOROBENZENE	3/8	0.65	2.4	0.80	OU4-MU-R01-400A	0.74	0.93
2,4'-DDD	8/8	1.2	357	46	OU4-MU-R02-400A	126	2.72
2,4'-DDE	6/8	0.11	0.39	0.21	OU4-MU-R04-400A	0.09	0.41
2,4'-DDT	8/8	0.22	1.8	0.81	OU4-MU-R01-400A	0.58	0.71
4,4'-DDD	8/8	1.7	5.9	3.13	OU4-MU-R02-400A	1.45	0.46
4,4'-DDE	8/8	5.1	11	7.54	OU4-MU-R02-400A	2.10	0.28
4,4'-DDT	8/8	0.51	3.5	1.17	OU4-MU-R02-400A	0.99	0.85

TABLE 3-8b

DESCRIPTIVE STATISTICS OF THE ROUND 3 MUSSEL DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
ALDRIN	4/8	0.05	0.24	0.16	OU4-MU-R01-400A	0.08	0.48
ALPHA-BHC	7/8	0.27	2.1	0.53	OU4-MU-R02-400A	0.64	1.20
ALPHA-CHLORDANE	8/8	0.74	2	1.15	OU4-MU-R02-400A	0.41	0.36
BETA-BHC	3/8	0.42	6.2	1.44	OU4-MU-R02-400A	1.99	1.38
CIS-NONACHLOR	8/8	0.56	2.3	1.23	OU4-MU-R02-400A	0.52	0.43
DIELDRIN	8/8	0.03	1.1	0.66	OU4-MU-R03-400A	0.35	0.53
ENDOSULFAN II	8/8	0.08	11	1.50	OU4-MU-R02-400A	3.84	2.56
GAMMA-BHC (LINDANE)	6/8	0.03	0.16	0.11	OU4-MU-R03-400A	0.04	0.37
GAMMA-CHLORDANE	7/8	0.25	0.57	0.38	OU4-MU-R03-400A	0.14	0.37
HEPTACHLOR	2/8	0.27	0.53	0.27	OU4-MU-R02-400A	0.11	0.39
HEXACHLOROBENZENE	8/8	0.1	0.92	0.30	OU4-MU-R02-400A	0.26	0.89
OXYCHLORDANE	1/8	9.7	9.7	1.36	OU4-MU-R02-400A	3.37	2.47
PCB-101/90	8/8	4.8	12	7.68	OU4-MU-R02-400A	2.36	0.31
PCB-105	8/8	2	6.5	3.34	OU4-MU-R02-400A	1.45	0.43
PCB-118	8/8	4.5	22	9.53	OU4-MU-R02-400A	5.53	0.58
PCB-126	1/8	1.6	1.6	0.71	OU4-MU-R03-400A	0.36	0.51
PCB-128	8/8	1.2	5.3	2.24	OU4-MU-R02-400A	1.32	0.59
PCB-138/160	8/8	7.5	21	13	OU4-MU-R02-400A	4.41	0.34
PCB-149/123	6/8	4.4	14	5.76	OU4-MU-R02-400A	3.60	0.63
PCB-153/132	7/8	10	27	16	OU4-MU-R02-400A	6.66	0.42
PCB-156	5/8	0.19	1.2	0.68	OU4-MU-R01-300A, OU4 MU-R02-400A	0.35	0.52
PCB-167	8/8	0.64	6.5	1.69	OU4-MU-R02-400A	1.96	1.16
PCB-169	1/8	0.13	0.13	0.41	OU4-MU-R04-400A	0.27	0.65
PCB-170/190	3/8	0.22	53	6.81	OU4-MU-R02-400A	19	2.74
PCB-18/17	6/8	0.27	28	4.24	OU4-MU-R02-400A	9.61	2.27
PCB-180	7/8	3.9	12	7.05	OU4-MU-R02-400A	3.40	0.48
PCB-187	8/8	3.4	12	6.20	OU4-MU-R02-400A	2.68	0.43
PCB-189	1/8	0.59	0.59	0.58	OU4-MU-R02-400A	0.04	0.07
PCB-195/208	1/8	1.1	1.1	0.55	OU4-MU-R02-400A	0.22	0.41
PCB-201/157/173	5/8	0.3	1.1	0.47	OU4-MU-R02-400A	0.26	0.56
PCB-28	8/8	0.43	3.6	1.05	OU4-MU-R02-400A	1.04	1.00
PCB-44	3/8	0.46	2.5	0.70	OU4-MU-R02-400A	0.74	1.05

TABLE 3-8b

DESCRIPTIVE STATISTICS OF THE ROUND 3 MUSSEL DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
PCB-52	3/8	1.6	5.3	1.88	OU4-MU-R02-400A	1.58	0.84
PCB-66	8/8	0.64	5.6	1.65	OU4-MU-R02-400A	1.63	0.99
PCB-77	5/8	0.23	0.68	0.46	OU4-MU-R03-400A	0.18	0.39
PCB-8/5	8/8	2.8	46	11	OU4-MU-R02-400A	15	1.33
PCB-81	3/8	0.12	0.55	0.47	OU4-MU-R02-400A	0.21	0.45
PENTACHLOROANISOLE	3/8	1.6	4	1.23	OU4-MU-R02-400A	1.36	1.10
PENTACHLOROBENZENE	3/8	0.48	1.9	0.57	OU4-MU-R01-400A	0.55	0.97
TRANS-NONACHLOR	8/8	0.75	1.4	1.06	OU4-MU-R03-400A	0.23	0.22
Inorganics (mg/kg)							
ALUMINUM	8/8	218	579	370	OU4-MU-R04-400A	114	0.31
ARSENIC	8/8	4.22	5.95	5.09	OU4-MU-R01-400A	0.51	0.10
CADMIUM	8/8	1.03	1.65	1.33	OU4-MU-R04-300A	0.22	0.16
CHROMIUM	6/8	3.09	5.17	3.48	OU4-MU-R04-400A	1.30	0.37
COPPER	8/8	5.33	33	14	OU4-MU-R04-400A	9.30	0.68
IRON	8/8	382	808	602	OU4-MU-R04-400A	174	0.29
LEAD	8/8	2.76	5.31	3.94	OU4-MU-R02-400A	0.92	0.23
MANGANESE	8/8	8.08	16.8	12	OU4-MU-R01-300A	2.97	0.24
MERCURY	8/8	0.22	0.34	0.28	OU4-MU-R04-300A	0.03	0.12
SILVER	1/8	0.49	0.49	0.20	OU4-MU-R01-300A	0.12	0.60
ZINC	8/8	70.4	105	86	OU4-MU-R04-400A	11	0.13
Percent Lipids (%)							
% LIPID	8/8	1.7	7	4.14	OU4-MU-R03-400A	1.56	0.38

Notes:
- All results are presented in dry weight
- The mean, standard deviation, and coefficient of variation were calculated using 1/2 the detection limit for non-detects and the average of duplicate samples.
- The sample and duplicate were counted as two separate samples when determining the minimum and maximum detected concentrations, but were only counted as one sample when determining the frequency of detection.
- This table includes the following reference station samples:
  - OU4-MU-(R01 through R04)-(300A and 400A)

TABLE 3-9a

DESCRIPTIVE STATISTICS OF THE ROUND 3 JUVENILE LOBSTER DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
Dioxins/Furans (ng/kg)							
1,2,3,4,6,7,8-HPCDD	3/6	1.59	5.5	4.74	OU4-LJ-M07-100A	3.30	0.70
2,3,7,8-TCDF	2/6	1.84	3.02	1.84	OU4-LJ-M08-100A	0.61	0.33
OCDD	4/6	4.53	28.6	12	OU4-LJ-M07-100A	9.04	0.73
TOTAL DIOXINS	4/6	1.59	34	13	OU4-LJ-M07-100A	11	0.89
TOTAL HPCDD	3/6	1.59	5.5	5.90	OU4-LJ-M07-100A	2.75	0.47
TOTAL TCDF	2/6	1.84	3.02	1.84	OU4-LJ-M08-100A	0.61	0.33
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	14/14	0.71	2.84	1.30	OU4-LJ-M08-100A	0.57	0.44
1-METHYLNAPHTHALENE	14/14	1.81	13	4.53	OU4-LJ-M14-100A	3.39	0.75
1-METHYLPHENANTHRENE	14/14	0.5	6.24	1.75	OU4-LJ-M13-100A	1.59	0.91
2,6-DIMETHYLNAPHTHALENE	14/14	0.9	4.18	1.69	OU4-LJ-M08-100A	0.91	0.54
2-METHYLNAPHTHALENE	14/14	2.6	18.3	6.55	OU4-LJ-M14-100A	4.65	0.71
ACENAPHTHENE	14/14	0.35	6.71	2.20	OU4-LJ-M13-100A	1.77	0.80
ACENAPHTHYLENE	14/14	0.25	6.9	1.29	OU4-LJ-M08-100A	1.71	1.32
ANTHRACENE	14/14	0.61	13.7	3.76	OU4-LJ-M08-100A	3.96	1.06
BENZO(A)ANTHRACENE	14/14	1.46	33.3	9.32	OU4-LJ-M13-100A	8.51	0.91
BENZO(A)PYRENE	14/14	0.92	23.6	10	OU4-LJ-M09-100A	6.58	0.64
BENZO(B)FLUORANTHENE	14/14	1.9	31.1	13	OU4-LJ-M08-100A	8.99	0.69
BENZO(E)PYRENE	14/14	1.93	26.4	9.50	OU4-LJ-M08-100A	6.36	0.67
BENZO(G,H,I)PERYLENE	14/14	1.6	11.7	5.72	OU4-LJ-M08-100A	2.74	0.48
BENZO(K)FLUORANTHENE	14/14	0.87	11.7	5.73	OU4-LJ-M09-100A	3.32	0.58
BIPHENYL	14/14	1.29	2.81	1.85	OU4-LJ-M14-100A	0.42	0.23
C1-CHRYSENES	14/14	0.1	15.1	5.83	OU4-LJ-M08-100A	4.11	0.71
C1-DIBENZOTHIOPHENES	14/14	0.06	2.2	1.04	OU4-LJ-M08-100A	0.57	0.55
C1-FLUORANTHENES/PYRENES	14/14	2.48	26.6	9.50	OU4-LJ-M13-100A	7.45	0.78
C1-FLUORENES	14/14	2.5	26.6	5.82	OU4-LJ-M08-100A	6.12	1.05
C1-NAPHTHALENES	14/14	4.41	31.3	11	OU4-LJ-M14-100A	8.01	0.72
C1-PHENANTHRENES/ANTHRACENES	14/14	3	21.5	6.56	OU4-LJ-M13-100A	5.39	0.82
C2-CHRYSENES	14/14	0.02	8.76	2.68	OU4-LJ-M08-100A	2.54	0.95
C2-DIBENZOTHIOPHENES	14/14	0.02	4.25	0.62	OU4-LJ-M08-100A	1.14	1.84
C2-FLUORENES	14/14	0.14	15.8	4.08	OU4-LJ-M08-100A	3.79	0.93
C2-NAPHTHALENES	14/14	2.78	18.6	6.57	OU4-LJ-M14-100A	5.48	0.83
C2-PHENANTHRENES/ANTHRACENES	14/14	2.08	19.9	5.14	OU4-LJ-M08-100A	4.75	0.92
C3-CHRYSENES	14/14	0.03	0.31	0.13	OU4-LJ-M06-100A	0.08	0.67
C3-DIBENZOTHIOPHENES	14/14	0.03	4.03	0.46	OU4-LJ-M08-100A	1.10	2.41

TABLE 3-9a

DESCRIPTIVE STATISTICS OF THE ROUND 3 JUVENILE LOBSTER DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
C3-FLUORENES	14/14	0.04	14.6	2.20	OU4-LJ-M08-100A	3.94	1.79
C3-NAPHTHALENES	14/14	0.06	11.6	4.50	OU4-LJ-M13-100A	3.35	0.74
C3-PHENANTHRENES/ANTHRACENES	14/14	0.06	13.6	2.40	OU4-LJ-M08-100A	3.48	1.45
C4-CHRYSENES	14/14	0.02	1.19	0.19	OU4-LJ-M06-100A	0.31	1.63
C4-NAPHTHALENES	14/14	0.09	10.9	2.20	OU4-LJ-M08-100A	2.95	1.34
C4-PHENANTHRENES/ANTHRACENES	14/14	0.01	8.49	0.75	OU4-LJ-M08-100A	2.24	3.00
CHRYSENE	14/14	3.05	41.4	16	OU4-LJ-M13-100A	10	0.64
DIBENZO(A,H)ANTHRACENE	14/14	0.04	1.44	0.48	OU4-LJ-M07-100A	0.47	0.97
DIBENZOTHIOPHENE	14/14	0.3	3.06	0.84	OU4-LJ-M13-100A	0.74	0.88
FLUORANTHENE	14/14	6.42	127	28	OU4-LJ-M13-100A	31	1.10
FLUORENE	14/14	1.17	10.8	3.64	OU4-LJ-M13-100A	3.04	0.84
INDENO(1,2,3-CD)PYRENE	14/14	0.06	14.4	5.93	OU4-LJ-M09-100A	3.98	0.67
NAPHTHALENE	14/14	3.84	16.3	7.57	OU4-LJ-M14-100A	3.89	0.51
PERYLENE	14/14	1.35	15	6.04	OU4-LJ-M08-100A	3.55	0.59
PHENANTHRENE	14/14	2.73	62.5	12	OU4-LJ-M13-100A	16	1.36
PYRENE	14/14	5.06	89	23	OU4-LJ-M13-100A	22	0.98
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	14/14	0.48	15	7.59	OU4-LJ-M01-100A	4.15	0.55
1,2,4,5-TETRACHLOROBENZENE	9/14	0.02	0.79	0.28	OU4-LJ-M04-100A	0.20	0.71
2,4'-DDD	3/14	0.57	2.2	0.41	OU4-LJ-M08-100A	0.53	1.31
2,4'-DDT	2/14	0.23	0.87	0.32	OU4-LJ-M08-100A	0.16	0.50
4,4'-DDD	3/14	0.07	2.2	0.39	OU4-LJ-M08-100A	0.52	1.36
4,4'-DDE	14/14	0.87	7.9	2.77	OU4-LJ-M08-100A	1.83	0.66
4,4'-DDT	1/14	0.94	0.94	0.45	OU4-LJ-M08-100A	0.14	0.32
ALPHA-BHC	1/14	1	1	0.28	OU4-LJ-M11-100A	0.10	0.37
ALPHA-CHLORDANE	2/14	0.23	0.88	0.31	OU4-LJ-M08-100A	0.17	0.54
BETA-BHC	8/14	0.1	1.6	0.37	OU4-LJ-M08-100A	0.38	1.05
CIS-NONACHLOR	2/14	0.25	1.4	0.33	OU4-LJ-M08-100A	0.31	0.95
DELTA-BHC	1/14	0.09	0.09	0.14	OU4-LJ-M01-100A	0.02	0.12
DIELDRIN	14/14	0.97	2.9	1.62	OU4-LJ-M01-100A	0.44	0.27
ENDOSULFAN II	2/14	0.12	0.23	0.25	OU4-LJ-M08-100A	0.04	0.17
GAMMA-BHC (LINDANE)	3/14	0.05	0.09	0.19	OU4-LJ-M08-100A	0.06	0.34
GAMMA-CHLORDANE	2/14	0.25	0.38	0.29	OU4-LJ-M08-100A	0.03	0.12
HEPTACHLOR EPOXIDE	1/14	0.24	0.24	0.28	OU4-LJ-M01-100A	0.02	0.08
HEXACHLOROBENZENE	14/14	0.06	0.51	0.21	OU4-LJ-M01-100A	0.06	0.29
MIREX	1/14	0.33	0.33	0.61	OU4-LJ-M01-100A	0.09	0.15

TABLE 3-9a

DESCRIPTIVE STATISTICS OF THE ROUND 3 JUVENILE LOBSTER DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
OXYCHLORDANE	13/14	0.11	1.3	0.50	OU4-LJ-M01-100A	0.24	0.48
PCB-101/90	10/14	0.48	8	1.41	OU4-LJ-M08-100A	1.93	1.37
PCB-105	14/14	0.23	2.9	0.91	OU4-LJ-M08-100A	0.72	0.79
PCB-118	14/14	1.1	7.7	3.53	OU4-LJ-M08-100A	2.08	0.59
PCB-126	1/8	0.64	0.64	0.92	OU4-LJ-M01-100A	0.12	0.13
PCB-128	13/14	0.34	2	0.73	OU4-LJ-M08-100A	0.47	0.65
PCB-138/160	3/14	3.7	13	3.09	OU4-LJ-M08-100A	3.38	1.10
PCB-149/123	13/14	0.07	6.7	0.70	OU4-LJ-M08-100A	1.74	2.47
PCB-153/132	1/14	18	18	3.81	OU4-LJ-M08-100A	4.25	1.12
PCB-156	2/14	0.31	0.89	0.92	OU4-LJ-M08-100A	0.19	0.20
PCB-167	4/14	0.27	0.82	0.83	OU4-LJ-M08-100A	0.25	0.30
PCB-169	7/14	0.03	0.42	0.56	OU4-LJ-M03-100A	0.42	0.75
PCB-18/17	12/14	0.34	9.2	2.98	OU4-LJ-M11-100A-D	2.46	0.82
PCB-180	1/14	6.1	6.1	1.26	OU4-LJ-M08-100A	1.48	1.17
PCB-187	14/14	0.57	8.1	2.73	OU4-LJ-M13-100A	2.31	0.84
PCB-195/208	6/14	0.15	8.1	1.13	OU4-LJ-M13-100A	2.02	1.79
PCB-201/157/173	2/14	0.16	0.33	0.68	OU4-LJ-M01-100A	0.19	0.28
PCB-206	8/14	0.15	19	1.90	OU4-LJ-M13-100A	4.93	2.59
PCB-209	3/14	0.16	4.2	1.21	OU4-LJ-M13-100A	0.91	0.76
PCB-28	7/14	0.1	0.83	0.35	OU4-LJ-M08-100A	0.24	0.68
PCB-44	1/14	0.27	0.27	0.41	OU4-LJ-M13-100A	0.22	0.54
PCB-52	7/14	0.04	1.9	0.73	OU4-LJ-M08-100A	0.45	0.62
PCB-66	12/14	0.14	1.2	0.62	OU4-LJ-M05-100A	0.31	0.50
PCB-77	1/14	0.41	0.41	0.61	OU4-LJ-M14-100A	0.39	0.64
PCB-8/5	12/14	0.35	17	2.33	OU4-LJ-M08-100A	4.30	1.84
PCB-81	2/14	0.18	0.25	0.87	OU4-LJ-M14-100A	0.28	0.33
PENTACHLOROANISOLE	1/14	3.8	3.8	0.39	OU4-LJ-M08-100A	0.98	2.49
TRANS-NONACHLOR	9/14	0.1	1.1	0.22	OU4-LJ-M08-100A	0.26	1.15
Inorganics (mg/kg)							
ARSENIC	14/14	3	5.13	4.17	OU4-LJ-M09-100A	0.71	0.17
CADMIUM	14/14	0.0187	0.0478	0.03	OU4-LJ-M07-100A	0.01	0.28
CHROMIUM	12/14	0.54	1.63	0.72	OU4-LJ-M10-100A	0.34	0.47
COPPER	14/14	37.5	61	47	OU4-LJ-M03-100A	8.23	0.17
IRON	14/14	5.09	27.7	13	OU4-LJ-M13-100A	5.64	0.44
LEAD	3/14	0.62	2.26	0.37	OU4-LJ-M09-100A	0.66	1.77
MANGANESE	14/14	1.62	9.3	3.52	OU4-LJ-M14-100A	2.16	0.61

TABLE 3-9a

DESCRIPTIVE STATISTICS OF THE ROUND 3 JUVENILE LOBSTER DATA FOR THE MONITORING STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
MERCURY	14/14	0.48	0.68	0.58	OU4-LJ-M01-100A-D	0.07	0.12
SILVER	14/14	0.49	1.34	0.98	OU4-LJ-M03-100A	0.23	0.23
ZINC	14/14	81	101	91	OU4-LJ-M09-100A	5.71	0.06
Percent Lipids (%)							
% LIPID	14/14	1.8	3.4	2.57	U4-LJ-M01-100A, OU4-LJ-M10-100	0.43	0.17

Notes:
- All results are presented in dry weight
- The mean, standard deviation, and coefficient of variation were calculated using 1/2 the detection limit for non-detects and the average of duplicate samples.
- The sample and duplicate were counted as two separate samples when determining the minimum and maximum detected concentrations, but were only counted as one sample when determining the frequency of detection.
- This table includes the following monitoring station samples:
  - OU4-LJ-(M01 through M14)-100A
  - OU4-LJ-M01-100A-FD
  - OU4-LJ-M11-100A-FD

TABLE 3-9b

DESCRIPTIVE STATISTICS OF THE ROUND 3 JUVENILE LOBSTER DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
Dioxins/Furans (ng/kg)							
2,3,7,8-TCDD	1/4	0.37	0.37	1.22	OU4-LJ-R03-100A	0.63	0.51
2,3,7,8-TCDF	2/3	1.77	2.87	2.17	OU4-LJ-R02-100A	0.61	0.28
OCDD	1/4	6.41	6.41	9.92	OU4-LJ-R01-100A	3.22	0.33
TOTAL DIOXINS	4/4	0.37	26.09	11	OU4-LJ-R04-100A	12	1.02
TOTAL FURANS	1/4	17.77	17.77	5.21	OU4-LJ-R04-100A	8.38	1.61
TOTAL HPCDD	1/4	8.78	8.78	6.59	OU4-LJ-R01-100A	1.61	0.24
TOTAL TCDD	2/4	0.37	4.11	1.92	OU4-LJ-R02-100A	1.59	0.83
TOTAL TCDF	4/4	1.24	2.87	1.80	OU4-LJ-R02-100A	0.75	0.42
Polyaromatic Hydrocarbons (ug/kg)							
1,6,7-TRIMETHYLNAPHTHALENE	4/4	0.72	1.52	1.12	OU4-LJ-R04-100A	0.33	0.29
1-METHYLNAPHTHALENE	4/4	3.4	9.13	5.64	OU4-LJ-R04-100A	2.53	0.45
1-METHYLPHENANTHRENE	4/4	0.6	1.5	0.98	OU4-LJ-R03-100A	0.44	0.45
2,6-DIMETHYLNAPHTHALENE	4/4	1.53	2.2	1.77	OU4-LJ-R01-100A	0.30	0.17
2-METHYLNAPHTHALENE	4/4	4.95	10.2	7.16	OU4-LJ-R04-100A	2.24	0.31
ACENAPHTHENE	4/4	0.71	1.16	0.90	OU4-LJ-R01-100A	0.22	0.25
ACENAPHTHYLENE	4/4	0.64	0.84	0.72	OU4-LJ-R01-100A	0.09	0.12
ANTHRACENE	4/4	0.81	1.39	1.07	OU4-LJ-R03-100A	0.29	0.27
BENZO(A)ANTHRACENE	4/4	1.17	4.94	3.14	OU4-LJ-R03-100A	1.98	0.63
BENZO(A)PYRENE	4/4	1.63	8.32	5.04	OU4-LJ-R02-100A	3.65	0.72
BENZO(B)FLUORANTHENE	4/4	2.75	10.1	5.80	OU4-LJ-R02-100A	3.52	0.61
BENZO(E)PYRENE	4/4	1.8	7.01	4.20	OU4-LJ-R02-100A	2.28	0.54
BENZO(G,H,I)PERYLENE	4/4	0.73	3.56	2.24	OU4-LJ-R02-100A	1.22	0.55
BENZO(K)FLUORANTHENE	4/4	2.31	4.67	3.32	OU4-LJ-R03-100A	1.20	0.36
BIPHENYL	4/4	1.34	2.12	1.83	OU4-LJ-R01-100A	0.35	0.19
C1-CHRYSENES	4/4	0.11	4.06	1.76	OU4-LJ-R02-100A	1.97	1.12
C1-DIBENZOTHIOPHENES	4/4	0.28	0.89	0.63	OU4-LJ-R03-100A	0.28	0.45
C1-FLUORANTHENES/PYRENES	4/4	3.19	8.81	5.66	OU4-LJ-R02-100A	2.39	0.42
C1-FLUORENES	4/4	3.86	5.27	4.37	OU4-LJ-R04-100A	0.62	0.14
C1-NAPHTHALENES	4/4	8.35	19.3	13	OU4-LJ-R04-100A	4.74	0.37
C1-PHENANTHRENES/ANTHRACENES	4/4	2.97	5.36	3.98	OU4-LJ-R03-100A	1.11	0.28
C2-CHRYSENES	4/4	0.13	1.8	0.74	OU4-LJ-R02-100A	0.77	1.05
C2-DIBENZOTHIOPHENES	4/4	0.03	0.3	0.10	OU4-LJ-R02-100A	0.14	1.38
C2-FLUORENES	4/4	2.36	3.81	3.00	OU4-LJ-R04-100A	0.71	0.24
C2-NAPHTHALENES	4/4	3.85	13	6.65	OU4-LJ-R04-100A	4.29	0.65

TABLE 3-9b

DESCRIPTIVE STATISTICS OF THE ROUND 3 JUVENILE LOBSTER DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
C2-PHENANTHRENES/ANTHRACENES	4/4	2.9	4.3	3.57	OU4-LJ-R03-100A	0.63	0.18
C3-CHRYSENES	4/4	0.03	0.18	0.11	OU4-LJ-R04-100A	0.07	0.62
C3-DIBENZOTHIOPHENES	4/4	0.03	0.16	0.08	OU4-LJ-R02-100A	0.06	0.80
C3-FLUORENES	4/4	0.24	0.97	0.45	OU4-LJ-R01-100A	0.35	0.79
C3-NAPHTHALENES	4/4	3.06	10.2	5.29	OU4-LJ-R04-100A	3.36	0.63
C3-PHENANTHRENES/ANTHRACENES	4/4	0.04	1.2	0.57	OU4-LJ-R02-100A	0.61	1.06
C4-CHRYSENES	4/4	0.06	0.13	0.10	OU4-LJ-R04-100A	0.03	0.33
C4-NAPHTHALENES	4/4	0.13	1.79	0.96	OU4-LJ-R02-100A	0.94	0.98
C4-PHENANTHRENES/ANTHRACENES	4/4	0.03	0.08	0.05	OU4-LJ-R01-100A	0.02	0.39
CHRYSENE	4/4	4.83	15.1	9.07	OU4-LJ-R02-100A	4.97	0.55
DIBENZO(A,H)ANTHRACENE	4/4	0.07	0.24	0.12	OU4-LJ-R02-100A	0.08	0.73
DIBENZOTHIOPHENE	4/4	0.35	0.4	0.37	OU4-LJ-R03-100A	0.02	0.06
FLUORANTHENE	4/4	9.78	20.7	15	OU4-LJ-R02-100A	4.98	0.34
FLUORENE	4/4	1.76	2.15	1.90	OU4-LJ-R04-100A	0.18	0.09
INDENO(1,2,3-CD)PYRENE	4/4	0.71	3.42	1.90	OU4-LJ-R02-100A	1.39	0.73
NAPHTHALENE	4/4	6.15	9.05	7.89	OU4-LJ-R04-100A	1.25	0.16
PERYLENE	4/4	1.97	4.51	3.54	OU4-LJ-R02-100A	1.12	0.32
PHENANTHRENE	4/4	3.05	4.11	3.65	OU4-LJ-R03-100A	0.50	0.14
PYRENE	4/4	7.84	18.6	13	OU4-LJ-R02-100A	4.72	0.37
Pesticides/PCBs (ug/kg)							
1,2,3,4-TETRACHLOROBENZENE	4/4	3.9	13	9.25	OU4-LJ-R03-100A, OU4-LJ-R04-100A	4.52	0.49
2,4'-DDT	1/4	0.19	0.19	0.25	OU4-LJ-R02-100A	0.04	0.16
4,4'-DDE	4/4	1.8	3.9	2.78	OU4-LJ-R02-100A	1.03	0.37
ALPHA-CHLORDANE	2/4	0.21	0.21	0.23	OU4-LJ-R01-100A, OU4-LJ-R04-100A	0.02	0.10
CIS-NONACHLOR	2/4	0.1	0.13	0.17	OU4-LJ-R03-100A	0.07	0.40
DIELDRIN	4/4	1.3	1.8	1.48	OU4-LJ-R02-100A	0.22	0.15
HEXACHLOROBENZENE	4/4	0.15	0.27	0.21	OU4-LJ-R02-100A	0.06	0.28
OXYCHLORDANE	4/4	0.61	1.6	0.94	OU4-LJ-R03-100A	0.45	0.48
PCB-101/90	4/4	0.38	0.9	0.55	OU4-LJ-R01-100A	0.24	0.44
PCB-105	4/4	0.54	1.2	0.85	OU4-LJ-R02-100A	0.35	0.41
PCB-118	4/4	1.7	5	3.30	OU4-LJ-R02-100A	1.45	0.44
PCB-128	4/4	0.37	0.91	0.60	OU4-LJ-R02-100A	0.24	0.40
PCB-149/123	4/4	0.12	0.25	0.16	OU4-LJ-R01-100A	0.06	0.39

TABLE 3-9b

DESCRIPTIVE STATISTICS OF THE ROUND 3 JUVENILE LOBSTER DATA FOR THE REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Frequency of Detection	Minimum Concentration	Maximum Concentration	Mean Concentration	Sample with Maximum Concentration	Standard Deviation	Coefficient of Variation
PCB-156	2/4	0.32	0.59	0.68	OU4-LJ-R04-100A	0.28	0.41
PCB-167	2/4	0.32	0.55	0.67	OU4-LJ-R02-100A	0.28	0.43
PCB-169	1/4	0.05	0.05	0.70	OU4-LJ-R02-100A	0.43	0.62
PCB-18/17	1/4	0.88	0.88	2.03	OU4-LJ-R02-100A	0.77	0.38
PCB-187	4/4	1	2.4	1.73	OU4-LJ-R02-100A	0.59	0.34
PCB-195/208	2/4	0.14	0.16	0.45	OU4-LJ-R02-100A	0.35	0.77
PCB-206	2/4	0.07	0.12	0.45	OU4-LJ-R04-100A	0.41	0.91
PCB-44	2/4	0.15	0.63	0.34	OU4-LJ-R02-100A	0.29	0.85
PCB-66	4/4	0.32	0.81	0.53	OU4-LJ-R02-100A	0.21	0.40
PCB-77	1/4	0.08	0.08	0.71	OU4-LJ-R01-100A	0.42	0.59
PCB-8/5	4/4	0.52	1.8	1.15	OU4-LJ-R01-100A	0.57	0.49
TRANS-NONACHLOR	4/4	0.16	0.22	0.19	OU4-LJ-R03-100A	0.03	0.14
Inorganics (mg/kg)							
ARSENIC	4/4	4.11	4.52	4.23	OU4-LJ-R01-100A	0.20	0.05
CADMIUM	4/4	0.0202	0.0332	0.03	OU4-LJ-R03-100A	0.01	0.21
CHROMIUM	4/4	0.61	0.87	0.69	OU4-LJ-R03-100A	0.12	0.18
COPPER	4/4	31.8	55.4	43	OU4-LJ-R01-100A	9.71	0.23
IRON	4/4	9.56	24.9	15	OU4-LJ-R01-100A	6.98	0.47
LEAD	1/4	0.66	0.66	0.25	OU4-LJ-R04-100A	0.28	1.13
MANGANESE	4/4	1.66	3.82	2.91	OU4-LJ-R01-100A	1.08	0.37
MERCURY	4/4	0.64	0.96	0.77	OU4-LJ-R01-100A	0.14	0.18
SILVER	4/4	0.72	1.63	1.05	OU4-LJ-R01-100A	0.41	0.39
ZINC	4/4	77.1	101	89	OU4-LJ-R04-100A	11	0.12
Percent Lipids (%)							
% LIPID	4/4	1.6	2.6	2.13	OU4-LJ-R03-100A	0.43	0.20

Notes:
- All results are presented in dry weight
- The mean, standard deviation, and coefficient of variation were calculated using 1/2 the detection limit for non-detects and the average of duplicate samples.
- The sample and duplicate were counted as two separate samples when determining the minimum and maximum detected concentrations, but were only counted as one sample when determining the frequency of detection.
- This table includes the following reference station samples:
  - OU4-LJ-(R01 through R04)-100A

REFERENCES

B&R Environmental, 1996. “Standard Operating Procedures (SOPs) Manual” for Portsmouth Naval Shipyard, Kittery, Maine, Brown & Root Environmental, a Division of Halliburton NUS Corporation, Wayne, PA, November.

Navy (Department of Navy), 1999a. Interim Record of Decision for Operable Unit 4, May.

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NCCOSC (Naval Command, Control, and Ocean Surveillance Center), 1997. "Revised Draft Final Estuarine Ecological Risk Assessment" for Portsmouth Naval Shipyard, Kittery, Maine. Narragansett, RI, April.

TtNUS (Tetra Tech NUS, Inc.), 1999. “Interim Offshore Monitoring Plan for Operable Unit 4” for Portsmouth Naval Shipyard. TtNUS, King of Prussia, PA, October.

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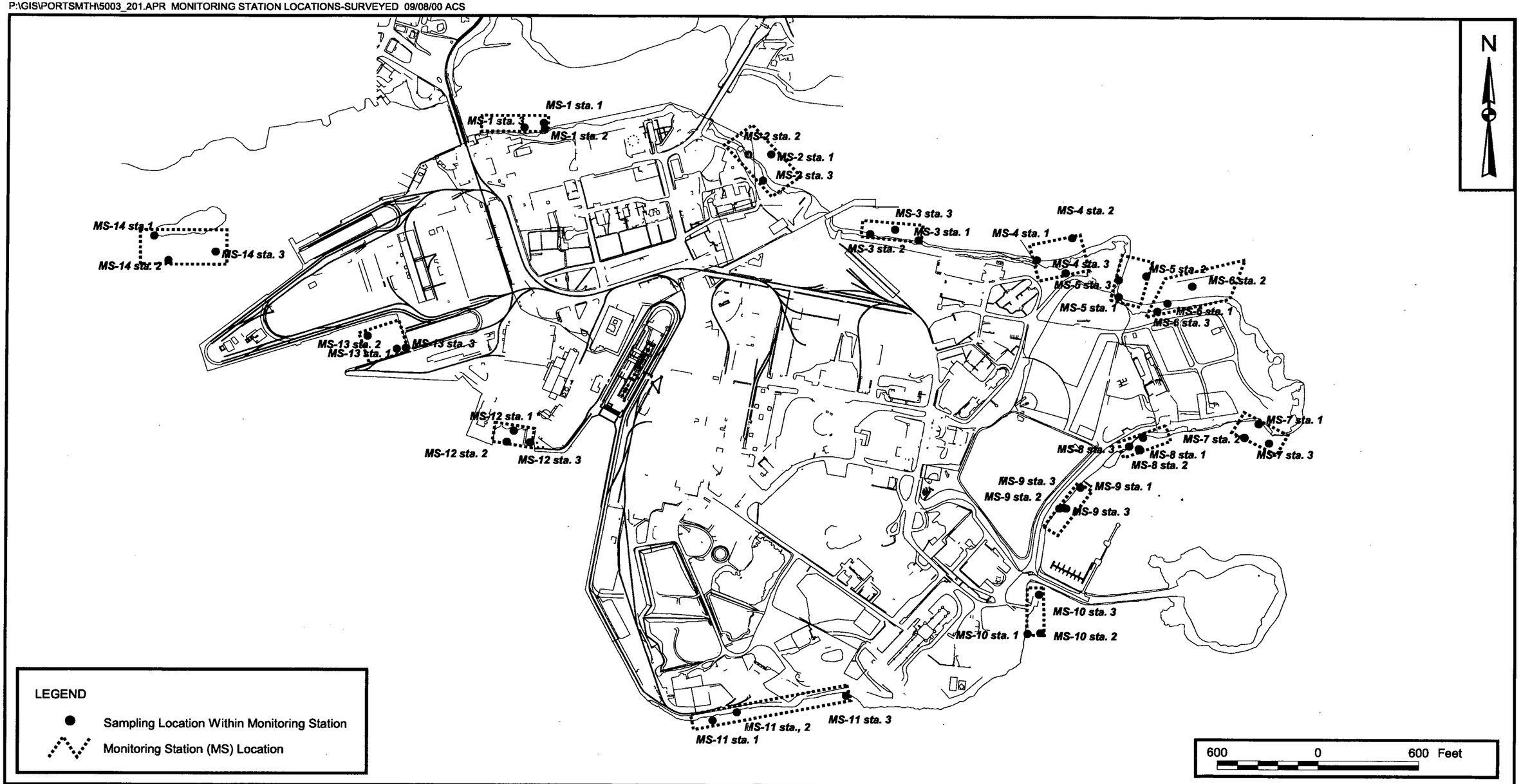


NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

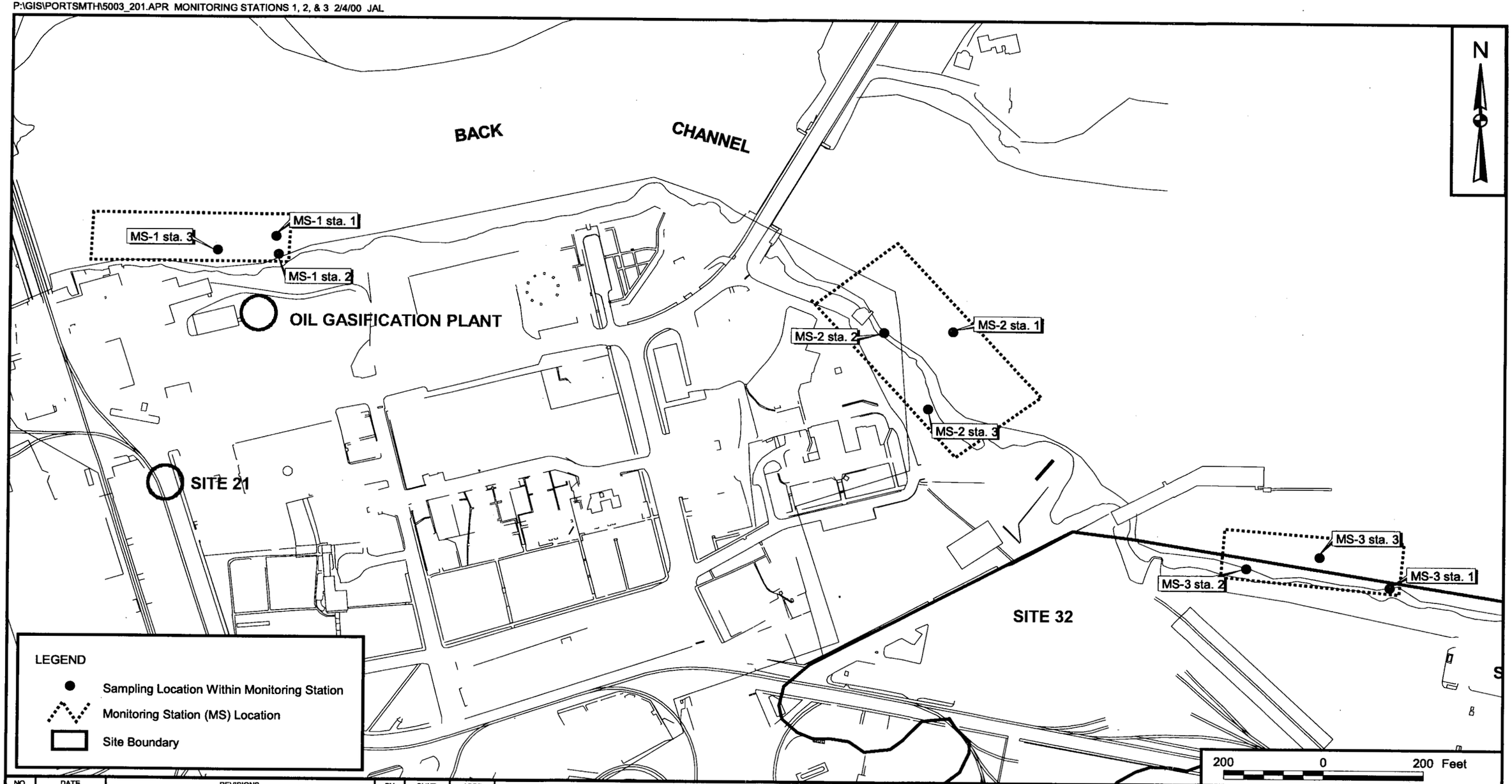
DRAWN BY J. LAMEY	DATE 12/15/99
CHECKED BY D. COHEN	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	

Tetra Tech NUS, Inc.

OVERVIEW OF MONITORING STATION LOCATIONS
INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

CONTRACT NUMBER 5003	OWNER NUMBER CTO 0201
APPROVED BY —	DATE —
APPROVED BY —	DATE —
DRAWING NO. FIGURE 1	REV 0

P:\GIS\PORTSMTH\5003_201.APR MONITORING STATIONS 1, 2, & 3 2/4/00 JAL



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY J. LAMEY	DATE 1/5/00
CHECKED BY D. COHEN	DATE 1/12/00
COST/SCHEDULE-AREA	
SCALE AS NOTED	

Tetra Tech NUS, Inc.

MONITORING STATIONS 1, 2, & 3
INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

CONTRACT NUMBER 5003	OWNER NUMBER CTO 201
APPROVED BY —	DATE —
APPROVED BY —	DATE —
DRAWING NO. FIGURE 2	REV 0

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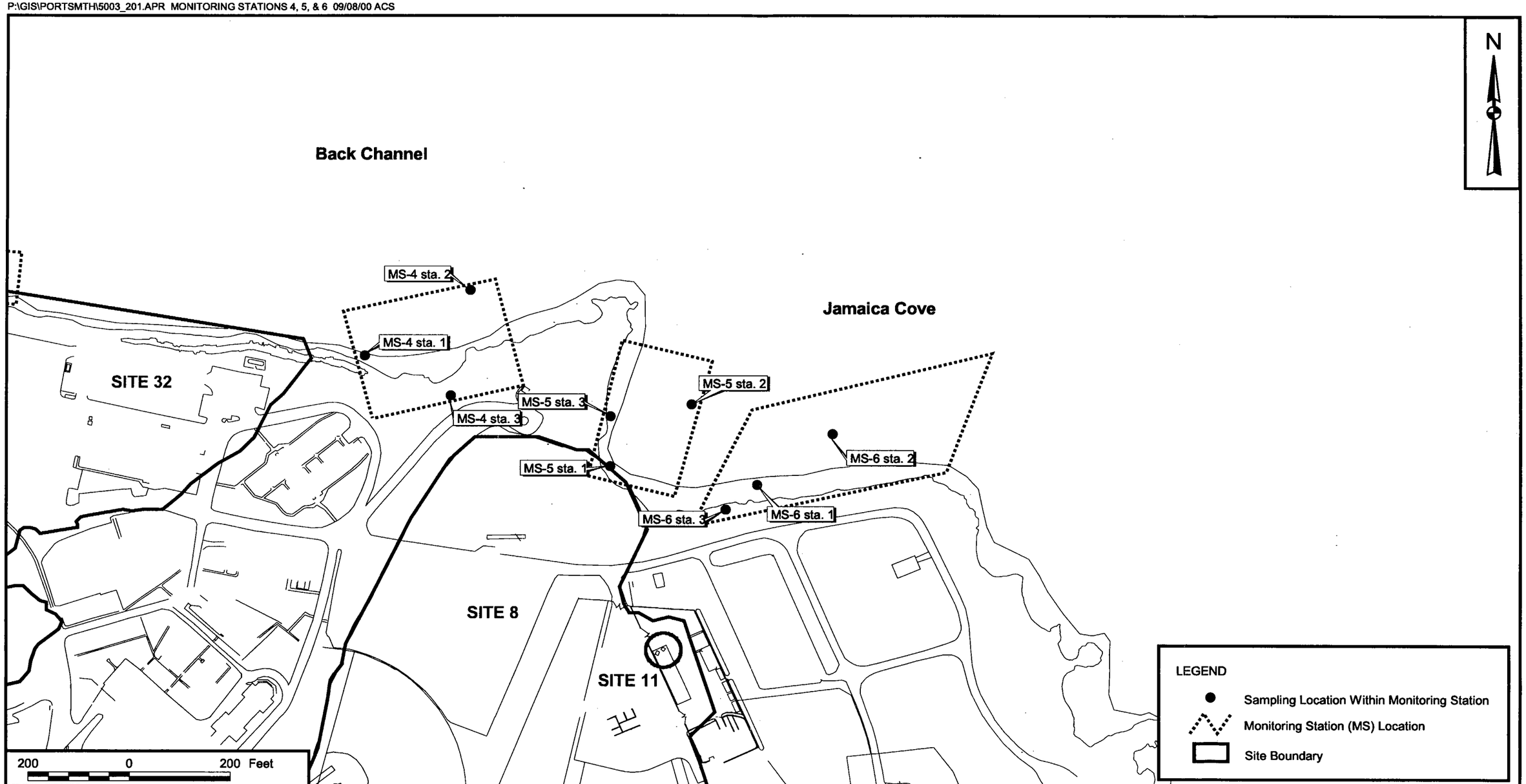

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY J. LAMEY	DATE 1/5/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5003 / OWNER NUMBER CTO 201
CHECKED BY D. COHEN DJC	DATE ~~1/4/00~~ 9/11/00	MONITORING STATIONS 4, 5, & 6 INTERIM OFFSORE MONITORING PROGRAM PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE	APPROVED BY — / DATE —
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 3 / REV 0

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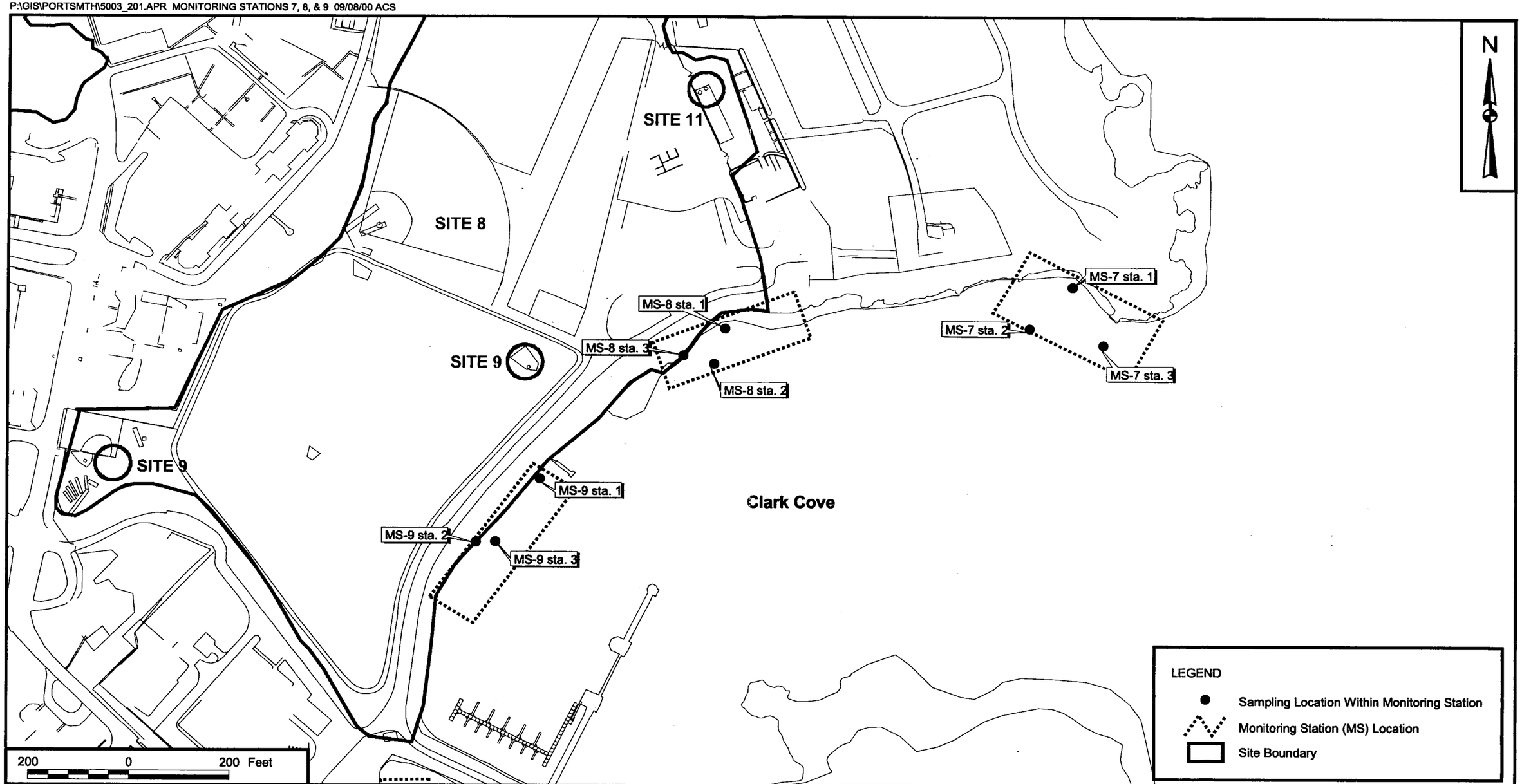
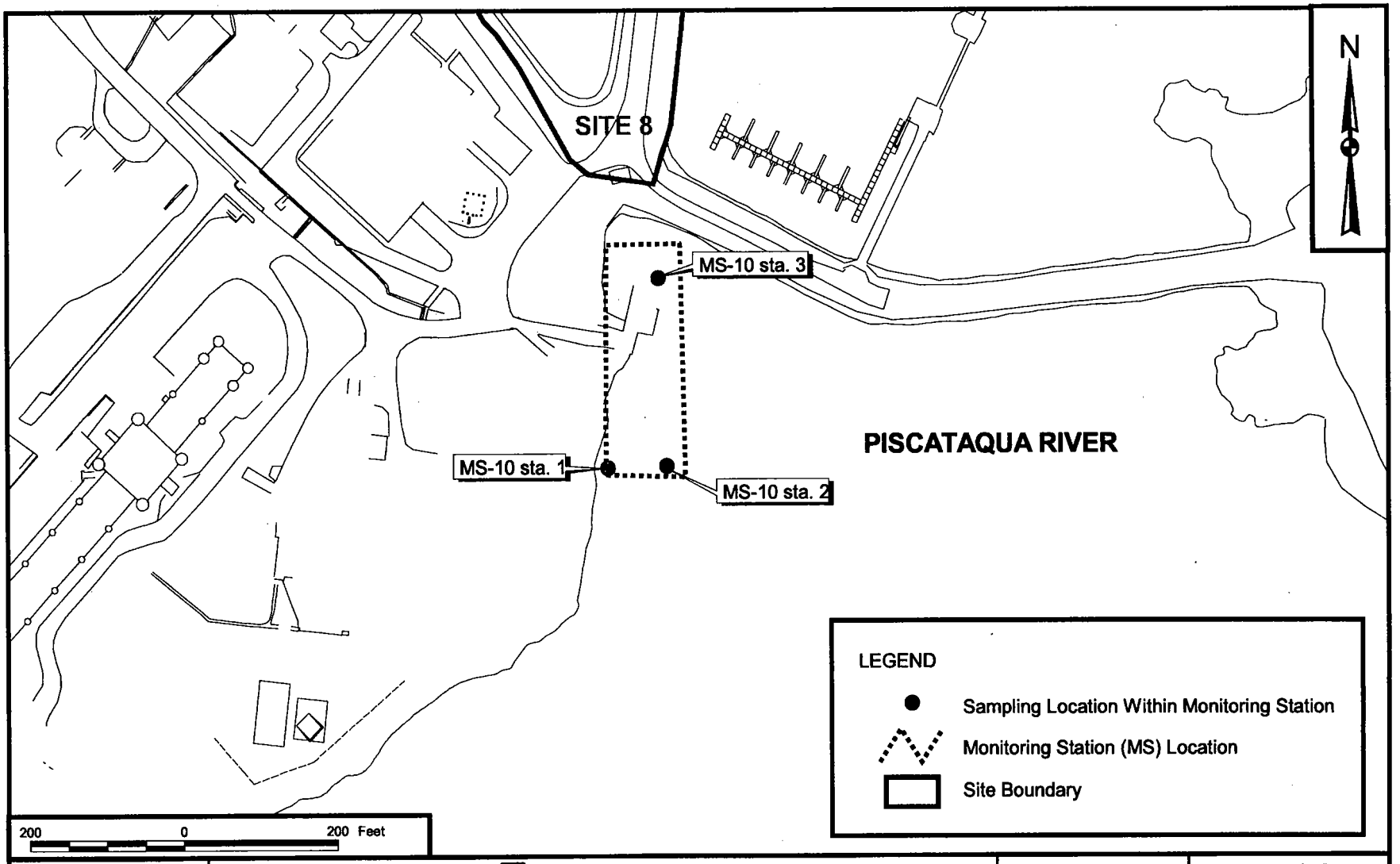


NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY J. LAMEY	DATE 1/5/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5003 / OWNER NUMBER CTO 201
CHECKED BY D. COHEN DJC	DATE ~~1/12/00~~ 9/11/00	MONITORING STATIONS 7, 8, & 9 INTERIM OFFSHORE MONITORING PROGRAM PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE	APPROVED BY — / DATE —
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 4 / REV 0



DRAWN BY J. LAMEY DATE 1/5/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5003	OWNER NUMBER CTO 201
CHECKED BY D. COHEN DATE 1/12/00	MONITORING STATION 10 INTERIM OFFSHORE MONITORING PROGRAM PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE	APPROVED BY — DATE —	
COST/SCHEDULE-AREA		APPROVED BY — DATE —	
SCALE AS NOTED		DRAWING NO. FIGURE 5	REV 0

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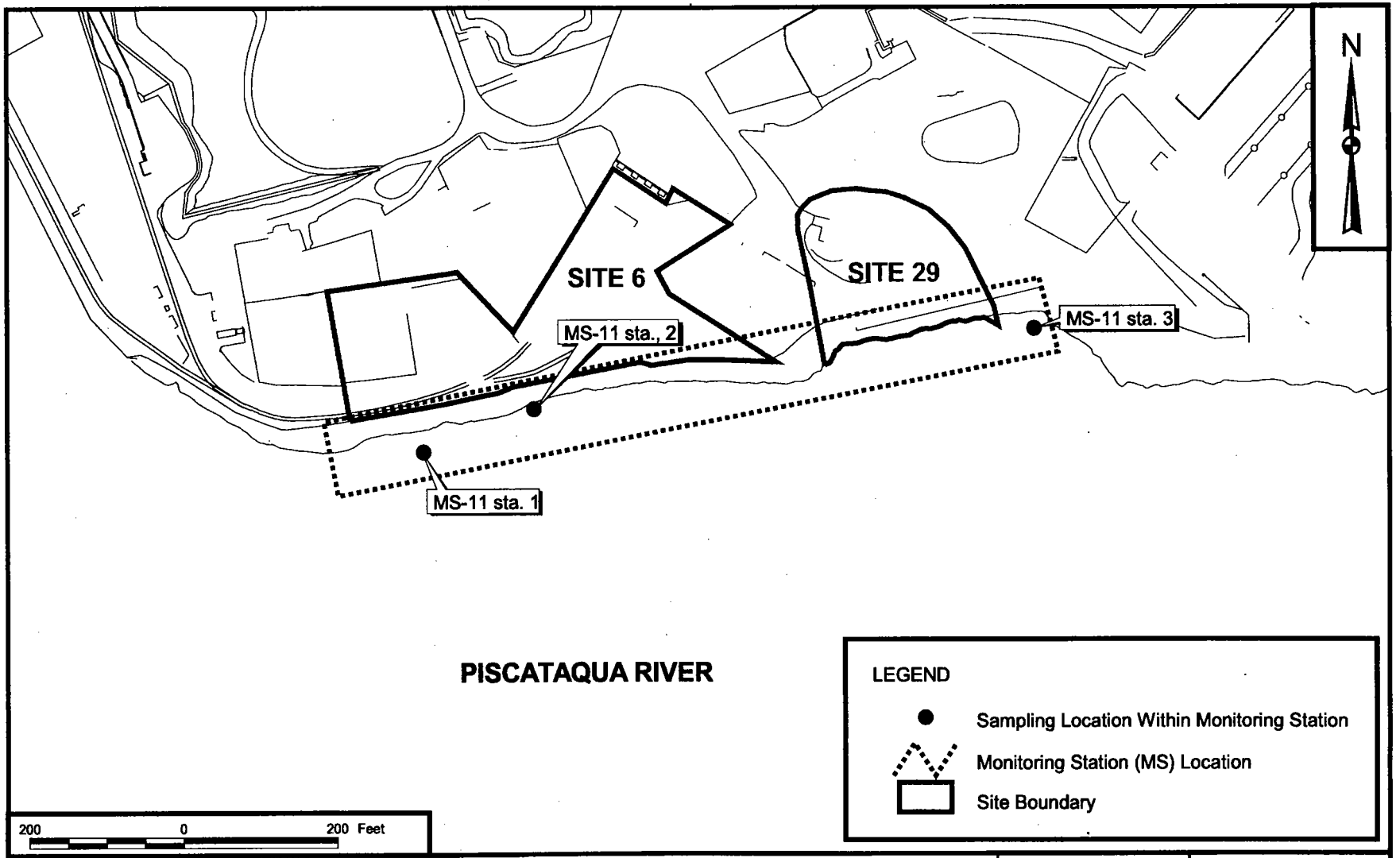

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CHECKED BY D. COHEN — DATE 1/12/00	MONITORING STATION 11 INTERIM OFFSHORE MONITORING PROGRAM PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE	APPROVED BY — DATE —	
COST/SCHEDULE-AREA		APPROVED BY — DATE —	
SCALE AS NOTED		DRAWING NO. FIGURE 6	REV 0

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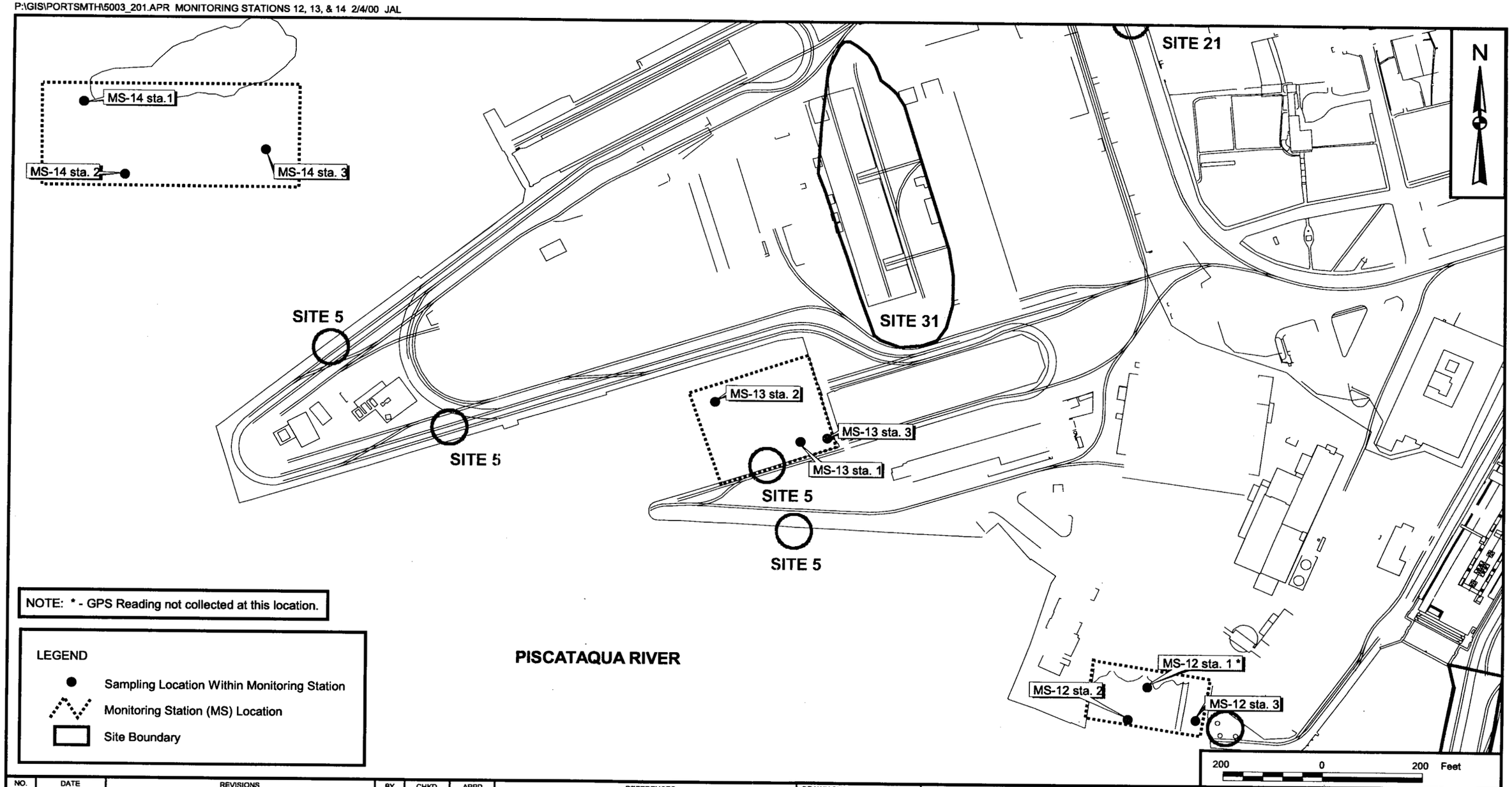


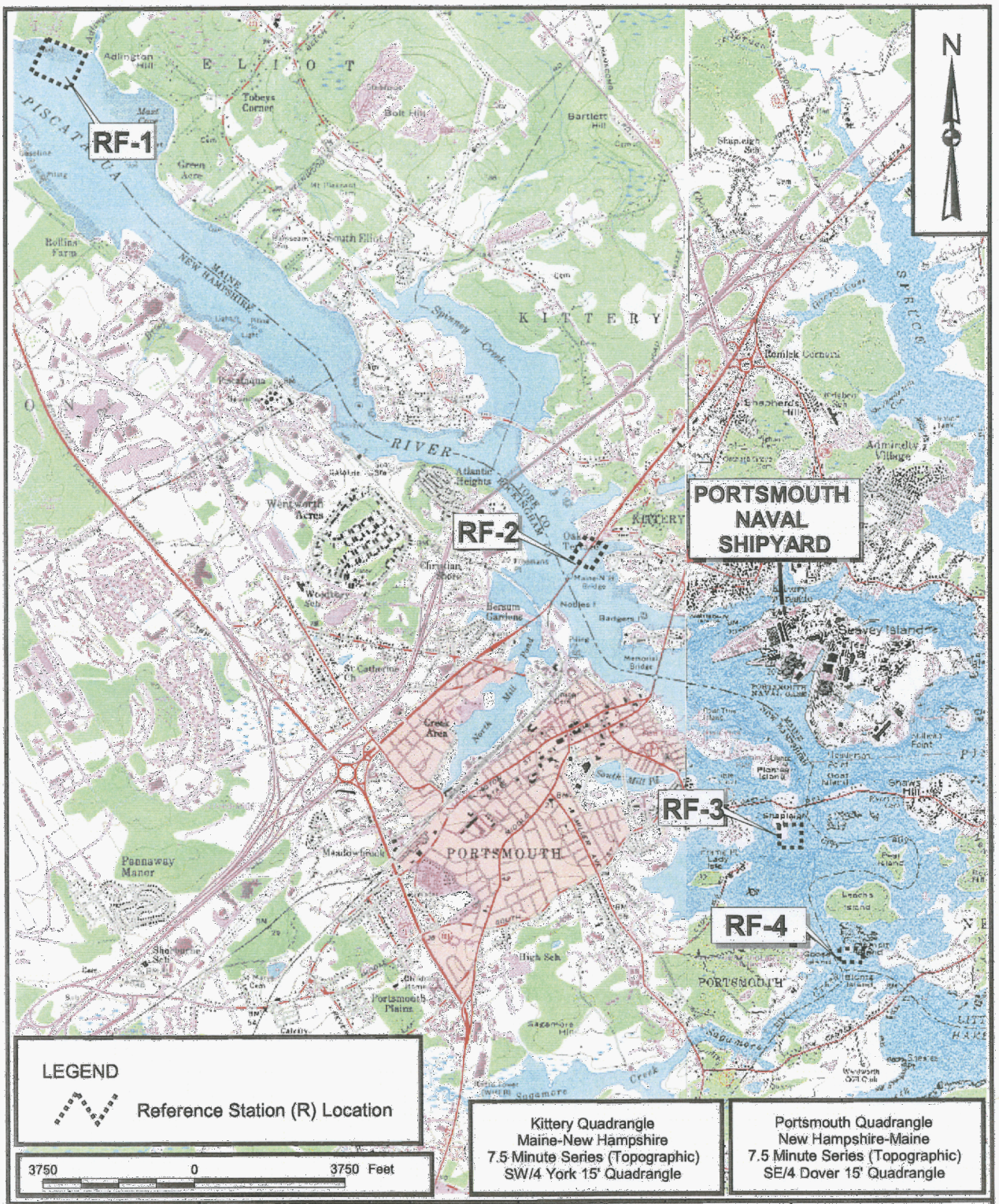
NOTE: * - GPS Reading not collected at this location.

LEGEND

- Sampling Location Within Monitoring Station
- Monitoring Station (MS) Location
- Site Boundary

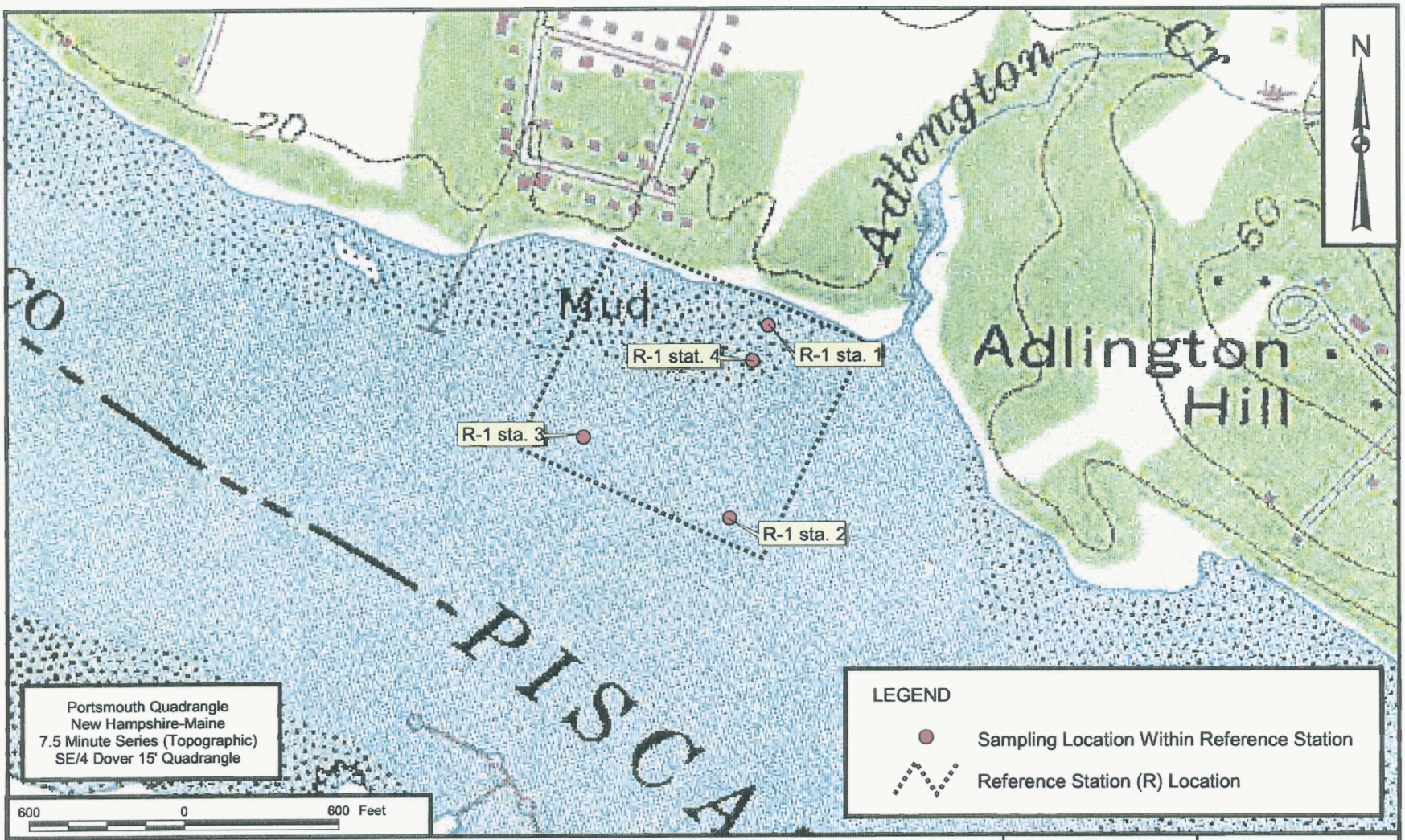
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY J. LAMEY	DATE 1/5/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5003 / OWNER NUMBER CTO 201
CHECKED BY D. COHEN	DATE 1/12/00	MONITORING STATIONS 12, 13, & 14 INTERIM OFFSHORE MONITORING PROGRAM PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE	APPROVED BY — / DATE —
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 7 / REV 0



DRAWN BY J. BELLONE — DATE 15-JULY-99	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5003	OWNER NO. 0201
CHECKED BY D. COHEN — DATE 2/4/00	OVERVIEW OF REFERENCE STATION LOCATIONS INTERIM OFFSHORE MONITORING PROGRAM PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE	APPROVED BY — DATE —	
COST/SCHEDULE-AREA		APPROVED BY — DATE —	
SCALE AS NOTED		DRAWING NO. FIGURE 8	REV 0

P:\GIS\PORTSMOUTH\5003_201.APR 2/4/00 JAL USGS MONITORING REFERENCE LOCATIONS LAYOUT



DRAWN BY J. LAMEY — DATE 1/5/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5003	OWNER NUMBER CTO 201
CHECKED BY D. COHEN — DATE 1/12/00	REFERENCE STATION 1 INTERIM OFFSHORE MONITORING PROGRAM PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE	APPROVED BY — DATE —	
COST/SCHEDULE-AREA		APPROVED BY — DATE —	
SCALE AS NOTED		DRAWING NO. FIGURE 9	REV 0

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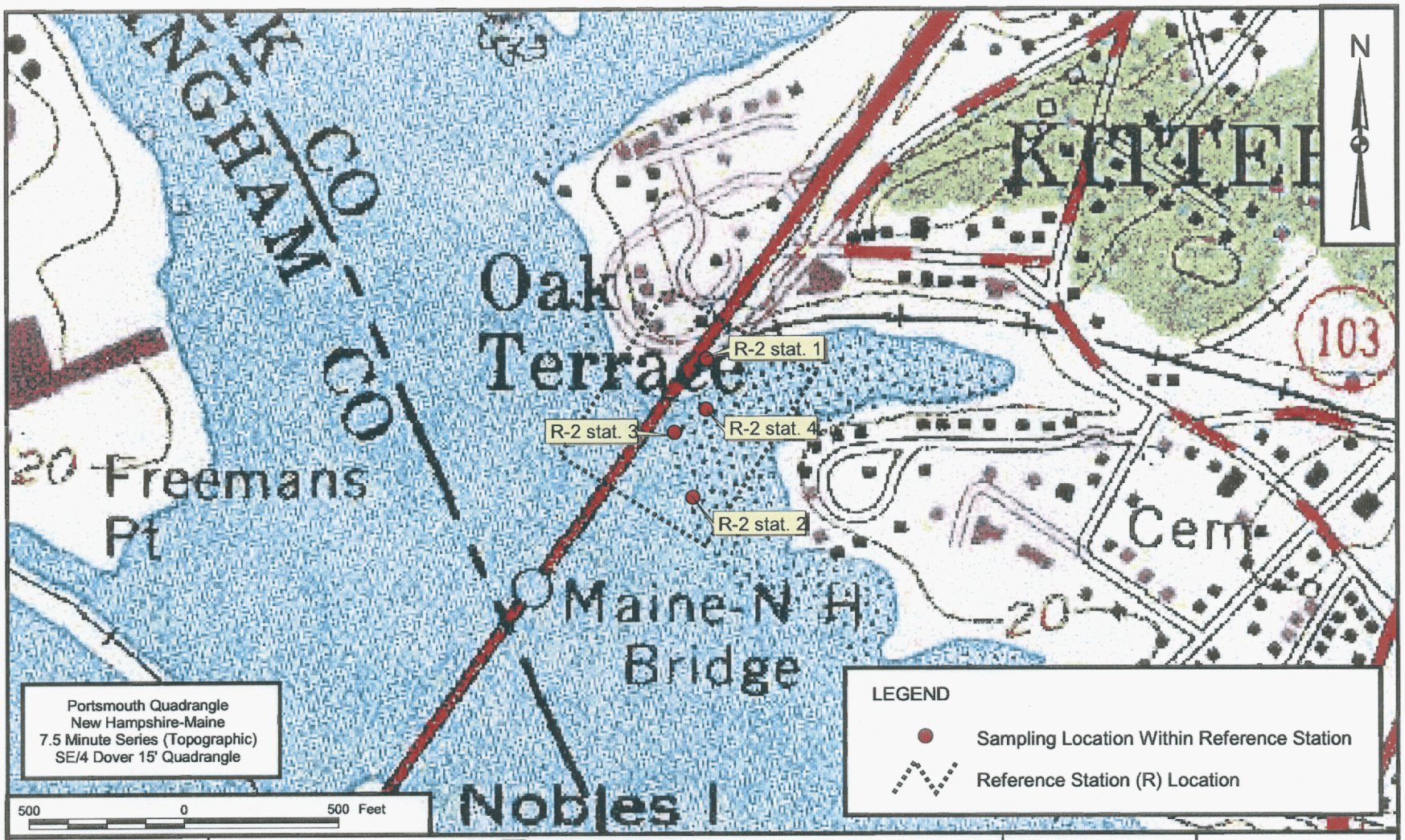

DRAWN BY J. LAMEY — DATE 1/5/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5003	OWNER NUMBER CTO 201
CHECKED BY D. COHEN — DATE 1/12/00	REFERENCE STATION 2 INTERIM OFFSHORE MONITORING PROGRAM PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE	APPROVED BY — DATE —	
COST/SCHEDULE-AREA		APPROVED BY — DATE —	
SCALE AS NOTED		DRAWING NO. FIGURE 10	REV 0

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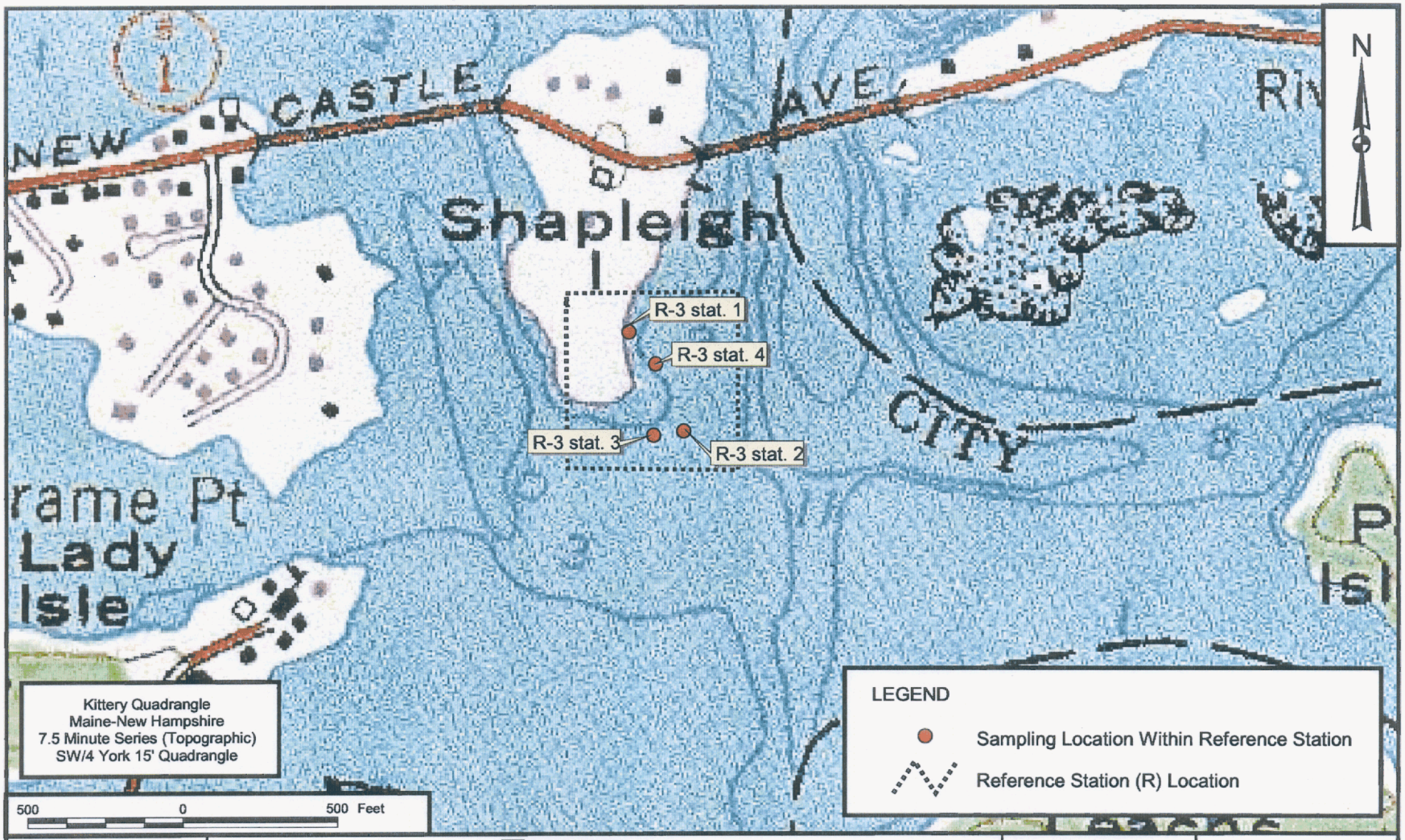

DRAWN BY J. LAMEY — DATE 1/5/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5003	OWNER NUMBER CTO 201
CHECKED BY D. COHEN — DATE 1/12/00	REFERENCE STATION 3 INTERIM OFFSHORE MONITORING PROGRAM PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE	APPROVED BY — DATE —	
COST/SCHEDULE-AREA		APPROVED BY — DATE —	
SCALE AS NOTED		DRAWING NO. FIGURE 11	REV 0

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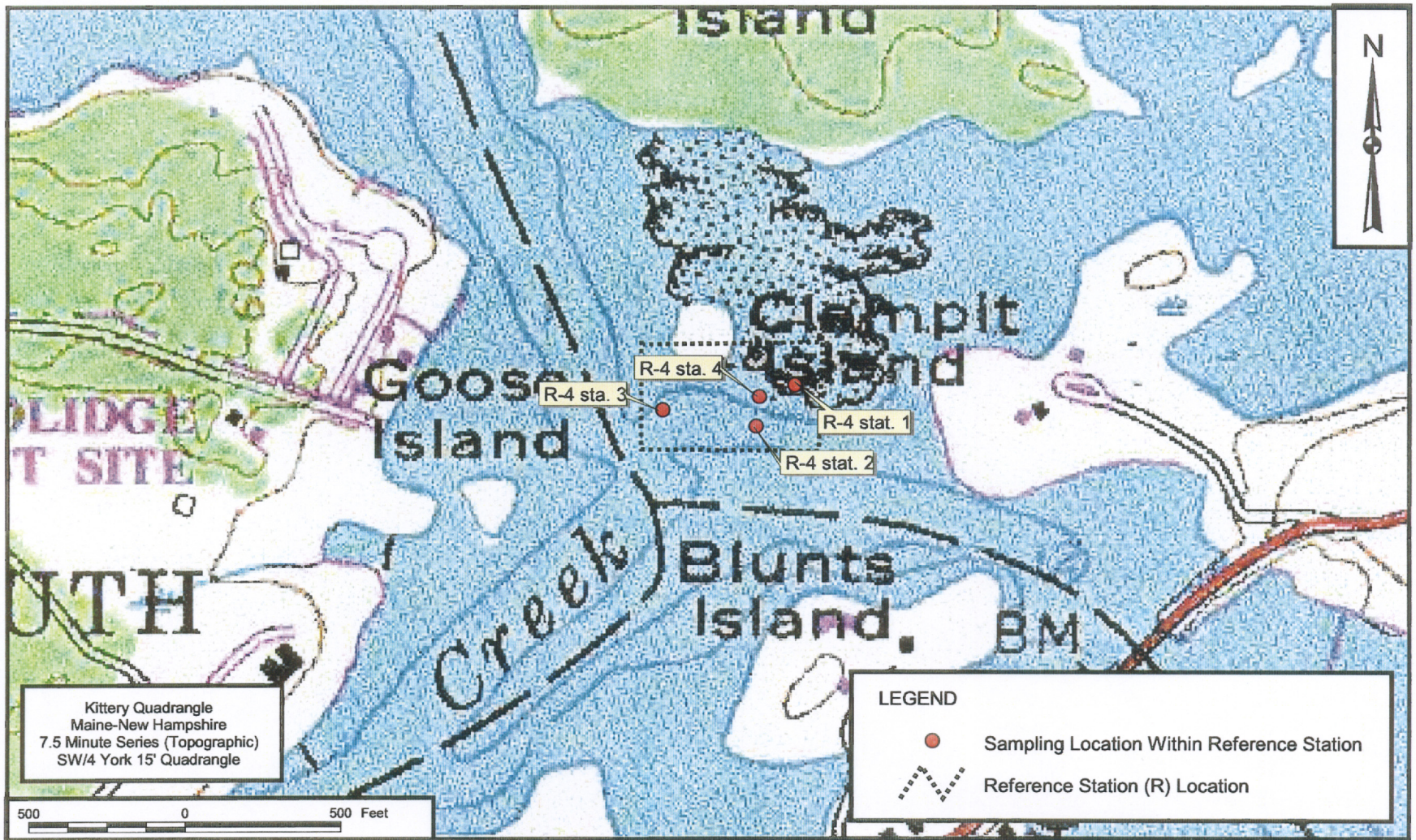

DRAWN BY J. LAMEY — DATE 1/5/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5003	OWNER NUMBER CTO 201
CHECKED BY D. COHEN — DATE 1/12/00	REFERENCE STATION 4 INTERIM OFFSHORE MONITORING PROGRAM PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE	APPROVED BY — DATE —	
COST/SCHEDULE-AREA		APPROVED BY — DATE —	
SCALE AS NOTED		DRAWING NO. FIGURE 12	REV 0

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APPENDIX A

FIELD LOG BOOKS

MS1-1 8/28/00

time 1224

43° 05' 05.08" N
70° 44' 22.43" W

Free Fallin'

Grab 1:
~~de~~ mussel shells
lots of shells, baby starfish, rocks
a lot of worms
Sandy & gravelly on top, clay below

redox 1-2 cm crs sand w/ gravel

2-9 sandy-silt black w/shell pieces

Grab 2:
jaws slightly open - rocks w/ baby seastars
very very cute

Grab 3:
Snail, hermit crab, baby urchins, baby brittle star

CTD°	T	S	DO	Time
0.2m	13.79	30.7	7.15	16:08
1.5	13.8	30.9	6.8	

MS 10-2 6:00 am 8/29/00

Mussel Collection -

#	Size	#	Size
1	9.2	21	7.4
2	8.3	22	9.8
3	9.1	23	8.7
4	8.2	24	8.6
5	8.7	25	7.1
6	9.5		
7	7.8		
8	7.7		
9	7.5	All too	
10	8.2	big!	
11	6.9		
12	8.5		
13	8.8		
14	8.0		
15	7.4		
16	8.2		
17	8.6		
18	9.0		
19	8.1		
20	7.2		

Location MS-2 Sta. 2. Date 8/28/00

Project / Client Chip - Hillary 1625

Sediment Redox layer 2mm

below 3cm of black, silty mud (sandy)

below brown sand 5-10cm

Sediment is gravelly

area is covered in mussel shells

Mussel collection

1	5.3	9	5.3
2	5.7	10	5.5
3	5.6	11	5.6
4	5.9	12	5.7
5	6.0	13	5.4
6	5.2	14	5.3
7	5.6	15	5.7
8	4.6	16	5.2

54 additional 5-6 cm

Location MS-1 Sta 2 Date 8/28/00

Project / Client time - 1655

Chip - Hillary

Sed -

- redox → at least 2cm
- coarse sand and gravel

Mussel Collection -

#	Size
1	6.0
2	6.0
3	5.2
4	5.6
5	5.8
6	5.2
7	5.4
8	5.9
9	5.5
10	5.1
11	6.0
12	5.8
13	5.4
14	5.4
15	5.8

55 Total → all in range

MS 1-3 8/28/00

time: 1250

43° 05' 04.71" N
70° 44' 24.00" W

X marks the spot!

Grab 1:

cobbles & shells on surface
silt/clay underneath
a lot of worms
some green algae
mussel ~~alive~~ alive ~~ok~~! nope, it was dead
plant material

redox 2 cm
0-2 med/lt brown sand w/cobbles
2-3 cm sandy silt
3-11 black w/ some dk brown mottling
worm tubes

43° 05' 04.65" N
70° 44' 23.94" W

(some movement - current)

Grab 2:

MS 1-3 continued 8/28/00

Grab 3:

Come back to get mussels and CTD
time 13:45

CTD	T	S	DO
0.2 m	13.77°	30.7	6.8
1.1 m	13.74	30.8	6.6
2.3 m	13.70	30.8	6.6

collected 33 mussels

1) 6.1 cm
2) 6.5 cm
3) 5.8
4) 8.0
5) 6.2
6) 7.0
7) 5.8
8) 6.6
9) 5.8
10) 6.6
11) 6.9
12) 6.5
13) 5.9
14) 6.5
15) 6.9
16) 6.0 cm
17) 6.0
18) 6.6
19) 6.0
20) 5.2
21) 5.6
22) 5.9
23) 6.5
24) 6.5
25) 7.0
26) 6.0
27) 7.0
28) 6.0
29) 6.6
30) 6.5
31) 6.8
32) 6.6
33) 6.9

MS 2-1

8/28/00

time: 1431

43° 05' 03.15" N
70° 44' 04.12" W

very strong currents

CTD

D	T	S	DO
0.2	13.26	31.0	7.6
4.1	13.21	30.9	7.3
~~4.43~~			

(swept by current - depth ~~[illegible]~~ elevation wrong)

Grab 1:

0-2½ cm gravel crs sand
2.5-6 cm clayey silt lt grey

bullets - quite a few

Grab 2: 43° 05' 03.10" N
70° 44' 04.16" W
rocks - failed attempt

MS 2-1 continued

8/28/00

Grab 2: 43° 05' 03.~~08~~ 12" N
70° 44' 04.~~14~~ 12" W

we're in an eddy making a 5m circle around the sampling spot

mostly rocks some sediment - grey clayey sed.
more bullets

Grab 3: attempt failed

Grab 3:
good grab

28 Location MS-2 Sta. 2. Date 8/28/00

Project / Client

Chip - Hillary 1625

Sediment Redox layer
2mm
below 3cm of black, silty mud (sandy)
below brown sand 3-10cm

Sediment is gravelly
area is covered in mussel shells

Mussel collection

1	5.3	9	5.3
2	5.7	10	5.5
3	5.6	11	5.6
4	5.9	12	5.7
5	6.0	13	5.4
6	5.2	14	5.3
7	5.6	15	5.7
8	5.6	16	5.2

34 additional 5-6 cm

Location MS-1 Sta 2 Date 8/28/00 29

Project / Client time - 1655

Chip + Hillary

Sed -

- redox → at least 7cm

- coarse sand and gravel

Mussel Collection -

#	Size
1	6.0
2	6.0
3	5.2
4	5.6
5	5.8
6	5.2
7	5.4
8	5.9
9	5.5
10	5.1
11	6.0
12	5.8
13	5.4
14	5.4
15	5.8

55 Total →
all in range

Location MS - 4 Sta. 3 Date 8/27/00

Project / Client Chip and Nick 1835

- redox at least 6cm
- gravel and sand w/ a lot of marsh roots

Location MS - 2 sta. 3 Date 8/28/00 1525

Project / Client Chip & Hillary

Mussel Collection -

#	Size
1	5.0
2	5.1
3	5.5
4	5.4
5	5.0
6	5.6
7	5.0
8	5.1
9	5.4
10	5.5
11	5.0
12	5.3
13	5.4
14	5.2
15	5.1

- only 18 w/in 5-6cm range
- 2# in 4-5cm

total 1-43

Sed -

- redox at least 0-10cm
- silt w/ a lot of marsh grass roots

Location MS 3 - 1 Date 8/27/00

Project / Client

Chip + Nick 1730

- seep ~10 ft to west of station
- redox ~2mm
- mussels collected 10 ft to the east of station
- not many mussels by seep

Location MS 04 - 1 Date 8/27/00

Project / Client Chip + Nick

1740

- redox at least 0 - 10 cm
- coarse gravel with sand

Mussel collection

#	Size	
1	5.9	2 → too big (6-7cm)
2	5.9	3 → too small (4-5cm)
3	5.6	
4	5.9	40 total → just right (5-6cm)
5	5.9	
6	5.5	
7	5.2	
8	5.6	
9	5.0	
10	5.2	mussels taken about 10 ft west of sample
11	5.1	
12	5.2	
13	5.9	
14	5.2	
15	5.6	

22

Location Ref 1-4 Date 8/27/00

Project / Client Chip + Nick 2:15pm

#	Size (cm)
1	5.3
2	5.2
3	5.9
4	6.0
5	5.8
6	5.9
7	5.1
8	5.9
9	6.0
10	5.2
11	6.0
12	5.4
13	5.1
14	5.0
15	5.4

Mussel collection

5 btwn 4-5cm (too small)

12 - 6-7cm (too big)

30 total btwn 5-6 cm (just right!)

23

Location MS 3-2 Date 8/27/00

Project / Client Chip + Nick 4:50pm

- redox ~ 1mm
- black silty material, a lot of rocks and snails
- 5 yds from seep west of seep

Mussel collection -

#	Size
1	5.5
2	5.7
3	5.8
4	5.2
5	5.4
6	5.7
7	5.8
8	5.5
9	5.8
10	5.8
11	5.6
12	5.9
13	5.1
14	5.5
15	5.6

1 - too small (btwn 4-5cm)

9 - too big (btwn 6-7cm)

40 total - just right (btwn 5-6cm)

130 Location ~~Rinsate, Field Blank~~ Date 5/7/00
Project / Client PNS 11:20

rinsate blank 5 dI over small scoop

Field blank 1 DI

PNS - ROUND 3 8/27/00

10:00am

Rinsate blank over aluminum bowl

Field blank

Location PNS - ROUND 3 Date 8/27/00 131
Project / Client MSCZ - 3
11:00am

CTD same location as before
42°04'9.8" N → 43°04'58.69"
70°43'8.4" W → 70°43'53.66"

~~0.5 13.6 30.9 6.4~~

D	T	S	O_2 (mg/L)
0.5	13.60	30.9	6.4
1.2	13.34	30.9	6.4
2.4	13.20	31.0	6.2

Grab 1:
redox ~~0-10~~ 0-2.3 cm
0-2 brown
2-10 mottled grey-black
8-10 black fades to grey

sandy silt

Grab 2: lots of worm tubes, big clam worm

Grab 3: same as others

GORGEOUS DAY!!! ☺

24 Location MS 3 - 1 Date 8/27/00

Project / Client

Chip + Nick 1730

- seep ~10 ft to west of station
- redox ~2mm
- mussels collected 10 ft to the east of station
- not many mussels by seep

Location MS 04 - 1 Date 8/27/00 25

Project / Client Chip + Nick

1740

- redox at least 0 - 10 cm
- coarse gravel with sand

Mussel collection

#	Size	
1	5.9	2 → too big (6-7cm)
2	5.9	
3	5.6	3 → too small (4-5cm)
4	5.9	40 total → just right (5-6cm)
5	5.5	
6	5.5	
7	5.2	
8	5.6	
9	5.0	
10	5.2	mussels taken about 10 ft west of sample
11	5.1	
12	5.2	
13	5.9	
14	5.2	
15	5.6	

Location _____ Date 8/27/00

Project / Client MS 4-2

12:00 noon

43° 04' 58.26" N same
70° 43' 39.95" W location

CTD

D	T	S	O_2
0.2	14.04	30.8	7.1
1.1	13.39	31.0	7.0
2.2	13.32	31.0	7.0
3.0	13.28	31.0	6.9

Grab 1. Some worms, shells, iso or decapods of some sort

redox ~~cm~~ 2½-3 cm

Sandy silt

0-3 med. brown

3-8 mottled black - med grey

8-12 med. grey (no mottling)

Grab 2:

Grab 3: free fall Aaaah ...!

good grabs

Location _____ Date 8/27/00

Project / Client MS 5-2

13:45

43° 04' 56.03" N
70° 43' 33.67" W

CTD

D	T	S	O_2
0.2	~~14.94~~ 13.94	31.2	~~5~~ 6.9
0.9	13.45	31.0	6.4
1.9	13.45	30.9	6.5

it's mostly alive, but def. some eelgrass

eelgrass visible from boat

looks like large bed - in whole cove? → Nope

extends towards middle of cove

sta 6 sta 5

Grab 1:

redox 0.8-1.4 cm

above redox med. brown

1-5 black, not mottled

5-11 black - dk. grey mottled

Sandy silt

Came up w/ a line! ha ha...!

grab is fine though.

Location MS - 4 Sta. 3 Date 8/27/00

Project / Client

Chip and Nick 1835

- redox at least 6cm

- gravel and sand w/ a lot of marsh roots

Location MS - 2 sta. 3 Date 8/28/00

Project / Client 1525

Chip & Hillary

Mussel Collection -

#	Size
1	5.0
2	5.1
3	5.5
4.	5.4
5	5.0
6	5.6
7	5.0
8	5.1
9	5.4
10	5.5
11	5.0
12	5.3
13	5.4
14	5.2
15	5.1

- only 19 w/in 5-6cm range

- 2# in 4-5cm

total = 4/3

Sed -

- redox at least 0-10cm

- silt w/ a lot of marsh grass roots

MS 6-1

8/29/00
time 0530

~~Johnson Clip got seed mussels were collected on 8/27/00 in late afternoon/early evening – 1725~~

mussels

1	5.5	5.5	5.8
2	5.4	5.0	5.0
3	5.2	5.2	5.8
4	5.4	5.6	5.0
5	5.5	5.4	5.2

35 additional 5-6cm

total: 50

MS 5-1

8/27/00
time 1635

station marker

mussels

1	5.2	5.2	5.2
2	5.5	5.3	5.5
3	5.0	5.8	5.3
4	5.0	5.0	5.5
5	5.0	5.5	5.2

28 others 5-6cm

total: 43

0-1 cm lt. brown fine silt
1-10 cm dk. black fine silt

redox at 1cm

(from Aaron's field book)

Location _____ Date 8/27/00

Project / Client MS 4-2

12:00 noon

CTD 43° 04' 58.20" N 70° 43' 39.15" W same location

D	T	S	O_2
0.2	14.04	30.8	7.1
1.1	13.39	31.0	7.0
2.2	13.32	31.0	7.0
3.0	13.28	31.0	6.9

Grab 1: some worms, shells, iso or decapods of some sort

redox 2½-3 cm

sandy silt

0-3 med. brown

3-8 mottled black - med grey

8-12 med. grey (no mottling)

Grab 2:

Grab 3: free fall Aaaah ...!

good grabs

Location _____ Date 8/27/00

Project / Client MS 5-2

12:45

CTD 43° 04' 56.03" N 70° 43' 33.67" W

D	T	S	O_2
0.2	~~14.94~~ 13.94	31.2	~~15~~ 6.9
0.9	13.45	31.0	6.4
1.9	13.45	30.9	6.5

it's mostly algae, but def. some eelgrass

eelgrass visible from boat

looks like large bed - in whole cove? → Nope

extends towards middle of cove

sta. 6 sta. 5

Grab 1:

redox 0.8-1.4 cm

above redox med brown

1-5 black, not mottled

5-11 black - dk. grey mottled

Sandy silt

Came up w/ a line! ha ha...!

grab is fine though.

Project / Client

Grab 2:
soft shelled clam
nothing else - no worms, amphipods

Grab 3:
free fall again - problem w/ brakes on winch

Project / Client

time: 1337

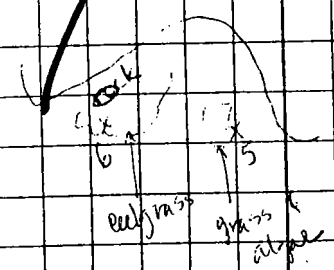
had trouble getting to spot - no GPS

~~D T S O_2~~
~~0.2 13.76 31.0 6.5~~
~~3.2 13.64 31.0~~

strong current

D	T	S	O_2
0.2	13.68	30.9	7.2
1.1	13.64	30.9	6.9
2.1	13.66	30.9	7.1

→ no GPS fix, bad signal. Used maps from before. Can see eelgrass around boat



MS 5-3

8/27/00
time: 1705

station marker

mussels

1	5.5	5.4	5.5
2	5.3	5.3	5.0
3	5.7	5.2	5.2
4	5.5	5.0	6.0
5	5.5	5.4	5.0

27 others 5-6 cm

total 42

0-1 cm lt brown silty sand
1-10 cm. black med sand with silt

redox at 1cm

(from Aaron's field book)

MS 6-3

8/27/00
time: 1750

~~from~~

station marker

mussels

1	5.5	5.2	5.6
2	5.2	5.3	5.2
3	5.2	5.2	5.9
4	5.0	5.7	5.5
5	5.4	5.3	5.0

35 others 5-6cm total: 50

0-10 cm lt brown silty sand
no redox discontinuity
many roots

~1 foot east of previous location
on edge of salt marsh

(from Aaron's field book)

MS 6-1

8/29/00
time 0530

John & Chip got peds

mussels were collected on

8/27/00

in late afternoon/

early evening — 1725

mussels

1	5.5	5.5	5.8
2	5.4	5.0	5.0
3	5.2	5.2	5.8
4	5.4	5.6	5.0
5	5.5	5.4	5.2

35 additional 5-6cm

total: 50

MS 5-1

8/27/00
time 1635

station marker

mussels

1	5.2	5.2	5.2
2	5.5	5.3	5.5
3	5.0	5.8	5.3
4	5.0	5.0	5.5
5	5.0	5.5	5.2

28 others 5-6cm

total: 43

0-1 cm lt. brown fine silt
1-10 cm dk. black fine silt

redox at 1cm

(from Aaron's field book)

Project / Client

Grab 1:
eelgrass & algae snails
little sea star
fish in grab

no redox
Sandy - silt
lots of vegetation
dk brown 0-10 cm

Grab 2:
silty-sand (More ~~silt~~ sand than last grab)

Grab 3:
0-1 mm redox
couple big clam worms

lots of eelgrass & rhizomes in all grabs

all grabs very close to one another
prob close but not exact to last May sampling

mussels collected at 15:30
~~20~~ 19 between 5 and 6 cm
had trouble finding mussels in appropriate size range

Project / Client

1) 5.8 cm
2) 5.0 cm
3) 5.2
4) 5.9
5) 5.8
6) 5.5
7) 5.8
8) 6.0
9) 5.7
10) 5.8
11) 5.5
12) 6.0
13) 5.0
14) 5.9
15) 5.3

shower at lunch time but gorgeous again!

MS 5-3 8/27/00

time: 1705

station marker

mussels

1	5.5	5.4	5.5
2	5.3	5.3	5.0
3	5.7	5.2	5.2
4	5.5	5.0	6.0
5	5.5	5.4	5.0

27 others 5-6 cm

total $\boxed{42}$

0-1cm lt brown silty sand
1-10cm black med sand with silt

redox at 1cm

(from Aaron's field book)

MS 6-3 8/27/00

time: 1750

station marker

mussels

1	5.5	5.2	5.6
2	5.2	5.3	5.2
3	5.2	5.2	5.9
4	5.0	5.7	5.5
5	5.4	5.3	5.0

35 others 5-6cm total: $\boxed{50}$

0-10cm lt brown silty sand
no redox discontinuity
many roots

~1 foot east of previous location
on edge of salt marsh

(from Aaron's field book)

 Location MG 7-1 Date 8/28/00

Project / Client time: 1550

0-1cm lt. brown
1-10cm dk. grey

sandy silt

easy to find

<u>mussels</u>:

1	6.0	6	5.4	11	5.8
2	6.0	7	5.6	12	6.0
3	6.0	8	5.8	13	5.6
4	6.0	9	5.9	14	6.0
5	6.0	10	5.9	15	6.0

34 others between 5-6 cm
total: 49

 Location Date

Project / Client

 Location MS 7-2 Date 8/2/00

Project / Client

time: 16:43

(low tide)

43° 04' 46.90"
70° 43' 25.84"

CTD

D	T	S	O_2
0.2	15.01	30.6	6.7
0.8	14.90	30.6	6.5

Grab 1:

0.6-1cm redox
0-1 med brown
1-6 black / lt brown mottled
6-10 med brown, less black mottled

silty-sand bits of eelgrass (dead)
dandiwormus

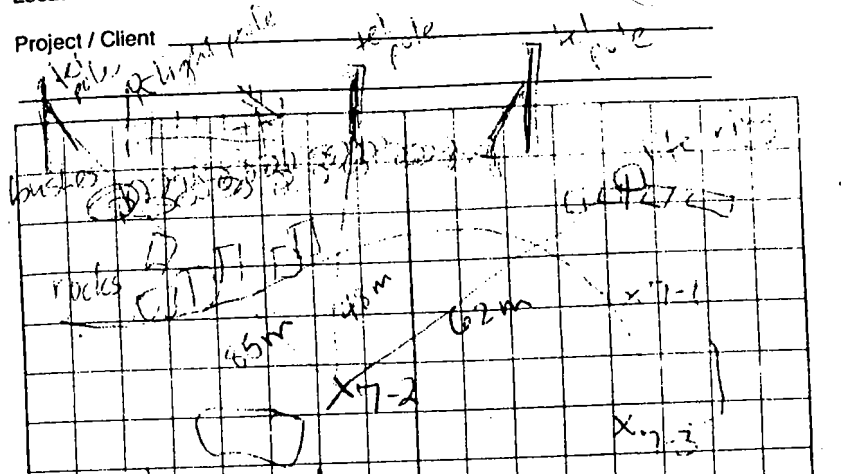
Grab 2:

Grab 3:

very calm, nice evening

 Location MS 7-2 Date

Project / Client



big hazardous rock
(we hit it 2x at low tide - dud)

 Location MS 7-3 Date 8/2/00

Project / Client

time: 15:50

Night on to 5103 site

41° 04	45.95"	N
70° 43	23.93"	W

CTD	T	S	O_2
0.2m	15.05	30.7	6.8
0.8m	14.59	30.7	6.8

Grab 1: 3 cm red in disc.

0-3 med brown sandy-silt

3-10 mottled black & lt grey/lt brown

10-13 " med brown & black silty sand

shells

eelgrass visible from boat

Grab 2:

Grab 3:

may have hit same hole

Mussels collected 16:15

So total

 Location MS 7-3 continued Date 8/07/00

Project / Client 16:25

1)	5.5
2)	5.8
3)	5.6
4)	5.2
5)	5.2
6)	6.0
7)	6.1
8)	6.3
9)	6.1
10)	5.9
11)	5.8
12)	5.7
13)	6.0
14)	5.8
15)	6.0

Location MS 8-1 Date 8/28/00

Project / Client time 1630

0-1 cm lt. brown (redox at 1cm)
1-10 cm black

Sandy-clayey silt
some worms, small
a few pebbles

sampling marker just above mud-

good maps still very helpful

Mussels:

1	6.0	6	6.0	11	5.7
2	5.0	7	5.4	12	5.2
3	5.2	8	5.6	13	5.3
4	5.1	9	6.0	14	5.5
5	5.9	10	6.0	15	5.0

41 others between 5-6 cm

total: 56

Location MS 8-3 Date 8/28/00

Project / Client time 1700

0-10 cm brown sand
some cobbles
(gravelly)
no color change

sampled 1 foot east of marker

Mussels:

1	5.8	6	5.2	11	5.3
2	5.2	7	6.0	12	5.3
3	5.6	8	5.6	13	5.2
4	5.4	9	5.0	14	5.5
5	5.8	10	5.5	15	5.5

39 others between 5-6 cm

total: 54

 Location MSE-2 Date 5/27/00

Project / Client

time 17.20

413" 04' 45 21" N 10 meters away?
70° 41' 33.92" W

lobster pots & nasty rock made exact positioning difficult - also low tide
(excuses, excuses...)

CTD

D	T	S	O_2
0.2	15.15	30.8	6.6
G 0.6	14.90	30.6	6.5

Grab 1:
Crab! Carcinus maenas (green crab)
6cm carapace - if it matters

redox 0.3 - 0.7cm
0-0.7 med brown
0.7-4 mottled dk grey / black
G 4-9 med - lt grey

Silty sand
G Grab 2: worm

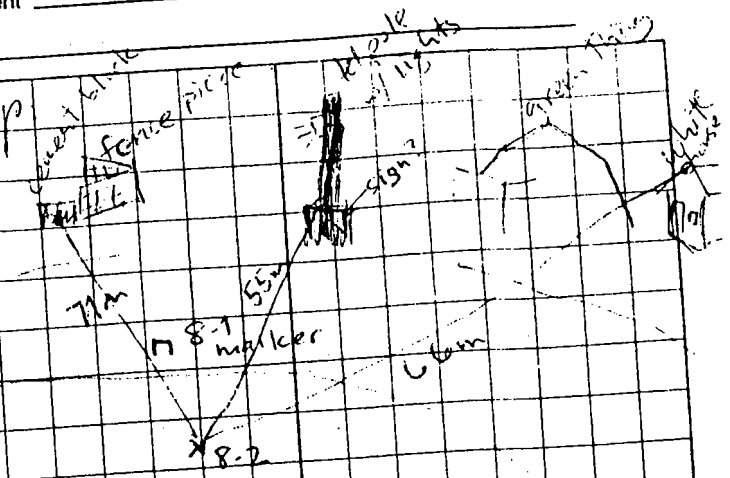
all grabs free falling

Grab 3:

 Location Date

Project / Client

Map



Location MS 8-1 Date 8/28/00

Project / Client time 1630

0-1cm lt. brown (redox at 1cm)
1-10cm black

Sandy-clayey silt
some worms, small
a few pebbles

sampling marker just above mud-

good maps still very helpful

Mussels:

1	6.0	6	6.0	11	5.7
2	5.0	7	5.4	12	5.2
3	5.2	8	5.6	13	5.3
4	5.1	9	6.0	14	5.5
5	5.9	10	6.0	15	5.0

41 others between 5-6cm

total: 56

Location MS 8-3 Date 8/28/00

Project / Client time 1700

0-10cm brown sand
some cobbles
(gravelly)
no color change

sampled 1 foot east of marker

Mussels:

1	5.8	6	5.2	11	5.3
2	5.2	7	6.0	12	5.3
3	5.6	8	5.6	13	5.2
4	5.4	9	5.0	14	5.5
5	5.8	10	5.5	15	5.5

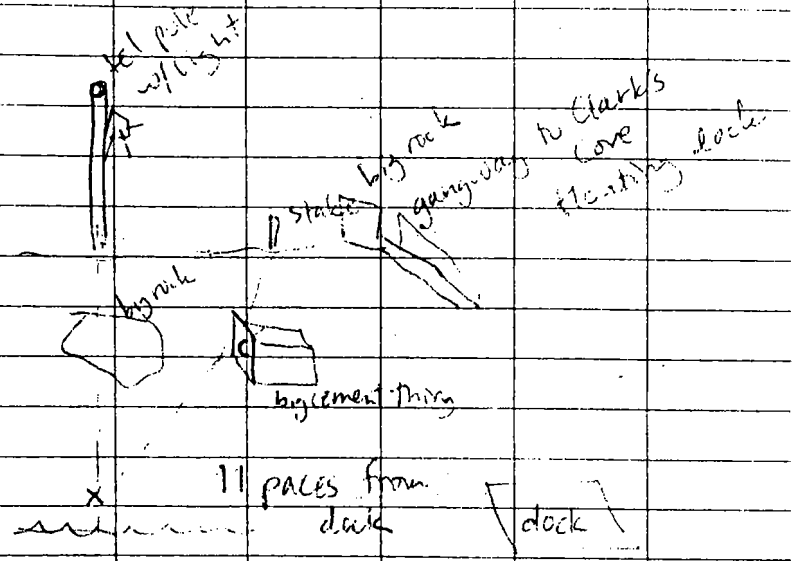
39 others between 5-6cm

total: 54

Location M9-1 Date 8/30/00

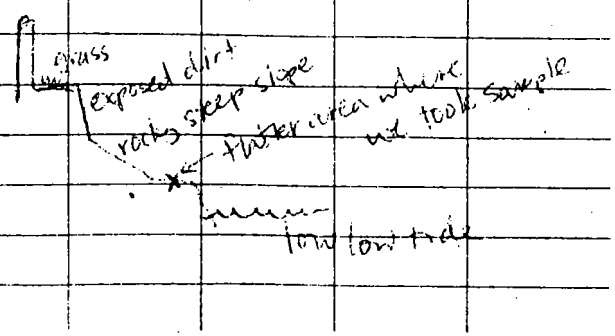
Project / Client time. 0630

43° 04' 43.16"N
70° 43' 38.93"W



No marker - no rebar

Side view:



Location Date 8/30/00

Project / Client 0630

M 9-1 Sed Description -

- redox at least thru 0-5 cm
- only went about 5cm deep
- gravelly, coarse sand w/ a little mud

CONTENTS

PAGE	REFERENCE	DATE

29 August 2000

PNS Station 9-2 5:35 am

Sediment collected 10' downslope from pipe. 0-4mm brown silt w/ mussels and snails

4mm-10cm dark grey/black sandy gravelly silt w/snails

90 Mussels collected. all others b/w 5-6cm

5.5 cm	5.4 cm	5.3 cm
5.8 cm	6.0 cm	5.6 cm
5.9 cm	5.3 cm	6.0 cm
5.2 cm	5.9 cm	5.5 cm
5.5 cm	5.9 cm	6.0 cm

PNS resampled at proper location 9-1 at 8:30 am 29 Aug 8/30/00

Coarse sand and gravel.

~~40~~ ~~50~~ 50 mussels.

5.2 cm	5.5 cm	6.0 cm
5.0 cm	5.2 cm	5.8 cm
5.4 cm	5.6 cm	5.5 cm
6.0 cm	6.0 cm	5.8 cm
5.3 cm	5.0 cm	5.0 cm

Sediment discarded because site location was inaccurate. Will come back for sediment tomorrow. Mussels collected ~ 40-60 Feet away from correct location.

↳ that was all that was available.

CONTENTS

PAGE	REFERENCE	DATE

29 August 2000

PNS Station 9-2 5:35 am

Sediment collected 10' downslope from pipe. 0-4mm brown silt w/ mussels and snails

4mm-10cm dark grey/black sandy gravelly silt w/snails

50 Mussels collected. all others b/w 5-6cm

5.5 cm	5.4 cm	5.3 cm
5.8 cm	6.0 cm	5.6 cm
5.9 cm	5.3 cm	6.0 cm
5.2 cm	5.9 cm	5.5 cm
5.5 cm	5.9 cm	6.0 cm

resampled at proper location

PNS 9-1 at 8:30 am 29 Aug 8/30/00

Coarse sand and gravel.

~~40~~ ~~50~~ 50 mussels.

5.2 cm	5.5 cm	6.0 cm
5.0 cm	5.2 cm	5.8 cm
5.4 cm	5.6 cm	5.5 cm
6.0 cm	6.0 cm	5.8 cm
5.3 cm	5.0 cm	5.0 cm

Sediment discarded because site location was inaccurate. Will come back for sediment tomorrow. Mussels collected ~ 40-60 Feet away from correct location.

↳ that was all that was available

 Location MS 9-3 duplicate Date 8 7 00

Project / Client

BEAUTIFUL EVENING! time 1800

Calm, sunny, 80°, gulls boating

43° 04' 41.95" N right on last
70° 43' 39.88" W location from 5/00 & 9/99

CTD

D	T	S	DO
0.2	14.96	30.9	6.2
1.0	14.80	30.5	6.4
2.0	14.67	30.7	6.2

Grab 1:

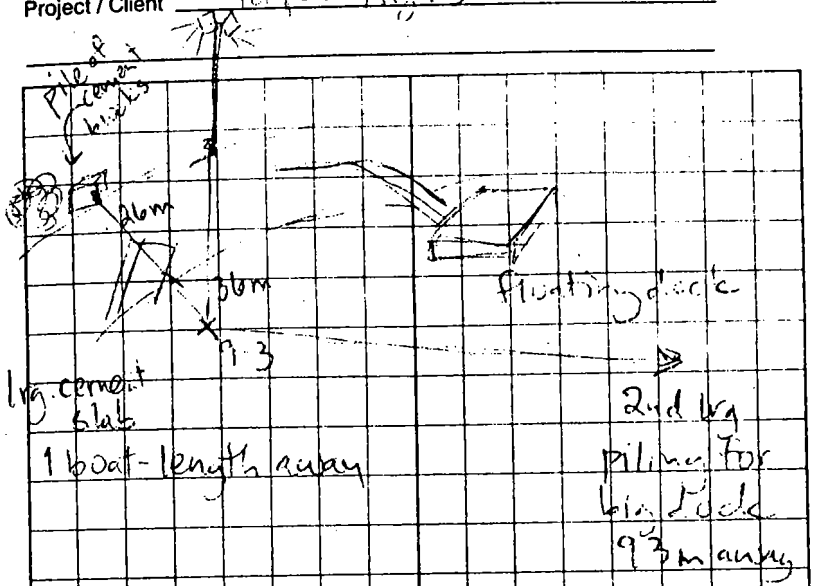
Grab 2: nothing living, no evidence of anything that used to be alive
Stinky

Grab 3: (16cm sub core)
Comm redox discont.
0-8 mottled black/med grey
8-16 med-grey no mottling
silt to clayey silt

grabs were very full - very soft mud

 Location MS 9-3 cont. Date 8/ 00

Project / Client tel pole w/ lights



1 boat-length away

Location M10-100A Date 8/29

Project / Client Portsmouth Naval Shipyard

FD	5:20 am	No marker - too rocky
SD	5:30 am	

0-4cm Brown "Dark" med grained sand/silt with a few pebbles and some larger cobbles

4-10cm Black ~~sand~~/silt
- Also med grained sand with silt, with a few pebbles/cobbles
- Redox at 4cm depth

DGPS reading (taken from boat at 0830)

43° 04' 34.39" N
70° 43' 42.91" W

Location R3-4 Date 8/29/00 0830

Project / Client

Mussels

1	5.4	6.0	5.5
2	5.8	5.4	5.8
3	5.8	5.0	6.0
4	5.8	5.7	5.8
5	5.7	5.0	5.0

total: 56 s/w 5-6cm

0-5mm redox med. brown
5mm-10cm sandy silt dk. grey

Same location as last time?

Sample taken 2 feet on water side of marker

MS 10-2 8/29/00

time: 0900

43° 04' 34.52" N
70° 43' 41.98" W

in strong current

x marks the spot

CTD

D	T	S	DO
0.2	15.48	30.1	7.1
2.2	15.45	30.1	6.9
4.4	15.48	30.1	6.4

Grab 1:
eelgrass in grab
slipper shells (dead)

silty sand 1-2 cm redox
0-2 dk brown
2-9 ~~dk~~ mottled dk brown & black

eelgrass material - dead & alive

Grab 2:
more eelgrass
clam worm

Grab 3:
more eelgrass
a crab - it was red. that's all we know.

MS 10-2 continued

mussels collected
8/29/00 time: 0600
at low tide - wading out to rock near the station

all too big - recorded 5 pages back in this book

MS1-1 8/28/00

time 1224

43° 05' 05.08" N
70° 44' 22.43" W

Free fallin'

Grab 1:
mussel shells
lots of shells, baby starfish, rocks
a lot of worms
Sandy & gravelly on top, clay below

redox 1-2 cm crs sand w/ gravel

2-9 sandy-silt + black w/shell pieces

Grab 2:
jaws slightly open - rocks w/ baby seastars
very very cute

Grab 3:
Snail, hermit crab, baby urchins, baby brittle star

CTD°	T	S	DO	Time
0.2m	13.79	30.7	7.15	16:08
1.5	13.8	30.9	6.8	
3.0	13.9	30.9	6.7	

MS 10-2 6:00 am 8/29/00

Mussel Collection -

#	Size	#	Size
1	9.2	21	7.4
2	8.3	22	9.8
3	9.1	23	8.7
4	8.2	24	8.6
5	8.7	25	7.1
6	9.5		
7	7.8		
8	7.7		
9	7.5		
10	8.2		
11	6.9		
12	8.5		
13	8.8		
14	8.0		
15	7.4		
16	8.2		
17	8.6		
18	9.0		
19	8.1		
20	7.2		

All too big!

8/27/00

MS 10-3 continued time: 0825

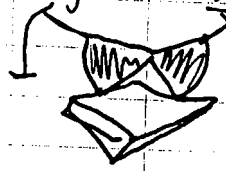
CTD

D	T	S	DO
0.2	16.44	29.4	6.5
0.9	16.43	29.4	6.0
1.8	16.42	29.4	6.0

43° 04' 36.75" N
70° 43' 42.33" W

good location - right on x

Grab 1: attempt 1
we got a BIG rock! ☺



kinda funny

Grab 1: attempt 2
good grab
smelly
0-2 cm med brown (redox)
2-12cm black

sandy-silt w/ shell pieces small rocks
vegetation - algae bits

MS-10-3 continued

Grab 2:
a lot of worms

Grab 3: attempt 1
hit same hole

Grab 3: attempt 2
good grab
a lot of worms - clam worms

MS 10-3 6:20 am 8/29/00

Mussel Collection -

#	size	#	size
1	8.6	21	8.8
2	8.6	22	8.5
3	8.6	23	8.6
4	8.8	24	8.5
5	7.5	25	8.9
6	7.7	26	6.6
7	7.2	27	6.5
8	7.3	28	7.9
9	7.6	29	8.1
10	7.1	30	6.7
11	7.9	31	7.7
12	6.6	32	7.3
13	7.3	33	7.4
14	8.1	34	7.6
15	8.2	35	7.7
16	8.5	36	7.8
17	7.6	37	7.0
18	7.4	38	7.4
19	7.4	39	6.9
20	7.8	40	6.5

MS 10-3 (continued

#	size
41	6.8
42	6.3
43	6.2

only large mussels available

MS 11-2 8/30/00

time: 0715

same location as last time

no sediment

mussels: hard to find

1	4.5	4.8	5.5
2	5.7	5.9	6.1
3	5.3	6.9	6.3
4	4.9	5.2	5.0
5	5.0	5.8	4.7

1 4-5 cm
8 5-6 cm

total : 24

MS 11-1 8/30/00

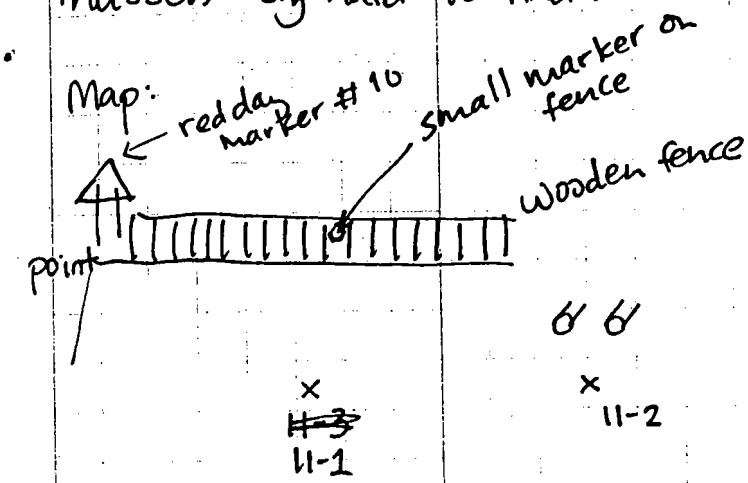
time: 0730

same location as last time

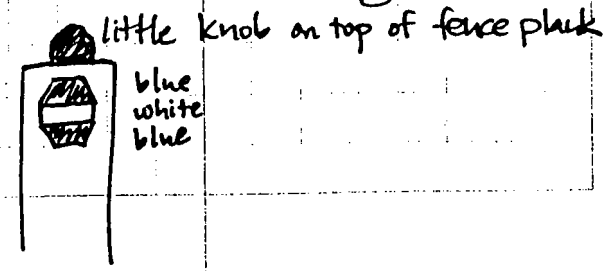
no sediment — all rocks

mussels very hard to find!

Map:



~~H-3~~ 11-1 is directly in front of small blue marker/tag on fence:



MS 11-1 continued 8/30/00

time: 0730

mussels:

1	5.2	6.6
2	5.6	5.9
3	6.6	
4	6.5	
5	5.7	

~~tot~~ that's all-

only 7

R1-3 8/30/00

time 0800

(low tide)

CTD

D	T	S	DO
~~0.2~~	~~18.16~~	~~27.8~~	~~6.9~~
0.2	18.16	27.8	6.9
2.0	18.14	27.9	6.7
1.0	18.15	27.9	6.8

recorded w/ other station info too

MS 11-2

8/30/00
time: 0715

same location as last time

no sediment

mussels: hard to find

1	4.5	4.8	5.5
2	5.7	5.8	6.1
3	5.3	6.9	6.3
4	4.9	6.2	5.0
5	5.0	5.8	4.7

1 4-5cm
8 5-6cm

total : 24

4.5 5
5 15

MS 11-1

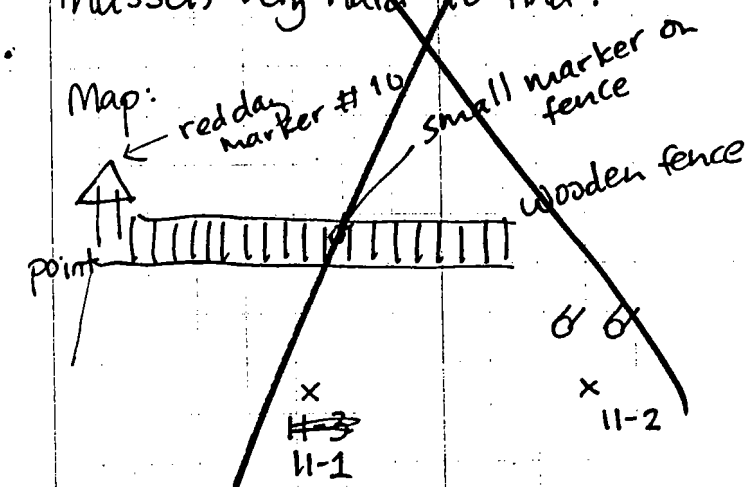
8/30/00
time: 0730

same location as last time

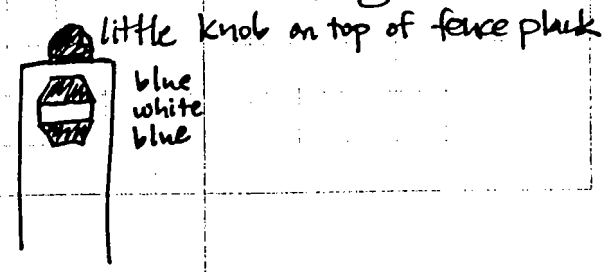
no sediment — all rocks

mussels very hard to find!

Map:



~~11-3~~ 11-1 is directly in front of small blue marker/tag on fence:



12-1 time 12[illegible] 8/30/05

top layer [illegible] brown w/ fibrous material
darker toward bottom
fibrous on top &
silty on bottom, dark grey to
BLACK

50 mussels collected

1) 5.6
2) 5.2
3) 6.0
4) 5.6
5) 5.7
6) 5.5
7) 5.2
8) 4.8
9) 5.7
10) 5.9
11) 5.0
12) 5.5
13) 5.5
14) 6.0
15) 5.7

total : 50 all b/w 5-6 cm

MS 11-3 8/30/00
time 0645

43° 04' 28.83" N
70° 44' 08.36" W

very rocky sediment

sandy-gravel
4cm redox disc.
0-4 yellowish brown cobbles on surface
4-10 dk grey

mussels to left & right of sed sampling spot

mussels:

1	5.1	6.2	6.0	
2	6.2	5.2	6.0	
3	5.9	5.0	5.2	
4	5.5	5.4	5.4	
5	5.2	5.8	5.6	

others:
4 4-5cm
31 5-6cm

total : 50

12-1 time 17.. 8/29.05

top layer 5cm light brown w/
fibrous material
darker toward bottom
fibrous on top &
silty on bottom, dark grey to
BLACK

50 mussels collected

1) 5.6
2) 5.2
3) 5.0
4) 5.6
5) 5.7
6) 5.5
7) 5.2
8) 5.8
9) 5.7
10) 5.9
11) 5.0
12) 5.5
13) 5.5
14) 6.0
15) 5.7

total : 50 all b/w 5 - 6 cm

MS 11-3 8/30/00
time 0645

43° 04' 28.83" N
70° 44' 08.36" W

very hard sediment

sandy - gravel
4cm redox disc.
0-4 yellowish brown cobbles on surface
4-10 dk grey

mussels to left & right of sed sampling spot

mussels:

1	5.1	6.2	6.0	
2	6.2	5.2	6.0	
3	5.9	5.0	5.2	
4	5.5	5.4	5.4	
5	5.2	5.8	5.6	

others:
4 4-5cm
31 5-6cm

total : 50

MS 12-2 8/29/00

~~43° 04' 45.61" N~~
~~70° 44' 25.54" W~~

time: 14:12

CTD

D	T	S	DO
0.2	17.04	30.6	7.3
1.1	13.85	31.2	7.0
2.2	13.55	31.4	7.2

we doubled checked the temp readings — they were repeatable

it's a calm day but we're getting waves in here — if possible do at low boat traffic time (morning), low wind conditions

Grab 1: 43° 04' 45.69" N
70° 44' 25.37" W
↳ other site put us directly over a rail. We had to move, we are very close to original site

eelgrass in grab (live)
lots of rhizomes + blades - "eelgrass stuff"

0-3mm med brown (redox)
3mm-10cm mottled dk brown to black
sandy-silt

MS 12-2 continued 8/29/00

Grab 2:
algae (brown) + wood pieces
shells
a lot of plant material (roots/rhizomes)

Grab 3:
live eelgrass
some little snails
worms

~~ROK-2~~

~~LAT: 43° 08' 10.71" N~~

~~LON: 070° 48' 27.64" W~~

Station 12-2 Mussels
8/29 1720
46 mussels collected off Rock wall.

5.5 cm	5.7 cm	6.5 cm
5.1 cm	5.8 cm	6.3 cm
6.0 cm	6.7 cm	5.4 cm
5.7 cm	6.6 cm	6.2 cm
5.6 cm	6.7 cm	5.7 cm

10 mussels > 6 cm
5 cm < 36 mussels < 6 cm

CTD 8/30/00 at 0815

D	T	S	DO
0.2	18.10	27.8	6.60
0.4	18.11	28.0	6.60

8/29/00

MS 12-3 time: 1515

43° 04' 45.26" N
70° 44' 23.~~53~~ 54" W good fix

had to wait for crane operations.
Using "position 2" from 5/00 →
"position 1" is under a barge now.

CTD

D	T	S	Do
0.2	17.76	30.6	7.0
0.6	13.90	30.7	6.9
1.4	13.95	31.3	7.2

nice eelgrass bed. 18m from warning sign

Grab 1: attempt 1 failed - hit one of the rails. - moved back to site listed above (from 23.62 to 23.54)

Grab 1: attempt 2
great grab - some eelgrass in grab
blood worms

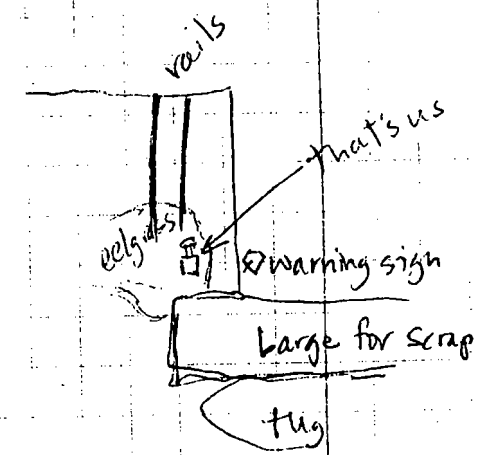
1/2 - 1cm redox disc. med brown
1 - 4.5 dk grey
4.5 - 6 lt. brown
6 - 11.5 black clayey silt

8/29/00

MS12-3 continued

Grab 2:
good

Grab 3:
good



eelgrass bed is thick

MS 13-1 8/28/00

time: 10:43
high tide

43° 04' 51.15" N
70° 44' 34.45" W

all floating docks (& hotels) have been moved - will come back at low tide to sample mussels from wall

Grab 1:
worm tubes
green algae (sea lettuce)
wood - prob from docks above
small mussel shell
1.5-3 cm redox discont.
mud brown
3-9 cm black

sandy silt

Grab 2:
brown algae piece (kelp)

Grab 3:
big piece of sea lettuce on gravel

time: 11:15

MS13-1 continued 8-28-00

50 mussels collected on wall
35 more between 5 and 6 cm

1) 5.4
2) 5.2
3) 5.4
4) 5.0
5) 5.3
6) 5.4
7) 4.9
8) 5.9
9) 5.2
10) 5.0
11) 5.0
12) 5.0
13) 5.0
14) 5.2
15) 4.9

time → 17:00 Came back to do CTD.

CTD	T°	S	D.O
.2 m	15.23	30.1	7.0
3.2 m	14.98	30.2	5.9
6.5 m	14.81	30.2	6.3

8/25/00

MS 13-2 time 1145

43° 04' 52.09" N
70° 44' 36.55" W

right on x from 9/99-

Grab 1:
amphipod tubes on surface, small
1-2cm redox lt brown
2-4cm black
4-9cm dk-med gray w/ black mottling
sandy-silt
lots of worms & worm tubes
~~etc~~

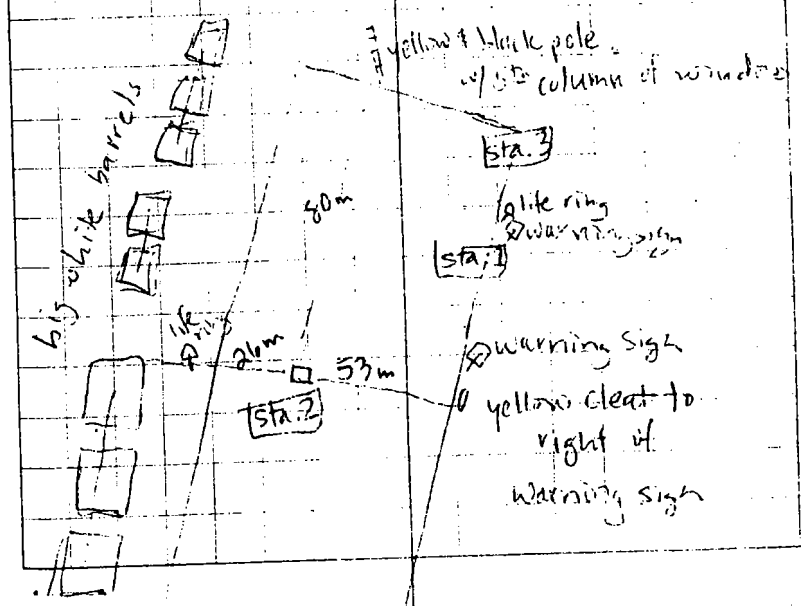
Grab 2:
eelgrass shoot

Grab 3:

MS 13-2 continued 8/25/00

16:55

CTD	T°	S	DO
0.2m	15.37	29.9	7.0
3.7	14.70	30.2	6.3
7.2m	14.21	30.6	6.3



8/2?/00

MS 13-3 0945

43° 04' 51.12" N
70° 44' 33.23" W

moved forward along wall b/w grabs

CTD batteries died
D T S DO

Grab 1: very smelly
put feet on grab
green eelgrass blade, pieces of algae?
some shells & woody material (prob from docks)

1-2 cm redox disc.
0-1/2 lt brown
2-9 black

clayey - sandy silt

Grab 2: had trouble w/ brakes on winch again

package of hot dogs (empty) caught in grab

leaves - dead org material

MS 13-3 continued 8/?/00

Grab 3
getting more anoxic + "skunky"
43° 04' 51.08"
70° 44' 33.33"

CTD @ 1710

Depth	Temp	Sal	DO
0.2 m	15.4°C	30.4‰	6.6 ppm
Mid	15.3°C	30.5‰	5.5 ppm
Bottom	15.2°C	30.5‰	6.2 ppm

→ Depth probe not working :(

Mussels collected 7:10

1) 5.6	13) 6.4	25) 5.0	37) 5.3	49) 6.3	
~~2) [illegible]~~	14) 6.0	26) 5.7	38) 6.7	50) 6.6	
3) 5.3	15) 6.4	27) 5.6	39) 5.8	51) 7.8	
~~4) [illegible]~~	~~16) [illegible]~~	~~28) [illegible]~~	40) 6.5	~~52) [illegible]~~	5.7
~~5) [illegible]~~	17) 5.6	29) 6.3	41) 7.3		5.6
~~6) [illegible]~~	18) 7.3	30) 5.4	42) 5.4		5.0
~~7) [illegible]~~	19) 6.5	31) 5.9	43) 5.6		6.0
~~8) [illegible]~~	20) 5.7	32) 7.1	44) 6.3		5.8
~~9) [illegible]~~	21) 6.3	33) 6.7	45) 5.5		5.1
10) 6.8	22) 6.4	~~34) [illegible]~~	46) 5.5		5.6
~~11) [illegible]~~	23) 6.6	35) 6.8	47) 5.8		5.7
12) 5.6	24) 5.2	36) 5.8	48) 6.2		5.7
			Kept		5.5
					6.0

R1-2

8/30/00
time 0815

CTD:

	T	S	DO
0.2	18.10	28.8	6.60
0.4	18.11	28.0	6.60

recorded w/ other station info too

MS 14-1

8/28/00
time 0832

Nick was dropped off in salt marsh to take sample —

he found station marker & sampled next to it

mussels taken w/in 30 ft./10 m.

CONTENTS

PAGE	REFERENCE	DATE

8/28/00

M 14-2 time 0930

43° 14' 51.19" N
70° 14' 52.91" W

× marks the spot - exact same as before?

CTD	T	S	DO
0.2	16.75	28.91	6.2
1.0	16.33	29.0	6.11
2.0	16.28	29.2	6.0

but there was a rock so we moved 5 feet

Grab 1:
.5-1cm redox discont
1-12 mottled black & dk grey
sandy-silt
0-1cm lt. brown
big clam worm

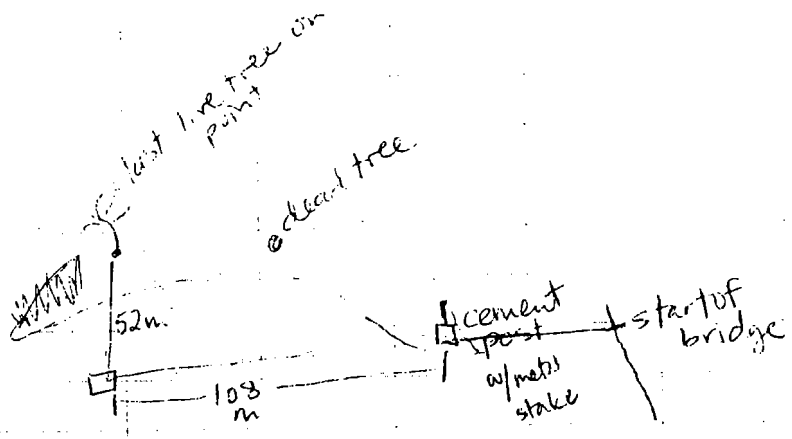
RIPE
very stinky

Grab 2:
shrimp

Grab 3:
caught some rocks
Red worms - lots and they're ugly

8/28/00

MS14-2 continued



had to move a little forward from this exact spot since rock was in the way.

we'll get mussels at low tide on rocks nearby

16:30 collect mussels (39)

1) 6.3	7) 5.8	13) 6.8	19) 8.3	25) 4.9	31) 7.1
2) 5.0	8) 5.9	14) 5.8	20) 7.2	26) 7.6	32) 8.1
3) 6.9	9) 6.4	15) 5.9	21) 6.4	27) 8.3	33) 8.5
4) 6.0	10) 6.8	16) 8.2	22) 6.5	28) 9.4	34) 8.3
5) 5.3	11) 7.4	17) 7.3	23) 9.5	29) 8.5	35) 8.7
6) 6.2	12) 7.5	18) 8.0	24) 9.0	30) 7.0	36) 7.2
37)			37) 8.7		37) 7.9

8/28/00

MS14-3

09:00

43° 44' 57.15" N
70° 44' 48.78" W

I really, honestly, cannot believe how close we are to the same spot.

CTD	T	S	DO
0.2	16.00	29.4	6.0
2.0	15.62	29.6	6.55
4.1	15.62	29.6	6.7

Grab 1

Stinky mud

redox disc = 0.7-1.5cm

0-1.5 lt brown

1.5-6 ~~mottled black~~ dk mottled to med. grey

6-13 dk grey mottled w/ black

Sandy silt

dead eelgrass blades

Grab 2:

Some worms

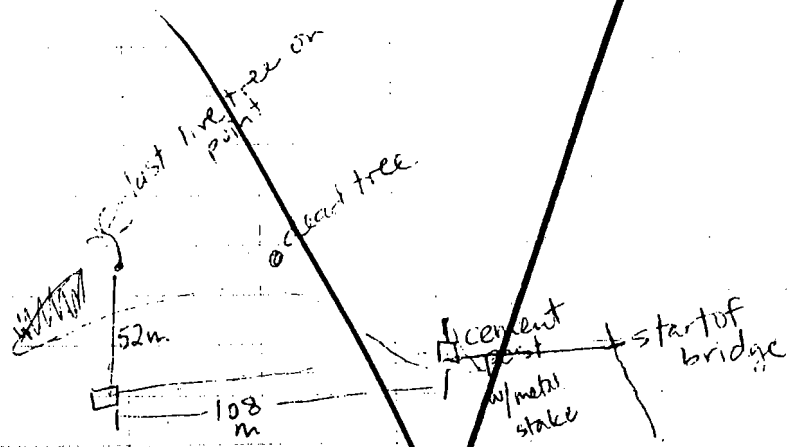
Grab 3:

~~16:30 collected mussels~~

& I'm downwind of it.

8/28/00

MS14-2 continued



had to move a little forward from this exact spot since rock was in the way.

we'll get mussels at low tide on rocks nearby

16:30 collect mussels (39)

1) 6.3	7) 5.8	13) 6.8	19) 8.3	25) 4.9	31) 7.1
2) 5.0	8) 5.9	14) 5.8	20) 7.2	26) 7.6	32) 8.8
3) 6.9	9) 6.4	15) 5.9	21) 6.4	27) 8.3	33) 8.5
4) 6.0	10) 6.8	16) 8.2	22) 6.5	28) 9.4	34) 8.3
5) 5.3	11) 7.4	17) 7.3	23) 9.5	29) 8.5	35) 8.7
6) 6.2	12) 7.5	18) 8.0	24) 9.0	30) 7.0	36) 7.2
38) [illegible]			37) 8.7		37) 7.9

8/28/00

MS14-3

0900

43° 04' 57.15" N
70° 44' 48.78" W

I really, honestly, cannot believe how close we are to the same spot.

CTD	T	S	DO
0.2	16.00	29.4	6.0
2.0	15.62	29.6	6.55
4.1	15.62	29.6	6.7

Grab 1: Stinky mud

redox disc = 0.7-1.5cm

0-1.5 lt brown

1.5-~~1.5~~ 6 ~~mottled black~~ not mottled med. grey

6-13 dk grey mottled w/ black

Sandy Silt

dead eelgrass blades

Grab 2:

Some worms

Grab 3:

~~16:30 collected mussels~~

2. I'm downwind of it.

Location _____ Date _____

Project / Client _____

Location Ref. 1-1 Date 8/27/00

Project / Client PNS

Chip + Nick 2:15 pm

Redox ~ 1cm

0-1cm - lighter brown ~~sandy~~ silt, mud

1-10cm - dark (almost black) silt, mud

Ref 1-4 8/27/00

Chip + Nick 2:05 pm

Redox ~ 1.5 - 2cm

silt w/ a lot of marsh grass

- 2-10cm darker silt w/ marsh grass

- 10 snails (w/in 1ft²), worm in sed.

R1-2

8/30/00
time 0815

CTD:

	T	S	DO
0.2	18.10	27.8	6.60
0.4	18.11	28.0	6.60

recorded w/ other station info too

MS 14-1

8/28/00
time 0830

Nick was dropped off in salt marsh to take sample —

he found station marker & sampled next to it

mussels taken w/in 30 ft./10 m.

R01 - 2

LAT: 43° 07' 10.71" N

LON: 070° 48' 27.64" W

Station 12-2 Mussels
8/29 1720
40 mussels collected off Rock wall.

5.5 cm	5.7 cm	6.5 cm
5.1 cm	5.8 cm	6.3 cm
6.0 cm	6.7 cm	5.4 cm
5.7 cm	6.6 cm	6.2 cm
5.6 cm	6.7 cm	5.7 cm

10 mussels > 6 cm
5 cm < 36 mussels < 6 cm

CTD 8/30/00 at 0815

D	T	S	DO
0.2	18.10	27.8	6.60
0.4	18.11	28.0	6.60

8-29-00

R02 - 400 A 15:15

mussel	collection
1	5.5
2	5.7
3	5.1
4	5.3
5	5.8
6	5.2
7	5.0
8	5.6
9	5.4
10	5.4
11	5.1
12	5.8
13	5.2
14	5.8
15	6.0

35 w/in 5-6 cm (including 1-15)
5 >6 cm
9 <5 cm

R 1-3

8/29/00
time 1700

43° 07' 13.85" N
70° 48' 35.10" W

great positioning right on x from last time

mussel	collection
1	6.2
2	4.9
3	7.2
4	6.0
5	5.6
6	7.0
7	5.3
8	6.7
9	6.0
10	6.7
11	7.3
12	8.0
13	8.0
14	6.7
15	7.2

hard to get them (esp. in right size range)

on rock near sed station

silty sand
0.5 cm redox med brown
0.5-6cm dk grey
rocks & shells

CTD:

D	T	S	DO
0.2	18.16	27.8	6.9
1.0	18.15	27.9	6.8
2.0	18.14	27.9	6.7

~~MG 11-1 continued~~ 8/30/00

~~time: 0730~~

~~mussels:~~

1	5.2	6.6
2	5.6	5.9
3	6.6	
4	6.5	
5	5.7	

~~that's all~~

~~only 7~~

RI-3 8/30/00

time 0800
(low tide)

CTD

D	T	S	DO
~~0.2~~	~~18.16~~	~~27.8~~	~~6.9~~
0.2	18.16	27.8	6.9
2.0	18.14	27.9	6.7
1.0	18.15	27.9	6.8

recorded w/ other station info too

Location _____ Date _____

Project / Client _____

Location Ref. 1-1 Date 8/27/00

Project / Client PNS

Chip + Nick 2:15 pm

Redox ~ 1cm

0-1cm - lighter brown silt, mud

1-10cm - dark (almost black) silt, mud

Ref 1-4 8/27/00

Chip + Nick 2:05 pm

Redox ~ 1.5 to 2cm

silt w/ a lot of marsh grass

- 2-10cm darker silt w/ marsh grass

- 10 snails (w/in 1ft²), worm in sed.

22 Location Ref 1-4 Date 8/27/00

Project / Client Chip + Nick 2:15pm

#	Size (cm)	Mussel collection
1	5.3	
2	5.2	
3	5.9	too small
4	6.0	5 btwn 4-5cm
5	5.8	12 - 6-7cm
6	5.9	too big
7	5.1	
8	5.5	30 total btwn 5-6cm
9	6.0	(just right!)
10	5.2	
11	6.0	
12	5.4	
13	5.1	
14	5.0	
15	5.4	

Location MS 3-2 Date 8/27/00 23

Project / Client Chip + Nick 4:50pm

- redox ~ 1mm
- black silty material, a lot of rocks and snails
- 5 yds from seep west of seep

Mussel collection -

#	Size
1	5.5
2	5.7
3	5.8
4	5.2
5	5.4
6	5.7
7	5.8
8	5.5
9	5.8
10	5.8
11	5.6
12	5.9

#	Size
14	5.5
15	5.6

1 - too small (btwn 4-5cm)

9 - too big (btwn 6-7cm)

40 total - just right (btwn 5-6cm)

8-29-00 Chip, Hillary, Nick

R02-100A 15:05

Samples taken 2m from station marker towards drawbridge

Sediment coarse sand w/ some pebbles

redox at 1cm

Some marsh grass roots growing in sediment

8-29-00 Chip, Hillary, Nick

R02-400A 15:15

- Samples take ~1m away from station marker
- ~.5cm redox (light brown silt)
- 0.5-10cm (dark, black silt)
- burrows (worm holes?) present (3 or 4)

R 2-2 8/29/00

time: 1630

turned off GPS for battery power.
same location as before

CTD

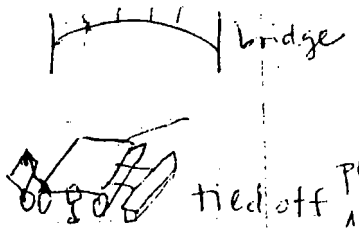
D	T	S	DO
0.2	15.31	30.3	7.4
0.9	15.32	30.4	7.1
1.8	15.25	30.4	7.1

Grab 1:
redox 4cm
0-4 cm med. brown sand (fine-med sand)
4-11 black & brown mottled
below 7 cm it's silty-sand

worms - tube worms - many

Grab 2: Sand good grab

Grab 3: Sand with live eel grass in grab



tied off port stern corner to red nun #4

RS 2-3

8/29/00
time: 1600

CTD

D	T	S	DO	
0.2	14.9	31.2	7.1	(very shallow)
0.4	14.7	31.1	7.0	

43° 05' 15.89" N
70° 45' 31.65" W

Grab 1:
1-2cm red ~~ox~~
0-2 med brown
2-6 mottled w/black & dk. grey
6-10.5 dk. grey

0-5 fine sand
5-10.5 clayey-silt w/ a little sand

Grab 2:
rocks & shells on surface, mussel, snail
clam worm

Grab 3:

8/29/00

RS 2-3 continued

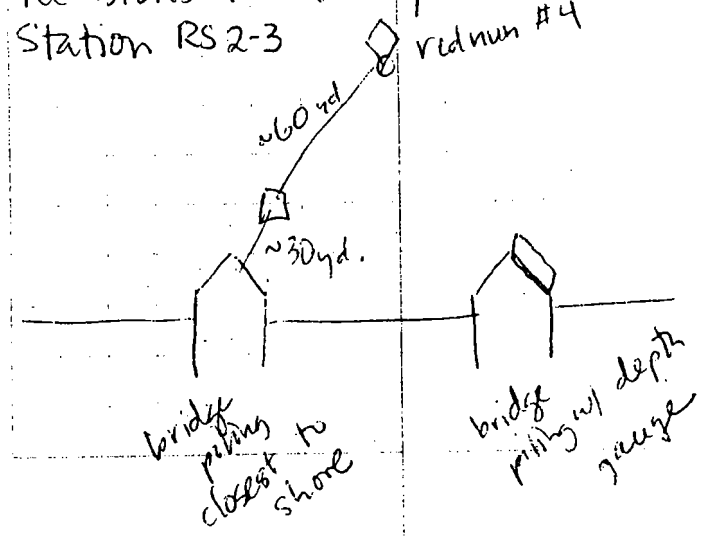
Mussels

1	5.8	11	6.0
2	5.6	12	5.0
3	5.8	13	5.5
4	6.2	14	6.0
5	5.3	15	5.9
6	5.5		
7	5.4		
8	5.6		
9	5.6		
10	5.7		

30 others in 5-6 cm range
total: 45

mussels collected around boat, not on bridge

Revisions to old map:
Station RS 2-3



8-29-00 Chip, Hillary, Nick

ROZ-100A 15:05

Samples taken 2m from station marker towards drawbridge

Sediment coarse sand w/ some pebbles

redox at 1cm

Some marsh grass roots growing in sediment

8-29-00 Chip, Hillary, Nick

ROZ-400A 15:15

- Samples take ~1m away from station marker
- ~.5cm redox (light brown silt)
- 0.5-10cm (dark, black silt)
- burrows (worm holes?) present (3 or 4)

8-29-00

R02 - 400 A 15:15

mussel collection

1	5.5
2	5.7
3	5.1
4	5.3
5	5.8
6	5.2
7	5.0
8	5.6
9	5.4
10	5.4
11	5.9
12	5.8
13	5.2
14	5.8
15	6.0

35 w/in 5-6 cm (including 1-15)
5 >6 cm
9 <5 cm

R 1-3 8/29/00

time 1700

43° 07' 13.85" N
70° 48' 35.10" W

great positioning right on x from last time

mussel collection

1	6.2
2	4.9
3	7.2
4	6.0
5	5.6
6	7.0
7	5.3
8	6.7
9	6.0
10	6.7
11	7.0
12	8.0
13	8.0
14	6.7
15	7.2

hard to get them (cap. in right size range)

on rock near sed station

silty sand
0.5 cm redox med brown
0.5-6cm dk grey
rocks & shells

CTD:

D	T	S	DO
0.2	18.16	27.8	6.9
1.0	18.15	27.9	6.8
2.0	18.14	27.9	6.7

Location Ref - 3 sta. 1 Date 8/27/00

Project / Client 1202

- sampled right next to previous hole
- redox at least thru 0-10cm
- a lot of snails
- Brown, silt w/ a lot of marsh grass roots

~~Ref - 4 sta. 1 8/27/00~~

~~time: 12:40~~

~~- 0-10, Brown, silt and a lot of Marsh Grass~~

~~- redox @ least 0-10cm~~

~~- about 10 yds west of seep~~

- sampled right next hole from last sampling round

Location Date

Project / Client

R8-2 8/29/00

43° 04' 05.85"N time: 1030
70° 44' 22.37"W

CTD

D	T	S	Do
0.2	15.81	29.6	7.2
1.5	15.55 ~~14.92~~	30.2	6.95
3.0	14.92	30.3	7.0

Grab 1:
eelgrass blades (alive)
large ~~clam~~ worm burrows

0-2cm med. brown
2-10cm mottled med brown & black
↳ worm burrows

redox discontinuity 1-2cm
silty-sand

Grab 2:

Grab 3: 1/2 of grab in same hole...
very good ... enough mud to sample
so we kept it.

~~AS~~ R4-3 8/29/00

time 1100

43° 03' 37.54" N X marks the spot
70° 44' 06.30" W VERY strong current

CTD

D	T	S	Do
0.2	14.00	31.0	7.45
1.8	14.04	31.0	7.30
3.8	13.97	30.8	7.10

Grab 1: redox disc at 4cm
0-4cm med brown Coarse - med sand
4-8cm dk. grey w/ gravel
a lot of shells

Grab 2:
43° 03' 37.57" N
70° 44' 06.33" W
we had to reanchor - got it right back in same spot
snails

Grab 3:
a lot of snails (whales, snails & puppy dog tails, according to JK)

eelgrass on anchor

R 3-3 8/29/00

time: 1000

43° 04' 0584" N
70° 44' 23.86" W strong current

CTD

D	T	S	DO
0.2	15.43	30.0	7.2
1.2	15.39	30.2	7.1
2.4	15.40	30.2	7.0

Grab 1 : eelgrass floating by

0.5cm red ox disc.

0-0.5 ~~dk~~ med brown
0.5-6 mottled dk brown & black

~~Gravel in~~ silty-sand w/ gravel
clam worms

Grab 2: attempt 1 failed (rock in grab)
Grab 2: attempt 2 good
tiny brittle stars
many worms
Grab 3:
sand shrimp, snails

R3-3 cont. 8/29/00

mussels (come back at low tide)

time: 1830

not a lot available

1	6.3	6.5	7.8
2	7.9	5.6	6.0
3	8.0	6.2	6.4
4	6.9	8.0	7.3
5	7.2	8.5	6.0

total: 15

raked for a long time & nothing

Location M10-100A Date 8/29

Project / Client Portsmouth Naval Shipyard

FD 5:20 am No marker - too rocky

SD 5:30 am

0-4cm Brown "dirt" med grained sand/silt with a few pebbles and some larger cobbles

4-10cm Black sand/silt
- Also med grained sand with silt with a few pebbles/cobbles
- Redox at 4 cm depth

DGPS reading (taken from boat at ~~0830~~ 0830)

43° 04' 34.39" N
70° 43' 42.91" W

Location R3-4 Date 8/29/00

Project / Client 0830

mussels

1	5.4	6.0	5.5
2	5.8	5.4	5.8
3	5.8	5.0	6.0
4	5.8	5.7	5.8
5	5.7	5.5	5.0

total: 56 b/w 5-6 cm

0-5mm redox med. brown
5mm-10cm sandy-silt dk. grey

Same location as last time

Sample taken 2 feet on water side of marker

Location Ref - 3 sta. 1 Date 8/27/00

Project / Client 1202

- sampled right next to previous hole
- redox at least thru 0-10cm
- a lot of snails
- Brown, silt w/ a lot of marsh grass roots

Ref - 4 sta. 1 8/27/00

time: 12:40

- 0-10, Brown silt and a lot of Marsh Grass
- redox @ least 0-10cm
- about 10yds west of sleep
- sampled right next hole from last sampling round

Location Date

Project / Client

R 4-3 continued 8/29/00

Mussels

come back at low tide : 1800

1	7.0	6.4	7.6
2	6.5	7.0	7.0
3	7.2	6.2	5.5
4	8.0	6.5	6.0
5	8.2	7.7	5.5

others:
7 5-6
23 6-7

total: 45

R 4-2 8/29/00

time: 1150

43° 03' 37.31" N
70° 44' 01.52" W

very close (first length away)
very strong current

CTD

D	T	S	DO
0.2	13.82	31.1	7.4
1.8	13.75	31.0	7.25
3.6	13.70	31.1	7.1

Grab 1:
rocks, snails
1-1.5 redox disc.
0-1.5 med brown
1.5-6 dk. grey
Coarse to med Sand w/gravel

Grab 2:
rocks, snails

Grab 3:
little baby crab

R3-2 8/29/00

43° 04' 05.85"N time: 1030
70° 44' 22.37"W

CTD

D	T	S	DO
0.2	15.81	29.6	7.2
1.5	15.55 ~~14.92~~	30.2	6.95
3.0	14.92	30.3	7.0

Grab 1:
eelgrass blades (alive)
large ~~clam~~ worm burrows

0-2cm med. brown
2-10cm mottled med brown & black
↳ worm burrows

redox discontinuity 1-2cm
silty-sand

Grab 2:

Grab 3: 1/2 of grab in same hole...
very good... enough mud to sample
so we kept it.

~~R3~~ R4-3 8/29/00

time 1100

43° 03' 37.54" N X marks the spot
70° 44' 06.30" W VERY strong current

CTD

D	T	S	DO
0.2	14.00	31.0	7.45
1.8	14.04	31.0	7.30
3.8	13.97	30.8	7.10

Grab 1: redox disc. at 4cm
0-4cm med brown Coarse-med sand w/ gravel
4-8cm dk. grey a lot of shells

Grab 2:
43° 03' 37.57" N
70° 44' 06.33" W
we had to reanchor - got it right back in same spot

Grab 3: snails
a lot of snails (whelks, snails & puppy dog tails, according to JK)

eelgrass on anchor

R 4-3 continued 8/29/00

mussels

come back at low tide : 1800

1	7.0	6.4	7.6
2	6.5	7.0	7.0
3	7.2	6.2	5.5
4	8.0	6.5	6.0
5	8.2	7.7	5.5

others:
7 5-6
23 6-7

total: 45

R 4-2 8/29/00

time: 1150

43° 03' 37.31" N
70° 44' 01.52" W

very close (first length away)
very strong current

CTD

D	T	S	DO
0.2	13.82	31.1	7.4
1.8	13.75	31.0	7.25
3.6	13.70	31.1	7.1

Grab 1:
rocks, snails
1-1.5 redox disc.
0-1.5 med brown
1.5-6 dk grey
Coarse to med sand w/gravel

Grab 2:
rocks, snails

Grab 3:
little baby crab

8-29-00 Chip, Hilary & Nick

Reference 4 - 400A

Mussel Collection 10:40

1	5.7	21	6.5
2	5.7	22	6.2
3	5.3	23	6.0
4	6.3	24	6.3
5	5.9	25	5.5
6	5.0	26	5.5
7	5.6	27	5.7
8	7.4	28	5.9
9	5.4	29	5.6
10	6.8	30	5.0
11	5.2	31	5.6
12	5.3	32	5.4
13	5.1		
14	6.2		
15	4.8		
16	6.0		
17	5.3		
18	5.2		
19	6.3		
20	6.7		

Total $\boxed{32}$

R04-400H

0-10 cm fine, silty sand (dark grey → to brown)

mussels were collected w/in 5m radius of site (more seaward)

TITLE

PROJECT NO.

BOOK

Continued from Page

0700 At trailer - begin unloading equip

0800 met w/ guy + loaded up boat

0900 - left Boat dock

0913 - set 3 traps at MS-09

0914 set 3 traps at MS-08

0916 set 3 traps at MS-07

0921 set 3 traps at MS-06

0932 set 3 traps at MS-10

0935 set 3 traps at MS-11
started at new rip rap + went upstream

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE

DATE 8-27-00

WITNESS

DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

Heading upstream to R01 - R02 while tide is good

945 set 3 traps at R02

1000 set 6 Traps at R01

went to get gas + load up the rest of the lobster traps

1130 set 3 traps at MS12

1143 set 3 traps at MS13

1100 set 3 traps at MS14

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE 8-27-00

WITNESS

DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

1155 set 3 traps at Ref 03

1202 set 6 traps at Ref 04

went back to trailer to finish unloading equip + get organized

I got all paperwork and sample bottle groupings together

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

0800 got to site - unloaded equip + got organized for sampling - went over procedures w/ CAI

0900 collect 004-RB-001-000A
→ stainless steel bowl

0915 collect 004-RB-001-000A

~1045 Boats in water at Topsite pier
- John King + crew will begin subtidal sampling at MS-03 - CAI trailer are going to hit the reference station to collect silt mush sediment as they come out of the water since they will come out before other samples

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE

DATE

PROJECT NO.

BOOK

Continued from Page

- went - bought some ice and baggies if for shipment tomorrow

- got keys for field crew

- decided again for sampling

- walked around to look at MS 1 → 10 to see what was out of water early - only salt marsh samples

1615 At Sep BC-1006 - tried to get a flow measurement but unable to do so w/ a bucket.
- most water flowed around bucket
same at BC-1005

1630 At MS 5 - #1
1635 collect SD + mussels
mussels ~ 15' into clam flats SD
SD ~ 11 from water in mud flat
~1cm redox - light brown } fine silt
1-10cm dark black
FD-002 - 0004 (1200 Auto time)
hundreds of mussels + snails

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

TITLE

PROJECT NO.

BOOK

Work continued from Page

1700 At MS 5 #300
1705 collect SD + mussels
redox 0-1cm light brown silt/sand
1-10cm black med sand w/ silt
mussels collected w/in 5-7' of SD towards shore

1725 At MS 6 #1
- SD under water but could still collect mussels.
1730 collected mussels. will measure later
- 100's of mussels w/ 5-10' of SD sample location (perm marker)

1745 At MS 6 #3

1750 collect SD
0-10cm light brown silty sand
no redox zone - many roots
~ 1' east of previous location at edge of ~~collected mussels~~ salt marsh
collected mussels ~ ~~70~~ 70' from water - able to bring 5-6cm bed
many smaller ones (did not keep)

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE

DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

Mussel measurements

Station #
M[redacted]-100A

Mussel #	length (cm)
1	5.5
2	5.4
3	5.2
4	5.4
5	5.5
6	5.5
7	5.0
8	5.2
9	5.6
10	5.4
11	5.8
12	5.0
13	5.8
14	5.0
15	5.2

35 additional 6-6 cm

Station #
M[redacted]06-300A

mussel #	length (cm)
1	5.5
2	5.2
3	5.2
4	5.0
5	5.4
6	5.2
7	5.3
8	5.2
9	5.7
10	5.3
11	5.6
12	5.2
13	5.9
14	5.5
15	5.0

35 additional 5-6 cm

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

TITLE

PROJECT NO.

BOOK

Work continued from Page

Mussel Measurements

Station #
M05-100A

Mussel #	length (cm)
1	5.2
2	5.5
3	5.0
4	5.0
5	5.0
6	5.2
7	5.3
8	5.8
9	5.0
10	5.5
11	5.2
12	5.5
13	5.3
14	5.5
15	5.2

28 [redacted] additional 5-6cm

Station #
M03-100A

mussel #	length (cm)
1	5.5
2	5.2
3	5.8
4	5.9
5	6.0
6	5.5
7	5.8
8	5.5
9	5.8
10	5.3
11	5.2
12	5.1
13	6.0
14	5.0
15	5.2

32 additional 5-6cm

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

SIGNATURE

DATE

PROJECT NO.

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Mussel Measurements

Station #
405 - 300A

Mussel #	length (cm)
1	5.5
2	5.3
3	5.7
4	5.5
5	5.5
6	5.4
7	5.3
8	5.2
9	5.0
10	5.4
11	5.5
12	5.0
13	5.2
14	6.0
15	5.0

27 additional 5-6 cm

2000 - left site

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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TITLE

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0600 At gate - waiting for pass office. cooler and gear pass at gate

708 left boat dock w/ gear

0712 at ms-01 - 5 keepers 5-6 cm
threw back ~ 15-20 larger ones
+ 2 smaller ones - redeployed

Sets	Checklist at stations
1	ms-01 - 5
2	ms-02 - 2
1	ms-03 - 6
1	ms-04 - 8
1	ms-05 - 6
2	ms-06 - 4
1	ms-07 - 8
0	ms-08 - 10-14
1	ms-09 - 7
2	ms10 - 4
2	ms-11 - 2
2	ms-12 - 1
0	ms-13 - 10

Sets	
0	ms-14 - 10
2	RS-01 - 4 + 1 big
1	RS-02 - 1
0	RS-03 - 9-10
1	RS-04 - 7

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

DATE

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Heading up to Ref #2 to check traps

0745 At RS-01. pulled both sets of traps
- 4 Keepers (5-6) and 1 a 6.2 (kept for now)
- redeployed both sets of traps
- there back - 15 large ones

0815 - At RS-02 - could only check 2 traps
- third one is hung up on something
- will try to get it next time
1 Keeper - 5-10 too big

0830 At MS-14
- 10 Keepers - pulled traps out to reset somewhere else
- meet w/ two clams -

0840 At MS-13
10 Keepers - pulled traps to reset somewhere else

TITLE

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spoke w/ shipyard police to show them permits
- they made a copy + told us they would call it in - we told them that we were close w/ dry dock

0900 At MS-12 - 1 Keeper but a little too big
Reset for now - reset traps + put an extra set of traps out to try to catch more lobsters
- ~50-75 summer fish in traps

0915 At Ref 03 - - 9-10 Keepers
took traps out to reset somewhere else if needed

0925 At Ref 04 - 7 Keepers
took one set out + redeployed other set

0950 At MS 10 - 4 Keepers - reset traps
~ 3-4 too small + ~10 too big

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1000 - At ms-7 - 8 keepers - reset traps for
now - may pull out depending
on ms 8 - ms-9
~ 5 too small & 10-12 too big

1010 - At ms-8
10-11 keepers
- pulled traps from water to reset
somewhere else

1020 At ms-9
7 keepers - redeployed traps

1030 At ms-2
2 keepers 1 5-6 ~ 1-4-5
set 2 sets of traps

1040 At ms-3
~ 6 keepers - 1-2 may be a little small
- set 1 set of traps
~ 10 too big

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SCIENTIFIC BRIDERT PRODUCTIONS CHICAGO 60605

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1050 At ms-4 8 keepers
reset traps

1055 At ms-5 6 keepers
reset traps

1100 At ms-6 - 4 keepers
- put out 2 sets of traps

1300 At ms-10 - put out another set of traps

1315 At ms-11 - 2 keepers
put out 2 sets of traps

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SCIENTIFIC BRIDERT PRODUCTIONS CHICAGO 60605

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1600 RB-002 on titanium scoop

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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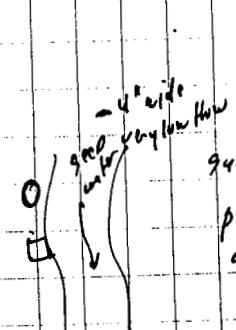
500 At site Trutle getting set up to sample intertidal during low tide - I assistant of mussel collection at M10 + sed at M6 #1

at M10 - hundreds of mussels by scop - no permanent marks here but could see holes from last round (large because of test trist) - difficult to collect mussels in 5-6 because mostly larger but able to pick looking around

At M6 #1 - ~1 m² index zone
0-0.1cm light brown ~~sand~~ silt w/ little sand
0.1-10cm black silty mud w/ little fine sand



sample ~1' toward water from marker
patches of mussels - 100's w/ 5-10
w/ sp sample

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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TITLE

Continued from Page

710 RB-003 on titanian chisels

spent the rest of the day bagging
Ice - picking up samples (ice - replace a
batteries (for UKE) - repacking up
samples - 6 coules chipped -

also entered labster data into computer
spreadsheet.

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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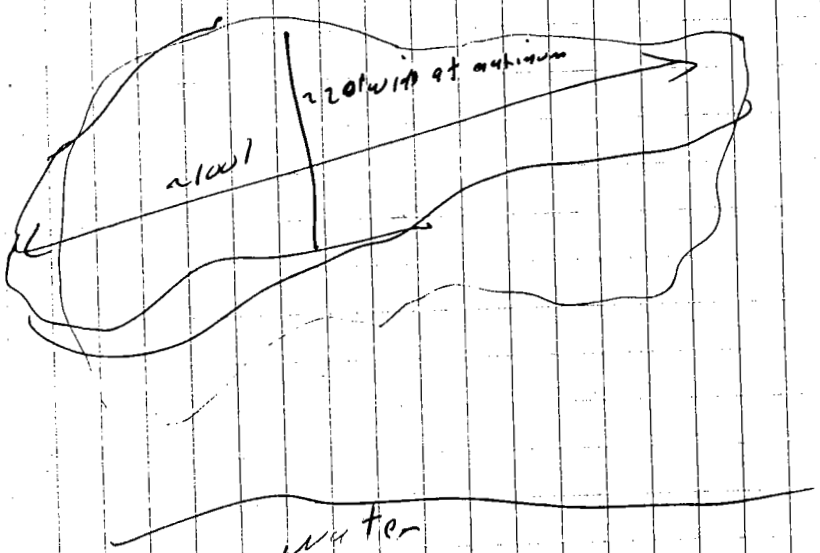
~1900 6-3 salt marsh - pretty dense Area of salt marsh



CENTRAL BUDERT PRODUCTIONS CHICAGO 60605

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SIGNATURE

DATE 8-29-00

WITNESS

DATE

TITLE

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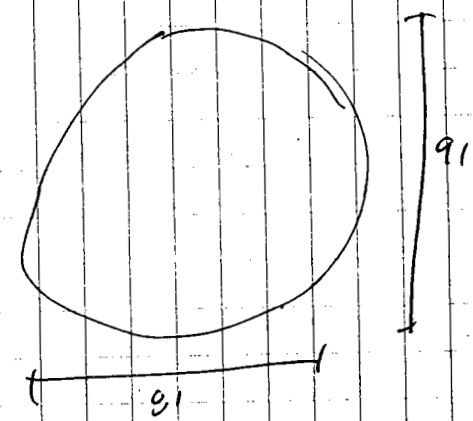
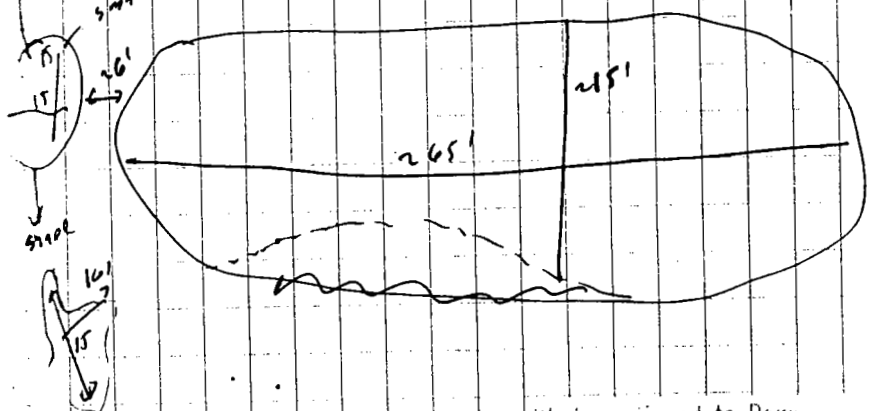
~1915 4-3 salt marsh - small patch



~20' to w. east is another small patch
~5' diameter

not dense sum

2-3 ~2930 small patch



CENTRAL BUDERT PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE 8-29-00

WITNESS

DATE

TITLE

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0600 At site trailer

0605 walked to 9-1 to look at marker in relation to seep - marker was difficult to find because tape was covered w/ silt - found ~ 5' into mudflat between two stakes - seep was slightly flowing

0620 At 9-1 - locating previous location w/ GPS - no marker because too rocky could see seep flowing + did pH ~ 30 from dock - set ~ 18 feet west of seep down front pole - seep under water most of time - even now at low tide, only a 1-2" of seep is exposed - sample was ~ 5' from water

0730 met w/ gary at clark cove dock

0740 At ms-10 - 6 keepers - all between 5-6 cm then back ~ 25 others pulled both sets of traps out of water

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0755 At ms-11
10 keepers. threw some 5-6 cm back because we had extra
pulled both sets of traps from water

0810 At ms-01
5 keepers. 5-6 cm
pulled traps from water

0830 At Ref 02
8 keepers between 5-6 cm
pulled traps from water - was able to get third trap after working it from different angles

0855 At Ref 07
6 keepers between 5-6 cm
- released 2 or 3 ~ 6 cm because had enough
- pulled both sets of traps from water

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1000 At MS-09
~ 6 Keepers w/in 5-6cm
pulled traps from water

1015 At MS-07
2 keepers. Trap back others 5-6cm

- spoke w/ Marty about site visit last night - they were able to see marker by 8-1

- she said if we do not get enough lobsters at MS-12 we should try another night because it is an important site

1055 At MS-12
9 Keepers all w/in 5-6
pulled both sets of traps

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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1110 at MS 04
Had 3 lobsters - only allowed 10 in all
all w/in 5-6cm. Trap back ~ 5 w/in
correct size range + ~ 20-30 large lobsters

1135 At MS 02
11 Keepers 5-6cm - Trap back 5-10 in correct range

1145 At MS 03
4 Keepers 5-6 cm - Trap back 2-3 in correct range

1155 At MS 04
2 Keepers

1200 At MS 05
4 Keepers. 5-6

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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120g At ns-96
4/Kanas 5-6 cm

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SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

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APPENDIX B

SEDIMENT SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: MS 1-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 1226			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0-2 crs sand w/gravel lt brown
Monitor Readings (Range in ppm):				2-9 Sandy-silt, black w/ small shell pieces
				redox 2-3 cm

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grab Size	Ziploc Bag		

OBSERVATIONS / NOTES:

Mussel shells, other shells
rocks, a couple w/ baby sea stars ☆ → they are very cute
a lot of worms
sandy & gravelly on top, clay below
Snail, hermit crab, baby urchins, baby brittle stars

MAP:

43°05' 05.08"N
70°44' 22.43"W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

Sample ID No.: M1-2
Sample Location: PNS
Sampled By: UR1
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 1655			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0-7cm lt-med brown crs sand & gravel
Monitor Readings (Range in ppm):				
				redox 7cm

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP: same location as before

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: MS 1-3
Sample Location: PNS
Sampled By: WRJ
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 1250			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-2 med to lt brown
Method:				sand w/ cobbles
				3-11 black w/ dk brown
Monitor Readings				mottling from worm
(Range in ppm):				tubes - sandy silt

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

plant material, shells, many worms

MAP:

43° 05' 04.71" N
70° 44' 24.00" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:
	MS 1-3

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: MS 2-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 1430			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-2½ cm gravel & coarse sand brown
Method:				2½-6 cm clayey silt, lt. grey
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

many rocks - gravel, cobbles
bullets (!)

MAP:

43° 05' 03.15" N
70° 44' 04.12" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

Sample ID No.: M 2-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 1625			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-2mm med. brown silt
Method:				2mm-3cm black silty mud w/sand
				3cm-10cm brown sand
Monitor Readings				
(Range in ppm):				
				2mm redox disc.

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

sed is gravelly - area covered in mussel shells

MAP:

same location as before

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M 2-3
Sample Location: PNS
Sampled By: MRI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 1525			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-10cm
Method:				
				silt, many marshgrass roots
Monitor Readings (Range in ppm):				
				all above redox

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

Same location as before

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M 3-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1730			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-2mm
Method:				
Monitor Readings (Range in ppm):				
				redox 2mm

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grab Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

Seep about 10 ft. west of station

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M 3-2
Sample Location: PNS
Sampled By: WRI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1650			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-1 mm black silt
Method:				
Monitor Readings				
(Range in ppm):				
				0-1mm redox

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

rocks & snails

MAP:

5 yds ~~[illegible]~~ from seep to the west

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

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Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: MS 3-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			sandy-silt, brown to grey-black
Time: 1115			redox 0 to 2/3 cm
Method: grab			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-2 brown
Method:				2-10 mottled grey-black
				8-10 black fades to grey
Monitor Readings				
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

43° 04.978' N
70° 43.894' W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Paul Sadler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M 4-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1740			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-10 cm med brown
Method:				coarse gravel w/sand
Monitor Readings				
(Range in ppm):				all above redox disc.

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grab Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

same location as before

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: MS 04-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1200			
Method: Grab			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				Sandy silt
Method:				0-3 med. brown redox at 3
				3-8 mottled black - med grey
Monitor Readings				8-12 med. grey no mottling
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS - SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

43° 04' 58.26" N
70° 43' 39.95" W

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

Sample ID No.: M4-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 8/27/00
Time: 1835
Method:
Monitor Reading (ppm):

Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)

COMPOSITE SAMPLE DATA:

Date:
Method:
Monitor Readings (Range in ppm):

Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
			gravel & sand w/a lot of marsh roots
			6cm redox disc.

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

same location as before

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M 5-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1635			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0-1 cm (light brown fine silt)
				1-10 cm (dark black fine silt)
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

Station marker

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: MS 5-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1245			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0.8-1.4cm redox
Method:				0-0.8/1.4 med. brown
				1-5 cm black, not mottled
Monitor Readings				5-11 cm black dk grey mottled
(Range in ppm):				
				sandy silt

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

eelgrass & algae on bottom

MAP:

43° 04' 56.03" N
70° 43' 33.67" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

Sample ID No.: M5-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1705			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0-1 cm (light brown silty sand)
				1-10 cm (black med. sand w/ silt)
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

Station marker

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M 6-1
Sample Location: ~~8/29/00~~ PNS
Sampled By: ~~PNS~~ URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 0530			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				~~0-10 cm~~
Method:				0.0.1 cm (light brown)
				0.1 – 10 cm (black)
Monitor Readings				seed was silt w/ some
(Range in ppm):				fine sand

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

mussels sampled on 8/27/00

MAP:

by station marker in seep

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: MS 6-2
Sample Location: PNS
Sampled By: URS
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1342			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-10 cm dk brown sandy-silt
Method:				lots of eelgrass
				no redox discontinuity
Monitor Readings (Range in ppm):				
				Some silty-sand
				On 3rd grab redox discont. at 1mm

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

lots of eelgrass - thick bed, long blades. bed somewhat localized - not across whole cove

MAP:

See last May (5/00) notes - used range finder, could not get GPS fix

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

Sample ID No.: MS 6-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: ~~8~~ 1750			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0-10 cm (light brown silty sand) no odor discoloration
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

roots

MAP:

station marker

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

Sample ID No.: M7-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 1550			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-1 cm lt. brown
Method:				1-10cm dk grey
				sandy-silt
Monitor Readings				
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

Sample ID No.: MS 7-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1645			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-1 med brown
Method:				1-6 black/lt brown mottled
				6-10 med brown, less black
Monitor Readings (Range in ppm):				
				0.6-1 cm redox discont.

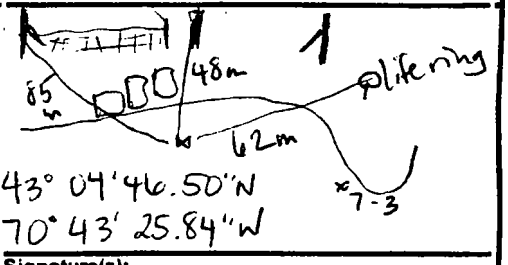
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain size	Ziploc Bag		

OBSERVATIONS / NOTES:

clam worms
dead eelgrass

MAP:



Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

Sample ID No.: MS7-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1550			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-3 med brown sandy-silt
Method:				3-10 mottled black & lt green / lt. brown.
Monitor Readings (Range in ppm):				10-13 mottled black & med brown silty sand

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

eelgrass visible from boat

MAP:

43° 04' 45.95" N
70° 43' 23.93" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M8-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 1630			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-1 lt. brown
Method:				1-10 black
Monitor Readings				sandy-clayey silt
(Range in ppm):				some worms, small
				a few pebbles
				lck redox

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003.

Sample ID No.: MS 8-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1720			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-0.7 med brown
Method:				0.7-4 mottled dk green black
				4-9 med to lt. grey
Monitor Readings				
(Range in ppm):				Silty sand
				0.3-0.7cm redox disc.

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

green crab

MAP:

43° 04' 45.21"N
70° 43' 33.92"W

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: MS-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00 Time: 1700 Method: Monitor Reading (ppm):	0-10	brown	sand w/ gravel, cobbles no color change.

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

Sample ID No.: M 9-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

Date: 8/30/00
Time: 0630
Method:
Monitor Reading (ppm):

Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)

COMPOSITE SAMPLE DATA:

Date:
Method:
Monitor Readings (Range in ppm):

Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
			0-5cm gravelly crs sand w/ a little mud grey & brown
			redox 5cm

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

lots of rocks

MAP:

43° 04' 43.16"N
70° 43' 38.93"W

just down from tel pole

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

Sample ID No.: M 9-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 0535			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0-4cm brown silt w/ mussels & snails
Monitor Readings (Range in ppm):				4-10cm dk grey / black sandy gravelly silt
				redox 4cm

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP: 10 ft. downslope from pipe

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: MS 9-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1600			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-8 mottled black & med grey
Method:				8-16 med grey no mottling
Monitor Readings (Range in ppm):				silt & clayey silt
				10 mm redox discontinuity

SAMPLE COLLECTION INFORMATION:

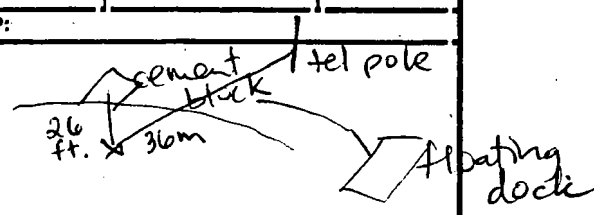
Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

Stinky mud

43° 04' 41.95" N
70° 43' 39.88" W

MAP:



Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M10-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: ~~1730~~ 0530			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-4cm dk brown
Method:				Sandy-silt w/pebbles
				& cobbles
Monitor Readings				
(Range in ppm):				4-10cm black med. sand
				w/ pebbles & cobbles
				redox at 4cm

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

43° 04' 34.39' N
70° 43' 42.91' W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M 10-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 0900			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-2 dk brown
Method:				2-9 mottled dk brown & black
Monitor Readings (Range in ppm):				redox disc at 1-2 cm
				Silty sand

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

eelgrass in grab - alive, some in sample alive & dead

lots of eelgrass, 1 crab (alive)

MAP:

43° 04' 34.52" N
70° 43' 41.98" W

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M 10-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 0830			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-2cm med. brown
Method:				2-12cm black
Monitor Readings				Sandy-silt w/ shell pieces
(Range in ppm):				fragments of algae, small
				rocks
				redox disc. 2cm

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

first grab "caught" a huge rock
a lot of worms (clam worms)

MAP:

43°04' 36.75" N
70°43' 42.33" N

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring
CTO 201 & 5003

Sample ID No.: MS 11-1 (11-1)
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/30/00			
Time: 0730			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

No sed - all rocks

MAP:

same location

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Revised 3 offshore monitoring CTO 201 # 5003

Sample ID No.: MS 11-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/30/00			
Time: 0715			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

no sediment - all rocks (big ones)

MAP:

same location

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: MS 11-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/30/00			
Time: 0645			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0 - cobbles
Method:				0-4 cm yellowish brown sandy-gravel
Monitor Readings (Range in ppm):				4-10cm dk. grey sandy-gravel

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

43° 04' 28.83" N
70° 44' 08.36" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M 12-1
Sample Location: PNS
Sampled By: VRE
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1710			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-5cm light Brown w/ Fibrous material
Method:				5-10cm Silty dark gray → black
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

2 Feet on water side of marker, between wooden rail ways.

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: MS 12-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 14:12			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-3mm med. brown
Method:				3mm-10cm mottled dk. brown and black
Monitor Readings (Range in ppm):				sandy-silt
				redox disc. at 3mm

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

eelgrass (alive) in grab
lots of blades & rhizomes

MAP:

43° 04' 45.69"N
70° 44' 25.37"W
(25.37)

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

Sample ID No.: M12-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1515			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0 - 0.5/1 cm med. brown
				0.5/1 - 4.5 dk. grey
Monitor Readings				4.5 - 6 lt. brown
(Range in ppm):				6 - 11.5 black
				clayey-silt

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS - SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

blood worms, some eelgrass
(grab in thick eelgrass bed)

MAP:

43° 04' 45.26" N
70° 44' 23.54" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M13-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 1045			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0-1.5/3 med. brown
				3-9 black
Monitor Readings (Range in ppm):				sandy-silt
				1.5-3 cm redox

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

worm tubes, green algae pieces
mussel shell
green & brown algae pieces

MAP:

43° 04' 51.15" N
70° 44' 34.45" W

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO. 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M13-2
Sample Location: PNS
Sampled By: NRI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 1145			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-2 redox, lt. brown
Method:				2-4 black
				4-9 dk-med grey w/ black mottling
Monitor Readings (Range in ppm):				
				sandy-silt

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

amphipod tubes on surface, small a lot of worms & wormtubes

MAP:

43° 04' 52.09" N
70° 44' 36.55" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring
CTO 201 # 5003

Sample ID No.: M13-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 0945			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-1/2 cm lt brown
Method:				2-9 cm black
Monitor Readings				clayey-sandy silt
(Range in ppm):				1-2cm redox discontinuity

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

dead organic material - leaves & stems
very smelly
3rd grab more anoxic (redox only 1-2mm)

MAP:

43° 04' 51.12" N
70° 44' 33.23" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offsite monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: MS 14-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 0830			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

salt marsh sample

MAP:

right near station marker

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: M14-2
Sample Location: PNS
Sampled By: WRI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 0830			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				redox discont. 0.5-1cm
Method:				0-1cm lt. brown
				1-12 cm mottled black &
Monitor Readings				dk. grey
(Range in ppm):				
				Sandy-silt
				Some rocks on 3rd grab

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

big clam worm
lots of red worms

MAP:

43° 04'56.49"N
70° 04'52.31"W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring
CTO 201 # 5003

Sample ID No.: M 14-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/00			
Time: 0900			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-.7/1.5 lt brown
Method:				1.5-6 med brown
				6-13 dk grey & black mottled
Monitor Readings (Range in ppm):				
				Sandy-silt
				0.7-1.5 redox disc.

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

Some worms
dead eelgrass blades

MAP:

43° 04' 57.15" N
70° 44' 48.78" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: R 1-1
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1415			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0-1 cm lt brown silty-mud
				1-10 cm black silty-mud
Monitor Readings (Range in ppm):				
				redox 1cm

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grab Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

same location as before

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

Sample ID No.: ~~R1-3~~ R1-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1700			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				med brown on surface.
Method:				black below
Monitor Readings				
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

43° 07' 10.71" N
70° 48' 27.64" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: ~~R1-2~~ R1-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1700			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-0.5cm med. brown
Method:				0.5-6cm dk. grey
Monitor Readings				
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grab Size	Ziploc Bag		

OBSERVATIONS / NOTES:

very hard to get grab

MAP:

43° 07' 13.85" N
70° 48' 35.10" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Sample ID No.: R 1-4
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00			
Time: 1405			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-2 lt. silt w/marsh grass
Method:				2-10 dk. silt w/ marsh grass roots
Monitor Readings (Range in ppm):				
				1.5-2cm redox

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

Silt w/a lot of marsh grass
Snails
worms in sed.

MAP:

same location as before

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: R 2-1
Sample Location: PNS
Sampled By: MRI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1505			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0-10 crs sand w/ pebbles
				some marsh grass
Monitor Readings				roots growing in sed
(Range in ppm):				
				redox 1cm

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

2m from station marker towards drawbridge

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: R2-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1030			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0-4cm med brown fine to med. sand
Monitor Readings (Range in ppm):				4-11cm mottled black & brown
				0-7cm fine-med sand
				7-11cm silty-sand

SAMPLE COLLECTION INFORMATION:

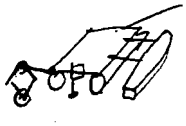
Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

worms (tube worms) a lot

MAP:

Same location as before
pump/bridge
tied off port stern to red num #4



Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: R 2-3
Sample Location: ONS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1600			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-2 med brown
Method:				2-6 mottled w/ black + dk grey
Monitor Readings (Range in ppm):				6-10.5 dk. grey
				0-5 fine sand
				5-10.5 clayey-silt w/some sand
				1-2 cm redox discont.

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

shells & pebbles, snails

MAP:

43° 05' 15.89"N
70° 45' 31.65" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

Sample ID No.: R2-4
Sample Location: PNS
Sampled By: MRI
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1515			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0.-0.5 lt. brown silt
				.5-10 dk black silt
Monitor Readings (Range in ppm):				
				0.5 cm redox

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

worm burrows (4)

MAP:

1m away from station marker

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

Sample ID No.: OU4-SD-R03-100A
Sample Location: R03 100A
Sampled By: Chip / Nick
C.O.C. No.:

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00 Time: 12:02 Method: Monitor Reading (ppm):	0-10cm	Brown	Silt w/ a lot of marsh grass

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

- a lot of snails (~20)
- redox at least thru 0-10cm

MAP:

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 & 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: R3-2
Sample Location: PNS
Sampled By: NRI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1030			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-2 cm med. brown
Method:				2-10 cm mottled med brown
				& black ↳ due to
Monitor Readings				worm burrows
(Range in ppm):				
				redox disc, 1-2cm
				silt, -sand

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

live eelgrass blades
large ~~clam~~ worm burrows & worms

MAP:

43° 04' 05.85" N
70° 44' 22.37" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: R 3-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1000			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-0.5 med brown
Method:				0.5-6 mottled dk brown & black
Monitor Readings (Range in ppm):				Silty-sand w/gravel clam worms

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

tiny brittlestars (<1cm), many worms
Sand shrimp, Snails

MAP:

43° 04' 05.84" N
70° 44' 23.86" W

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 11 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: R3-4
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1830			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				Redox @ 5 mm
Method:				Sandy Silt
				Medium Brown Above Redox
Monitor Readings				Dark Gray Below Redox
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10 cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

Sample taken 2 Feet on water side of marker.

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO. 201 # 5003

Sample ID No.: OU4-SD-R04-100A
Sample Location: R04 100A
Sampled By: Chip & Nick
C.O.C. No.:

- [ ] Surface Soil
- [ ] Subsurface Soil
- [x] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [x] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/27/00 Time: 17:40 Method: Monitor Reading (ppm):	0-10	Brown	Silt & a lot of Marsh Grass

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2 cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

- about 20 yds west of seep
- redox at least 0-10cm

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: R4-2
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1200			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-1.5cm med. brown
Method:				1.5-6cm dk. grey
Monitor Readings				Coarse to med. sand
(Range in ppm):				w/gravel

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

rocks & snails

MAP:

43° 03' 37.31" N
70° 44' 01.52" W

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

401
741587

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page 1 of 1

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: R4-3
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1112			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
				0-4cm med. brown
Method:				4-8cm dk. grey
Monitor Readings				coarse to med. sand
(Range in ppm):				w/gravel, lots of shells

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

Snails

MAP:

43° 03' 37.57" N
70° 44' 06.33" W

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring CTO 201 # 5003

[ ] Surface Soil
[ ] Subsurface Soil
[X] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: R4-4
Sample Location: PNS
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/29/00			
Time: 1040			
Method:			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				0-10cm fine silty-sand brown to dk. grey
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs / PCBs / Pesticides / TOC	Large glass jar		
Metals	Small glass jar		
AVS-SEM (0-10cm)	Small plastic jar		
AVS only (0-2cm)	Small plastic jar		
Grain Size	Ziploc Bag		

OBSERVATIONS / NOTES:

MAP:

Same location as before

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 Offshore monitoring CTO #201 #5003

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[X] QA Sample Type: Rinsate Blank

Sample ID No.: 004-RB-001-000A
Sample Location:
Sampled By: VAI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-27-00	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 0900								
Depth:								
Method:	clear	—	—	—	—	—	—	—

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES:

Rinsate of stainless steel bowl

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring
CTO #201 #5003

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[X] QA Sample Type: Rinsate Blank

Sample ID No.: 004-AB-002-000A
Sample Location:
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-28-00	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1600	(Visual)	(S.U.)	(mS/cm)	(°C)	(NTU)	(mg/l)	(%)	
Depth:	clear	—	—	—	—	—	—	—
Method:								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES:

Rinsate of titanium scoop

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring
CTO #201 #5003

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[X] QA Sample Type: Rinsate Blank

Sample ID No.: OU4-AB-003-000A
Sample Location:
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-29-00	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time: 710								
Depth:								
Method:	clear	—	—	—	—	—	—	—

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES:

Rinsate of titanium chisel

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 Offshore Monitoring CTO # 201 #5003

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type: Rinsate Blank

Sample ID No.: OU4-RB-004-000A
Sample Location:
Sampled By: URI
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8-30-00	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Time:								
Depth:								
Method:								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES:

Rinsate of titanium chisel

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: Portsmouth Naval Shipyard
Project No.: Round 3 offshore monitoring
CTO N201 N5003

[] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type: Field Blank

Sample ID No.: OU4-AB-001-0001
Sample Location:
Sampled By: JAJ
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 8-27-00								
Time: 0915								
Depth:								
Method:								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected

OBSERVATIONS / NOTES:

DI water

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

APPENDIX C

CHAIN OF CUSTODY FORMS

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 1 OF 6

PROJECT NO: 5003	SITE NAME: PES	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen - 412-921-7110	LABORATORY NAME AND CONTACT: TAMU - Tony Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt - 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	Alkylated PAHs	TOC, grain size	AVS, SEM	AVS only	Dioxin	TOC	COMMENTS
8-28	~~8-28~~ 1700	004-SD-M08-300A	SD	G	4	X	X	X	X	X		X		
8-28	~~8-28~~ 1700	004-SD-M08-300A-2			1						X			
8-28	1655	004-SD-M01-200A			4	X	X	X	X	X				
8-28	1655	004-SD-M01-200A-2			1						X			
8-28	1550	004-SD-M07-100A			4	X	X	X	X	X		X		
8-28	1550	004-SD-M07-100A-2			1						X			
8-29	0710	004-AB-003-000A	SW		3	X	X					X	X	
8-28	1600	004-AB-002-000A	SW		3	X	X					X	X	Hold for Analysis
8-28	0910	004-SD-M14-100A	SD		4	X	X	X	X	X				
8-28	0910	004-SD-M14-100A-2			1						X			
8-28	1010	004-SD-M13-300A			4	X	X	X	X	X				
8-28	1010	004-SD-M13-300A-2			1						X			
8-28	1300	004-FD-001-000A			4	X	X	X	X	X				

1. RELINQUISHED BY	DATE 8-29-00	TIME 1800	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 2 OF 6

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Terry Wade
SAMPLERS (SIGNATURE): [signature] URI		FIELD OPERATIONS LEADER AND PHONE NUMBER: Mary Bernhardt 412-921-5433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G):
PRESERVATIVE USED:

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: Metals	PAHs, PCBs, Pesticides	Halogenated PAHs	TOC, grain size	AVS-SEM	AVS only			COMMENTS
8-28	1300	004-FD-001-000A-2	SD	G	1						✓			
	1300	004-SD-M01-300A			4	✓	✓	✓	✓	✓				
	1300	004-SD-M01-300A-2			1						✓			
	1100	004-SD-M13-100A			4	✓	✓	✓	✓	✓				
	1100	004-SD-M13-100A-2			1						✓			
	0925	004-SD-M14-300A			4	✓	✓	✓	✓	✓				
	0925	004-SD-M14-300A-2			1						✓			
	1210	004-SD-M13-200A			4	✓	✓	✓	✓	✓				
	1210	004-SD-M13-200A-2			1						✓			
	0930	004-SD-M14-200A			4	✓	✓	✓	✓	✓				
	0930	004-SD-M14-200A-2			1						✓			
	1235	004-SD-M01-100A			4	✓	✓	✓	✓	✓				
	1235	004-SD-M01-100A-2			1						✓			

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	8-29-00	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 3 OF 6

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Colgan 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCB, Pesticides	Alkalinity PAH	TOC, grain size	Aus-SEM	Aus only	Digital	COMMENTS
8-29	1040	OU4-SD-R04-400A	SD	G	4	X	X	X	X	X		X	
	1040	OU4-SD-R04-400A-2			1						X		
	1050	OU4-SD-R03-200A			4	X	X	X	X	X		X	
	1050	OU4-SD-R03-200A-2			1						X		
	1015	OU4-SD-R03-300A			4	X	X	X	X	X		X	
	1015	OU4-SD-R03-300A-2			1						X		
	0835	OU4-SD-M10-300A			4	X	X	X	X	X		X	
	0835	OU4-SD-M10-300A-2			1						X		
	0930	OU4-SD-M10-200A			4	X	X	X	X	X		X	
	0930	OU4-SD-M10-200A-2			1						X		
	1210	OU4-SD-R04-200A			4	X	X	X	X	X		X	
	1210	OU4-SD-R04-200A-2			1						X		
	1125	OU4-SD-R04-300A			4	X	X	X	X	X		X	

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
	8-29-00	1800			
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 4 OF 6

PROJECT NO: 5003	SITE NAME: Pad	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7116	LABORATORY NAME AND CONTACT: TAMU - Tony Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt - 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☑
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	Alkylated PAHs	TOC, grain size	VOCs-SEM	AVS only	Dioxins	COMMENTS
8-29	1125	004-SD-R04-300A-2	SD	G	1					X			
8-29	0520	004-SD-M06-100A			4	X	X	X	X	X			
8-29	0520	004-SD-M06-100A-2			1					X			
8-28	1630	004-SD-M08-100A			4	X	X	X	X	X	X		
8-28	1630	004-SD-M08-100A-2			1					X			
8-28	1450	004-SD-M02-100A			4	X	X	X	X	X			
8-28	1450	004-SD-M02-100A-2			1					X			
8-28	1625	004-SD-M02-200A			4	X	X	X	X	X			
8-26	1625	004-SD-M02-200A-2			1					X			
8-28	1525	004-SD-M02-300A			4	X	X	X	X	X			
8-26	1525	004-SD-M02-300A-2			1					X			
8-28	1630	004-FD-003-000A			4	X	X	X	X	X	X		
8-26	1630	004-FD-003-000A-2			1					X			

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-29-00	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

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TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 5 OF 6

PROJECT NO: 5003	SITE NAME: PWS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU - Terry Wade
SAMPLERS (SIGNATURE): UAI		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bergbardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	Alkylated PAHs	TOC, grain size	AVS-SEM	AVS only	Diurnal	o/o Liquid	COMMENTS
8-29	530	004-MU-M10-100A	MU	G	1	X	X				X	X		
8-29	0550	004-MU-M09-100A			1	X	X				X	X		
8-28	1700	004-MU-M08-300A			1	X	X				X	X		
8-28	0900	004-MU-M14-100A			1	X	X					X		
8-28	1525	004-MU-M02-300A			1	X	X					X		
8-28	1625	004-MU-M02-200A			1	X	X					X		
8-29	0620	004-MU-M10-300A			1	X	X				X	X		
8-28	1550	004-MU-M07-100A			1	X	X				X	X		
8-28	1115	004-MU-M13-100A			1	X	X					X		
8-29	1505	004-SD-A02-100A	SD		4	X	X	X	X	X		X		
	1505	004-SD-A02-100A-2			1						X	X		
	1515	004-SD-A02-400A			4	X	X	X	X	X		X		
	1515	004-SD-A02-400A-2			1						X	X		

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-29-00	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

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TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 6 OF 6

PROJECT NO: 5003	SITE NAME: PWS	PROJECT MANAGER AND PHONE NUMBER: Debbie Chen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU - Tony Wade
SAMPLERS (SIGNATURE): [signature] URI		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	Alkylated PAHs	TOC, grain size	AVS-SEM	AVS only	Dioxins	% lipids	COMMENTS
8-29	0530	004-SD-M10-100A	SD	G	4	X	X	X	X	X		X		
	0530	004-SD-M10-100A-2			1						X			
	0535	004-SD-M09-200A			4	X	X	X	X	X		X		
	0535	004-SD-M09-200A-2			1						X			
	0520	004-FD-005-000A			4	X	X	X	X	X		X		
	0520	004-FD-005-000A-2			1						X			
8-28	1630	004-MU-M08-100A	MU		1	X	X					X	X	
8-29	0600	004-MU-M10-200A			1	X	X					X	X	
8-29	1515	004-MU-R02-400A			1	X	X					X	X	
8-29	1040	004-MU-R04-400A			1	X	X					X	X	
8-28	1655	004-MU-M01-200A			1	X	X						X	
8-29	0600	004-MU-M08-200A			1	X	X					X	X	
8-29	535	004-MU-M09-200A			1	X	X					X	X	

1. RELINQUISHED BY [signature]	DATE 8-29-00	TIME 1800	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

YELLOW (FIELD COPY) PINK (FILE COPY) 3/99

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 1 OF 9

PROJECT NO: 5003	SITE NAME: PuS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU- Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED
TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	metals	PAHs, PCBs, Pesticides	O/G Liquids						COMMENTS
9-30	0910	OU4-LT-M01-100A-6	LT	G	1	X	X	X						Hold for Composit
		OU4-LT-M01-100A-7												
		OU4-LT-M01-100A-8												
		OU4-LT-M01-100A-9												
		OU4-LT-M01-100A-10												
	1135	OU4-LT-M02-100A-3												
		OU4-LT-M02-100A-4												
		OU4-LT-M02-100A-5												
		OU4-LT-M02-100A-6												
		OU4-LT-M02-100A-7												
		OU4-LT-M02-100A-8												
		OU4-LT-M02-100A-9												
		OU4-LT-M02-100A-10												

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-30-00	1700	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 2 OF 9

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921-8433	ADDRESS: 533 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	O/G Liquid						COMMENTS
8-30	1135	OU4-LT-M02-100A-11	LT	G	1	X	X	X						Hold for Composite
		OU4-LT-M02-100A-12												
		OU4-LT-M02-100A-13												
	1145	OU4-LT-M03-100A-7												
		OU4-LT-M03-100A-8												
		OU4-LT-M03-100A-9												
		OU4-LT-M03-100A-10												
	1155	OU4-LT-M04-100A-9												
	1155	OU4-LT-M04-100A-10												
	1200	OU4-LT-M05-100A-7												
		OU4-LT-M05-100A-8												
		OU4-LT-M05-100A-9												
		OU4-LT-M05-100A-10												

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-30-00	1700	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

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TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 3 OF 9

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen - 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Tony Wade
SAMPLERS (SIGNATURE): URZ		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt - 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: Metals	PAHs, PCBs, Pesticides	O/G Lipids	Dioxins					COMMENTS
8-30	1205	OU4-LT-M06-100A-5	LT	G	1	X	X	X						Hold for Composit
		OU4-LT-M06-100A-6												
		OU4-LT-M06-100A-7												
		OU4-LT-M06-100A-8												
	1015	OU4-LT-M07-100A-10							X					
	1015	OU4-LT-M07-100A-11												
	1000	OU4-LT-M09-100A-7												
		OU4-LT-M09-100A-8												
		OU4-LT-M09-100A-9												
		OU4-LT-M09-100A-10												
	0740	OU4-LT-M10-100A-5												
		OU4-LT-M10-100A-6												
		OU4-LT-M10-100A-7												

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-30-00	1700	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 4 OF 9

PROJECT NO: 5003	SITE NAME: PWS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Terry Wade
SAMPLERS (SIGNATURE): UAI		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921 8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station TX 77845

STANDARD TAT ☑
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	O/U Liquids	Dioxin					COMMENTS
8-30	0740	OU4-LT-M10-100A-8	LT	G	1	X	X	X	X					Hold for composit
		OU4-LT-M10-100A-9												
		OU4-LT-M10-100A-10												
	0755	OU4-LT-M11-100A-3												
		OU4-LT-M11-100A-4												
		OU4-LT-M11-100A-5												
		OU4-LT-M11-100A-6												
		OU4-LT-M11-100A-7												
		OU4-LT-M11-100A-8												
		OU4-LT-M11-100A-9												
		OU4-LT-M11-100A-10												
		OU4-LT-M11-100A-11												
		OU4-LT-M11-100A-12												

1. RELINQUISHED BY	DATE 8-30-00	TIME 1700	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COI TS

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 5 OF 9

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cosen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Terry Wade
SAMPLERS (SIGNATURE): [signature] UXI		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: Metals	PAHs, PCBs, Pesticides	O/G Lipids	Dioxin					COMMENTS
8.30	1015	004-LT-M12-100A-2	LT	G	1	X	X	X	X					Hold for composit
		004-LT-M12-100A-3												
		004-LT-M12-100A-4												
		004-LT-M12-100A-5												
		004-LT-M12-100A-6												
		004-LT-M12-100A-7												
		004-LT-M12-100A-8												
		004-LT-M12-100A-9												
		004-LT-M12-100A-10												
	0815	004-LT-R01-100A-6												
		004-LT-R01-100A-7												
		004-LT-R01-100A-8												
		004-LT-R01-100A-9												

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	8-30-00	1700	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 6 OF 9

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen. 412-921-7118	LABORATORY NAME AND CONTACT: TAMU. Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt. 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station. TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	O/G Liquids	Dioxins					COMMENTS
8-30	0815	OU4-LT-R01-100A-10	LT	G	1									Hold for Compositing
	0815	OU4-LT-R01-100A-11												
	0830	OU4-LT-R02-100A-2												
		OU4-LT-R02-100A-3												
		OU4-LT-R02-100A-4												
		OU4-LT-R02-100A-5												
		OU4-LT-R02-100A-6												
		OU4-LT-R02-100A-7												
		OU4-LT-R02-100A-8												
		OU4-LT-R02-100A-9												
	1110	OU4-LT-R04-100A-8												
		OU4-LT-R04-100A-9												
		OU4-LT-R04-100A-10												

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-30-00	1700	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

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TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 7 OF 9

PROJECT NO: 5003	SITE NAME: PJS	PROJECT MANAGER AND PHONE NUMBER: Debbie Chen - 412-921-7118	LABORATORY NAME AND CONTACT: TAMU - Terry Wade
SAMPLERS (SIGNATURE): [signature] UAZ		FIELD OPERATIONS LEADER AND PHONE NUMBER: Hans Bernhardt - 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☑
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	Alkylated PAHs	TOC, grain size	AVS-SEM	AVS only	Dioxin	COMMENTS
8-30	0630	004-SD-M09-100A	SD	G	4	X	X	X	X	X	X		
8-30	0630	004-SD-M09-100A-1			1						X		
8-29	1430	004-SD-M12-200A			4	X	X	X	X	X	X		
8-29	1430	004-SD-M12-200A-1			1						X		
8-29	1615	004-SD-R02-300A			4	X	X	X	X	X	X		
8-29	1615	004-SD-R02-300A-1			1						X		
8-29	1430	004-FD-006-000A			4	X	X	X	X	X	X		
8-29	1430	004-FD-006-000A-1			1						X		
8-29	1710	004-SD-M12-100A			4	X	X	X	X	X	X		
8-29	1710	004-SD-M12-100A-1			1						X		
8-29	1830	004-SD-R03-400A			4	X	X	X	X	X	X		
8-29	1830	004-SD-R03-400A-1			1						X		
8-29	1630	004-SD-R02-200A			4	X	X	X	X	X	X		

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	8-30-00	1700	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 2 OF 9

PROJECT NO: 5003	SITE NAME: PLS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cosey 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Tony Wade
SAMPLERS (SIGNATURE): VAI		FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Berghardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	Alkylated PAHs	TOC, grain size	AVS/SEM	AVS only	Dioxins	o/w liquids	COMMENTS
		~~OU4-RO4-400A~~	SD	G										
8-29	1630	OU4-SD-RO2-200A-1	SD	G	1						X			
8-29	1810	OU4-SD-RO1-200A			4	X	X	X	X	X		X		
8-29	1810	OU4-SD-RO1-200A-1			1						X			
8-29	1700	OU4-SD-RO1-300A			4	X	X	X	X	X		X		
8-29	1700	OU4-SD-RO1-300A-2			1						X			
8-29	1530	OU4-SD-M12-300A			4	X	X	X	X	X		X		
8-29	1530	OU4-SD-M12-300A-2			1						X			
8-29	1830	OU4-MU-RO3-400A	MU		1	X	X					X	X	
8-29	1710	OU4-MU-M12-100A			1	X	X					X	X	
8-29	1800	OU4-MU-RO4-300A			1	X	X					X	X	
8-29	1615	OU4-MU-RO2-300A			1	X	X					X	X	
8-29	1700	OU4-MU-RO1-300A			1	X	X					X	X	

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-30-00	1700	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 3/99

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 9 OF 9

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
5003	PWS	Debbie Colon 412-921-7118	TAMU Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Benhardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	O/G Liquids	Dioxins	TOC	Alkylated PAHs	Grain size	Aus-Sxm	Aus	COMMENTS
8-29	1830	004-MU-A03-300A	MU	G	1	X	X	X	X						
8-29	1720	004-MU-M12-200A	MU	G	1	X	X	X	X						
8-30	1200	004-RB-004-000A	SW	G	4	X	X		X	X	X				Hold for Analysis
8-30	0645	004-SD-M11-300A	SD	G	4	X	X		X	X	X	X			
8-30	0645	004-SD-M11-300A-2	SD	G	1									X	
	0730	004-MU-M11-100A	MU		1	X	X	X	X						
	0715	004-MU-M11-200A			1	X	X	X	X						
	0645	004-MU-M11-300B			1	X	X	X	X						

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
	8-30-00	1700			
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 1 OF 13

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	o/o Lipids						COMMENTS
8-28-00	0712	004-LT-M01-100A-1	LT	G	1	X	X	X						Hold for Composit
		004-LT-M01-100A-2												
		004-LT-M01-100A-3												
		004-LT-M01-100A-4												
		004-LT-M01-100A-5												
	1035	004-LT-M02-100A-1												
	1035	004-LT-M02-100A-2												
	1040	004-LT-M03-100A-1												
		004-LT-M03-100A-2												
		004-LT-M03-100A-3												
		004-LT-M03-100A-4												
		004-LT-M03-100A-5												
		004-LT-M03-100A-6												

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-28-00	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 3/99

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 2 OF 13

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Tony Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: Metals	PAHs, PCBs, Pesticides	o/o Lipids						COMMENTS
8-28	1050	OU4-LT-MO4-100A-1	LT	G	1	X	X	X						Hold for composit
		OU4-LT-MO4-100A-2												
		OU4-LT-MO4-100A-3												
		OU4-LT-MO4-100A-4												
		OU4-LT-MO4-100A-5												
		OU4-LT-MO4-100A-6												
		OU4-LT-MO4-100A-7												
		OU4-LT-MO4-100A-8												
	1055	OU4-LT-MO5-100A-1												
		OU4-LT-MO5-100A-2												
		OU4-LT-MO5-100A-3												
		OU4-LT-MO5-100A-4												
		OU4-LT-MO5-100A-5												

1. RELINQUISHED BY	DATE 8-28-00	TIME 1800	1. RECEIVED BY	DATE / TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE / TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE / TIME

COMMENTS

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 3 OF 13

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt - 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	o/o Liquids	Dioxin					COMMENTS
8-28	1055	004-LT-M05-100A-6	LT	G	1	X	X	X						Hold for composite
	1100	004-LT-M06-100A-1												
		004-LT-M06-100A-2												
		004-LT-M06-100A-3												
		004-LT-M06-100A-4												
	1000	004-LT-M07-100A-1							X					
		004-LT-M07-100A-2												
		004-LT-M07-100A-3												
		004-LT-M07-100A-4												
		004-LT-M07-100A-5												
		004-LT-M07-100A-6												
		004-LT-M07-100A-7												
		004-LT-M07-100A-8												

1. RELINQUISHED BY	DATE 8-29-00	TIME 1800	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 3/00

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 4 OF 13

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	O/G Lipids	Dioxins					COMMENTS
8-28	1000	OU4-LT-MU7-100A-9	LT	G	1	X	X	X	X					Hold for composit
	1010	OU4-LT-MU8-100A-1												
		OU4-LT-MU8-100A-2												
		OU4-LT-MU8-100A-3												
		OU4-LT-MU8-100A-4												
		OU4-LT-MU8-100A-5												
		OU4-LT-MU8-100A-6												
		OU4-LT-MU8-100A-7												
		OU4-LT-MU8-100A-8												
		OU4-LT-MU8-100A-9												
		OU4-LT-MU8-100A-10												
		OU4-LT-MU8-100A-11												
	1020	OU4-LT-MU9-100A-1												

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-28-00	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 5 OF 13

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen · 412-921-7118	LABORATORY NAME AND CONTACT: TAMU · Terry Wade
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt · 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT [X]
RUSH TAT [ ]
[ ] 24 hr. [ ] 48 hr. [ ] 72 hr. [ ] 7 day [ ] 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: Metals	PAHs, PCBs, Pesticides	O/O Lipids	Dioxin					COMMENTS
8-26	1020	OU4-LT-M09-100A-2	LT	G	1	X	X	X	X					Hold for analysis
		OU4-LT-M09-100A-3												
		OU4-LT-M09-100A-4												
		OU4-LT-M09-100A-5												
		OU4-LT-M09-100A-6												
	1300	OU4-LT-M10-100A-1												
		OU4-LT-M10-100A-2												
		OU4-LT-M10-100A-3												
		OU4-LT-M10-100A-4												
	1315	OU4-LT-M11-100A-1												
	1315	OU4-LT-M11-100A-2												
	0900	OU4-LT-M12-100A-1												
	0840	OU4-LT-M13-100A-1												

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	8-26-00	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 6 OF 13

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU- Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	o/o Lipids	~~Pesticides~~					COMMENTS
8-26	0940	004-LT-M13-~~100~~100A-2	LT	G	1	X	X	X						Hold for Composit
		004-LT-M13-100A-3												
		004-LT-M13-100A-4												
		004-LT-M13-100A-5												
		004-LT-M13-100A-6												
		004-LT-M13-100A-7												
		004-LT-M13-100A-8												
		004-LT-M13-100A-9												
		004-LT-M13-100A-10												
	0930	004-LT-M14-100A-1												
		004-LT-M14-100A-2												
		004-LT-M14-100A-3												
		004-LT-M14-100A-4												

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-26-00	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 7 OF 13

PROJECT NO: 5003	SITE NAME: PWS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen. 412-921-7118	LABORATORY NAME AND CONTACT: TAMU - Tony Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt. 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: Metals	Pest/Herb, PCBs, Pesticides	% Lipids	Dioxins					COMMENTS
8-28	0830	004-LT-M14-5 100A-5	LT	G	1	X	X	X	~~X~~					Hold in Compositi
		004-LT-M14-6 100A 6							~~X~~					
		004-LT-M14-7 100A 7							~~X~~					
		004-LT-M14-8 100A-8							~~X~~					
		004-LT-M14-9 100A-9							~~X~~					
		004-LT-M14-10 100A-10							~~X~~					
	0745	004-LT-A01-100A-1							X					
		004-LT-A01-100A-2							X					
		004-LT-A01-100A-3							X					
		004-LT-A01-100A-4							X					
		004-LT-A01-100A-5							X					
	0815	004-LT-A02-100A-1							X					
	0915	004-LT-A03-100A-1							X					

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-28-00	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 8 OF 13

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen · 412-921-7116	LABORATORY NAME AND CONTACT: TAMU · Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt · 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	O/G Liquids	Digital					COMMENTS
8-28	0915	004-LT-R03-100A-2	LT	G	1	X	X	X	X					Hold for composite
		004-LT-R03-100A-3												
		004-LT-R03-100A-4												
		004-LT-R03-100A-5												
		004-LT-R03-100A-6												
		004-LT-R03-100A-7												
		004-LT-R03-100A-8												
		004-LT-R03-100A-9												
	0925	004-LT-R04-100A-1												
		004-LT-R04-100A-2												
		004-LT-R04-100A-3												
		004-LT-R04-100A-4												
		004-LT-R04-100A-5												

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-28-00	1500	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

CON S

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 9 OF 13

PROJECT NO: 5003	SITE NAME: PES	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU Tony Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Hans Bernhardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	metals	PAHs, PCBs, Pesticides	o/p lipids	Dioxins					COMMENTS
8-28	0925	004-LT-R04-100A-6	LT	G	1	X	X	X	X					Hold for compositing
8-28	0925	004-LT-R04-100A-7	LT			X	X	X	X					"
8-27	1635	004-MU-M05-100A	MU			X	X	X						
	1730	004-MU-M06-100A												
	1650	004-MU-M03-200A												
	1415	004-MU-R01-400A							X					
	1750	004-MU-M06-300A												
	1730	004-MU-M03-100A												
	1700	004-MU-M05-300A												
	1530	004-MU-M06-200A												
	1740	004-MU-M04-100A												
	1615	004-MU-M07-300A							X					

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-28-00	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

YELLOW/TEAL COPY: ... PINK/TEAL COPY: ...

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 10 OF 13

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7118	LABORATORY NAME AND CONTACT: TAMU - Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921 8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	Alkylated PAHs	TOC, grain size	AVS, SEM	AVS-only	Dioxin	COMMENTS
8-27	1415	004-SD-201-400A	SD	G	4	X	X	X	X	X	X	X	
	1415	004-SD-201-400A-2			1						X		
	1710	004-SD-M07-200A			4	X	X	X	X	X		X	
	1710	004-SD-M07-200A-2			1						X		
	1555	004-SD-M07-300A			4	X	X	X	X	X		X	
	1555	004-SD-M07-300A-2			1						X		
	1745	004-SD-M08-200A			4	X	X	X	X	X		X	
	1745	004-SD-M08-200A-2			1						X		
	1821	004-FD-004-000A			4	X	X	X	X	X		X	
	1821	004-FD-004-000A-2			1						X		
	1825	004-SD-M09-300A			4	X	X	X	X	X		X	
	1825	004-SD-M09-300A-2			1						X		

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-29-00	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

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TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 11 OF 13

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Cohen 412-921-7115	LABORATORY NAME AND CONTACT: TAMU - Terry Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	Alkylated PAHs	TOC, grain size	AVS, SEM	AVS only			COMMENTS
8-27	1635	004-SD-M04-300A-2	SD	G	1	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	X			
	1635	004-SD-M05-100A			4	X	X	X	X	X				
	1635	004-SD-M05-100A-2			1	~~X~~					X			
	1310	004-SD-M05-200A			4	X	X	X	X	X				
	1310	004-SD-M05-200A-2			1	~~X~~					X			
	1705	004-SD-M05-300A			4	X	X	X	X	X				
	1705	004-SD-M05-300A-2			1	~~X~~					X			
	1345	004-SD-M06-200A			4	X	X	X	X	X				
	1345	004-SD-M06-200A-2			1	~~X~~					X			
	1750	004-SD-M06-300A			4	X	X	X	X	X				
	1750	004-SD-M06-300A-2			1	~~X~~					X			
	1200	004-FD-002-000A			4	X	X	X	X	X				
	1200	004-FD-002-000A-2			1						X			

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	8-28-00	1800	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 3/99

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 8/2 OF 31

PROJECT NO: 5003	SITE NAME: PWS	PROJECT MANAGER AND PHONE NUMBER: Debbie Coley. 412-921-7118	LABORATORY NAME AND CONTACT: TAMU - Terry Wade
SAMPLERS (SIGNATURE): [signature] URI		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt · 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☑
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	Alkylated PAHs	TOC, grain size	HUS SEM	HUS only	Digital	TOC	COMMENTS
8-27	0900	004-RB-001-000A	SW	G	3	X	X	X			X	X		
8-27	0915	004-FB-001-000A	SW	G	3	X	X	X			X	X		
	1730	004-SD-M03-100A				X	X	X	X	X				
	1730	004-SD-M03-100A-2								X				
	1650	004-SD-M03-200A				X	X	X	X	X				
	1650	004-SD-M03-200A-2								X				
	1115	004-SD-M03-300A				X	X	X	X	X				
	1115	004-SD-M03-300A-2								X				
	1740	004-SD-M04-100A				X	X	X	X	X				
	1740	004-SD-M04-100A-2								X				
	1220	004-SD-M04-200A				X	X	X	X	X				
	1220	004-SD-M04-200A-2								X				
	1835	004-SD-M04-300A				X	X	X	X	X				

1. RELINQUISHED BY [signature]	DATE 8-28-00	TIME 1800	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

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TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER | PAGE 13 OF 13

PROJECT NO: 5003	SITE NAME: PNS	PROJECT MANAGER AND PHONE NUMBER: Debbie Coley · 412-921-7118	LABORATORY NAME AND CONTACT: TAMU - Tony Wade
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: Aaron Bernhardt · 412-921-8433	ADDRESS: 833 Graham Rd
		CARRIER/WAYBILL NUMBER	CITY, STATE: College Station, TX 77845

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)

PRESERVATIVE USED

TYPE OF ANALYSIS

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	Metals	PAHs, PCBs, Pesticides	Alkylated PAHs	TOC, grain size	AVS-SEM	AVS only	Dioxin	O/O tissues	COMMENTS
8-27	1405	004-SD-R01-100A	SD	G	4	X	X	X	X	X		X		
	1405	004-SD-R01-100A-2			1						X			
	1202	004-SD-R03-100A			4	X	X	X	X	X		X		
	1202	004-SD-R03-100A-2			1						X			
	1240	004-SD-R04-100A			4	X	X	X	X	X		X		
	1240	004-SD-R04-100A-2			1						X			
8-28	1430	004-MU-M14-200A	MU		1	X	X					X	X	
8-28	1515	004-MU-M02-100A	MU		1	X	X						X	
8-28	1555	004-MU-M01-300A	MU		1	X	X						X	
8-28	1710	004-MU-M13-300A	MU		1	X	X						X	

1. RELINQUISHED BY	DATE 8-28-00	TIME 1800	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

APPENDIX D

MUSSEL COLLECTION LOG SHEETS

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M01-200A	1	6.0
	2	6.0
	3	5.2
	4	5.6
	5	5.8
	6	5.2
	7	5.4
	8	5.9
	9	5.5
	10	5.1
	11	6.0
	12	5.8
	13	5.4
	14	5.4
	15	5.8
	16-55	5.0-6.0
OU4-MU-M01-300A	1	6.1
	2	6.5
	3	5.8
	4	8.0
	5	6.2
	6	7.0
	7	5.8
	8	6.6
	9	5.8
	10	6.6
	11	6.9
	12	6.5
	13	5.9
	14	6.5
	15	6.9
	16	6.0
	17	6.0
	18	6.6
	19	6.0
	20	5.2
	21	5.6
	22	5.9
	23	6.5
	24	6.5
	25	7.0
	26	6.0
	27	7.0
	28	6.0
	29	6.6
	30	6.5
	31	6.8
	32	6.6
	33	6.9

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M02-200A	1	5.3
	2	5.7
	3	5.6
	4	5.9
	5	6.0
	6	5.2
	7	5.6
	8	5.6
	9	5.3
	10	5.5
	11	5.6
	12	5.7
	13	5.4
	14	5.3
	15	5.7
	16	5.2
	17-50	5.0-6.0
OU4-MU-M02-300A	1	5.0
	2	5.1
	3	5.5
	4	5.4
	5	5.0
	6	5.6
	7	5.0
	8	5.1
	9	5.4
	10	5.5
	11	5.0
	12	5.3
	13	5.4
	14	5.2
	15	5.1
	16-39	4.0-4.9
	40-43	5.0-6.0
OU4-MU-M03-100A	1	5.5
	2	5.2
	3	5.8
	4	5.9
	5	6.0
	6	5.5
	7	5.8
	8	5.5
	9	5.8
	10	5.3
	11	5.2
	12	5.1
	13	6.0
	14	5.0
	15	5.2
	16-47	5.0-6.0

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M03-200A	1	5.5
	2	5.7
	3	5.8
	4	5.2
	5	5.4
	6	5.7
	7	5.8
	8	5.5
	9	5.8
	10	5.8
	11	5.6
	12	5.9
	13	5.1
	14	5.5
	15	5.6
	16	4.0-4.9
	17-41	5.0-6.0
	42-50	6.1-7.0
OU4-MU-M04-100A	1	5.9
	2	5.9
	3	5.6
	4	5.9
	5	5.5
	6	5.5
	7	5.2
	8	5.6
	9	5.0
	10	5.2
	11	5.1
	12	5.2
	13	5.9
	14	5.2
	15	5.6
	16-18	4.0-4.9
	19-43	5.0-6.0
	44-45	6.1-7.0
OU4-MU-M05-100A	1	5.2
	2	5.5
	3	5.0
	4	5.0
	5	5.0
	6	5.2
	7	5.3
	8	5.8
	9	5.0
	10	5.5
	11	5.2
	12	5.5
	13	5.3
	14	5.5
	15	5.2
	16-43	5.0-6.0

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M05-300A	1	5.5
	2	5.3
	3	5.7
	4	5.5
	5	5.5
	6	5.4
	7	5.3
	8	5.2
	9	5.0
	10	5.4
	11	5.5
	12	5.0
	13	5.2
	14	6.0
	15	5.0
	16-42	5.0-6.0
OU4-MU-M06-100A	1	5.5
	2	5.4
	3	5.2
	4	5.4
	5	5.5
	6	5.5
	7	5.0
	8	5.2
	9	5.6
	10	5.4
	11	5.8
	12	5.0
	13	5.8
	14	5.0
	15	5.2
	16-50	5.0-6.0
OU4-MU-M06-200A	1	5.8
	2	5.0
	3	5.2
	4	5.9
	5	5.8
	6	5.5
	7	5.8
	8	6.0
	9	5.7
	10	5.8
	11	5.5
	12	6.0
	13	5.0
	14	5.9
	15	5.3
	16-19	5.0-6.0

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M06-300A	1	5.5
	2	5.2
	3	5.2
	4	5.0
	5	5.4
	6	5.2
	7	5.3
	8	5.2
	9	5.7
	10	5.3
	11	5.6
	12	5.2
	13	5.9
	14	5.5
	15	5.0
	16-50	5.0-6.0
OU4-MU-M07-100A	1	6.0
	2	6.0
	3	6.0
	4	6.0
	5	6.0
	6	5.4
	7	5.6
	8	5.8
	9	5.9
	10	5.9
	11	5.8
	12	6.0
	13	5.6
	14	6.0
	15	6.0
	16-49	5.0-6.0
OU4-MU-M07-300A	1	5.8
	2	5.8
	3	5.6
	4	5.2
	5	5.2
	6	6.0
	7	6.1
	8	6.3
	9	6.1
	10	5.9
	11	5.8
	12	5.7
	13	6.0
	14	5.8
	15	6.0
	16-50	Unmeasured

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M08-100A	1	6.0
	2	5.0
	3	5.2
	4	5.1
	5	5.9
	6	6.0
	7	5.4
	8	5.6
	9	6.0
	10	6.0
	11	5.7
	12	5.2
	13	5.3
	14	5.5
	15	5.0
	16-56	5.0-6.0
OU4-MU-M08-300A	1	5.8
	2	5.2
	3	5.6
	4	5.4
	5	5.8
	6	5.2
	7	6.0
	8	5.6
	9	5.0
	10	5.5
	11	5.3
	12	5.3
	13	5.2
	14	5.5
	15	5.5
	16-54	5.0-6.0
OU4-MU-M09-100A	1	5.2
	2	5.0
	3	5.4
	4	6.0
	5	5.3
	6	5.5
	7	5.2
	8	5.6
	9	6.0
	10	5.0
	11	6.0
	12	5.8
	13	5.5
	14	5.8
	15	5.0
	16-50	Unmeasured

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M09-200A	1	5.5
	2	5.8
	3	5.9
	4	5.2
	5	5.5
	6	5.4
	7	6.0
	8	5.3
	9	5.9
	10	5.9
	11	5.3
	12	5.6
	13	6.0
	14	5.5
	15	6.0
	16-50	5.0-6.0
OU4-MU-M10-200A	1	9.2
	2	8.3
	3	9.1
	4	8.2
	5	8.7
	6	9.5
	7	7.8
	8	7.7
	9	7.5
	10	8.2
	11	6.9
	12	8.5
	13	8.8
	14	8.0
	15	7.4
	16	8.2
	17	8.6
	18	9.0
	19	8.1
	20	7.2
	21	7.4
	22	9.8
	23	8.7
	24	8.6
	25	7.1

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M10-300A	1	8.6
	2	8.6
	3	8.6
	4	8.8
	5	7.5
	6	7.7
	7	7.2
	8	7.3
	9	7.6
	10	7.1
	11	7.9
	12	6.6
	13	7.3
	14	8.1
	15	8.2
	16	8.5
	17	7.6
	18	7.4
	19	7.4
	20	7.8
	21	8.8
	22	8.5
	23	8.6
	24	8.5
	25	8.9
	26	6.6
	27	6.5
	28	7.9
	29	8.1
	30	6.7
	31	7.7
	32	7.3
	33	7.4
	34	7.6
	35	7.7
	36	7.9
	37	7.0
	38	7.4
	39	6.9
	40	6.5
	41	6.8
	42	6.3
	43	6.2

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M11-100A	1	5.2
	2	5.6
	3	6.6
	4	6.5
	5	5.7
	6	6.6
	7	5.9
OU4-MU-M11-200A	1	4.5
	2	5.7
	3	5.3
	4	4.9
	5	5.0
	6	4.8
	7	5.8
	8	6.9
	9	6.2
	10	5.8
	11	5.5
	12	6.1
	13	6.3
	14	5.0
	15	4.7
	16	4.0-4.9
	17-24	5.0-6.0
OU4-MU-M11-300A	1	5.1
	2	6.2
	3	5.9
	4	5.5
	5	5.2
	6	6.2
	7	5.2
	8	5.0
	9	5.4
	10	5.8
	11	6.0
	12	6.0
	13	5.2
	14	5.4
	15	5.6
	16-19	4.0-4.9
	20-50	5.0-6.0

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M12-100A	1	5.6
	2	5.2
	3	5.0
	4	5.6
	5	5.7
	6	5.5
	7	5.2
	8	5.8
	9	5.7
	10	5.9
	11	5.0
	12	5.5
	13	5.5
	14	6.0
	15	5.7
	16-50	5.0-6.0
OU4-MU-M12-200A	1	5.5
	2	5.1
	3	6.0
	4	5.7
	5	5.6
	6	5.7
	7	5.8
	8	6.7
	9	6.6
	10	6.7
	11	6.5
	12	6.3
	13	5.4
	14	6.2
	15	5.7
	16-42	5.0-6.0
	43-46	>6.0
OU4-MU-M13-100A	1	5.4
	2	5.2
	3	5.4
	4	5.0
	5	5.3
	6	5.4
	7	4.9
	8	5.9
	9	5.2
	10	5.0
	11	5.0
	12	5.0
	13	5.0
	14	5.2
	15	4.9
	16-50	5.0-6.0

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M13-300A	1	5.6
	2	8.3
	3	6.8
	4	5.6
	5	6.4
	6	6.0
	7	6.4
	8	5.6
	9	7.3
	10	6.5
	11	5.7
	12	6.3
	13	6.4
	14	6.6
	15	5.2
	16	5.0
	17	5.7
	18	5.6
	19	6.3
	20	5.4
	21	5.9
	22	7.4
	23	6.7
	24	6.8
	25	5.8
	26	5.3
	27	6.7
	28	5.8
	29	6.5
	30	7.3
	31	5.4
	32	5.6
	33	6.3
	34	5.5
	35	5.5
	36	5.8
	37	6.2
	38	6.3
	39	6.6
	40	7.8
	41	5.7
	42	5.6
	43	5.0
	44	6.0
	45	5.8
	46	5.1
	47	5.6
	48	5.7
	49	5.7
	50	5.5
	51	6.0

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-M14-200A	1	6.3
	2	5.0
	3	6.9
	4	6.0
	5	5.3
	6	6.2
	7	5.8
	8	5.9
	9	6.4
	10	6.8
	11	7.4
	12	7.5
	13	6.8
	14	5.8
	15	5.9
	16	8.2
	17	7.3
	18	8.0
	19	8.3
	20	7.2
	21	6.4
	22	6.5
	23	9.5
	24	9.0
	25	4.9
	26	7.6
	27	8.3
	28	9.4
	29	8.5
	30	9.0
	31	7.1
	32	6.8
	33	8.5
	34	8.3
	35	8.7
	36	7.2
	37	7.9
	38	7.1
	39	8.3

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-R01-300A	1	6.2
	2	4.9
	3	7.2
	4	6.0
	5	5.6
	6	7.0
	7	5.3
	8	6.7
	9	6.0
	10	6.7
	11	7.3
	12	8.0
	13	8.0
	14	6.7
	15	7.2
OU4-MU-R01-400A	1	5.3
	2	5.2
	3	5.9
	4	6.0
	5	5.8
	6	5.9
	7	5.1
	8	5.5
	9	6.0
	10	5.2
	11	6.0
	12	5.4
	13	5.1
	14	5.0
	15	5.4
	16-20	4.0-4.9
	21-35	5.0-6.0
	36-47	6.1-7.0
OU4-MU-R02-300A	1	5.8
	2	5.6
	3	5.8
	4	6.2
	5	5.3
	6	5.5
	7	5.4
	8	5.6
	9	5.6
	10	5.7
	11	6.0
	12	5.0
	13	5.5
	14	6.0
	15	5.9
	16-45	5.0-6.0

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-R02-400A	1	5.5
	2	5.7
	3	5.1
	4	5.3
	5	5.8
	6	5.2
	7	5.0
	8	5.6
	9	5.4
	10	5.4
	11	5.9
	12	5.8
	13	5.2
	14	5.8
	15	6.0
	16-24	<5.0
	25-44	5.0-6.0
	45-49	>6.0
OU4-MU-R03-300A	1	6.3
	2	7.9
	3	8.0
	4	6.9
	5	7.2
	6	6.5
	7	5.6
	8	6.2
	9	8.0
	10	8.5
	11	7.8
	12	6.0
	13	6.4
	14	7.3
	15	6.0
OU4-MU-R03-400A	1	5.4
	2	5.8
	3	5.8
	4	5.8
	5	5.7
	6	6.0
	7	5.4
	8	5.0
	9	5.7
	10	5.5
	11	5.5
	12	5.8
	13	6.0
	14	5.8
	15	5.0
	16-56	5.0-6.0

APPENDIX D

MUSSEL COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Number	Length (cm)
OU4-MU-R04-300A	1	7.0
	2	6.5
	3	7.2
	4	8.0
	5	8.2
	6	6.4
	7	7.0
	8	6.2
	9	6.5
	10	7.7
	11	7.6
	12	7.0
	13	5.5
	14	6.0
	15	5.5
	16-22	5.0-6.0
	23-45	6.1-7.0
OU4-MU-R04-400A	1	5.7
	2	5.7
	3	5.3
	4	6.3
	5	5.9
	6	5.0
	7	5.6
	8	7.4
	9	5.4
	10	6.8
	11	5.2
	12	5.3
	13	5.1
	14	6.2
	15	4.8
	16	6.0
	17	5.3
	18	5.2
	19	6.3
	20	6.7
	21	6.8
	22	6.2
	23	6.0
	24	6.3
	25	5.5
	26	5.5
	27	5.7
	28	5.9
	29	5.6
	30	5.0
	31	5.6
	32	5.4

APPENDIX E

JUVENILE LOBSTER COLLECTION LOG SHEETS

APPENDIX E

JUVENILE LOBSTER COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Date	Time	Sample Number	Length (cm)	Sex (male/female)	Muscle Weight (grams)	Tomalley Weight (grams)	Use for Composite	Composite Sample Number	Use For Duplicate	Use for MS/MSD
8/28/00	7:12	OU4-LJ-M01-100A-2	5.7	F	27.38	7.73	X	OU4-LJ-M01-100A	Yes	
8/28/00	7:12	OU4-LJ-M01-100A-5	5.6	M	28.8	8.93	X			
8/28/00	7:12	OU4-LJ-M01-100A-4	5.4	M	22.42	5.2	X			
8/28/00	7:12	OU4-LJ-M01-100A-3	5.3	M	31.18	5.84	X			
8/30/00	8:10	OU4-LJ-M01-100A-8	5.2	M	26.89	5.12	X			
8/28/00	7:12	OU4-LJ-M01-100A-1	5.7	M	31.88	7.91				
8/30/00	8:10	OU4-LJ-M01-100A-7	5.5	F	26.24	6.99				
8/30/00	8:10	OU4-LJ-M01-100A-6	5.3	M	28.85	6.53				
8/30/00	8:10	OU4-LJ-M01-100A-9	5.3	F	33.61	7.31				
8/30/00	8:10	OU4-LJ-M01-100A-10	5.1	F*	20.09	6.02				
8/30/00	11:35	OU4-LJ-M02-100A-12	5.9	M	29.05	7.75	X	OU4-LJ-M02-100A		
8/30/00	11:35	OU4-LJ-M02-100A-9	5.6	F	27.25	7.14	X			
8/30/00	11:35	OU4-LJ-M02-100A-6	5.4	M	25.02	5.47	X			
8/30/00	11:35	OU4-LJ-M02-100A-3	5.3	F	21.75	6.02	X			
8/30/00	11:35	OU4-LJ-M02-100A-10	5.1	M	10.75	5.94	X			
8/28/00	10:35	OU4-LJ-M02-100A-2	6.2	F	35.28	5.63				
8/30/00	11:35	OU4-LJ-M02-100A-13	5.8	M	34.04	9.12				
8/30/00	11:35	OU4-LJ-M02-100A-4	5.7	F	22.83	7.16				
8/30/00	11:35	OU4-LJ-M02-100A-5	5.6	M	30.51	9.15				
8/30/00	11:35	OU4-LJ-M02-100A-8	5.6	M	28.68	6.17				
8/30/00	11:35	OU4-LJ-M02-100A-7	5.4	M	26.02	6.37				
8/30/00	11:35	OU4-LJ-M02-100A-11	5.3	M	21.54	4.44				
8/28/00	10:35	OU4-LJ-M02-100A-1	4.5	F	10.81	3.92				
8/30/00	11:45	OU4-LJ-M03-100A-8	5.8	F	27.84	9.96	X	OU4-LJ-M03-100A		
8/30/00	11:45	OU4-LJ-M03-100A-9	5.6	M	19.33	7.5	X			
8/28/00	10:40	OU4-LJ-M03-100A-6	5.5	F	22.28	4.46	X			
8/28/00	10:40	OU4-LJ-M03-100A-1	5.3	M	26.19	5.49	X			
8/28/00	10:40	OU4-LJ-M03-100A-2	5	M	21.53	5.57	X			
8/30/00	11:45	OU4-LJ-M03-100A-7	5.8	F	21.67	9.54				
8/28/00	10:40	OU4-LJ-M03-100A-4	5.3	M*	14.74	6.73				
8/30/00	11:45	OU4-LJ-M03-100A-10	5.2	F	22.99	7.31				

APPENDIX E

JUVENILE LOBSTER COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Date	Time	Sample Number	Length (cm)	Sex (male/female)	Muscle Weight (grams)	Tomalley Weight (grams)	Use for Composite	Composite Sample Number	Use For Duplicate	Use for MS/MSD
8/28/00	10:40	OU4-LJ-M03-100A-3	5.1	F	12.91	4.92				
8/28/00	10:40	OU4-LJ-M03-100A-5	5	F	20.55	5.03				
8/28/00	10:50	OU4-LJ-M04-100A-5	6	M	20.78	7.27	X	OU4-LJ-M04-100A		
8/30/00	11:55	OU4-LJ-M04-100A-10	5.9	F	30.2	7.09	X			
8/28/00	10:50	OU4-LJ-M04-100A-6	5.2	M	19.36	5.18	X			
8/28/00	10:50	OU4-LJ-M04-100A-8	5.2	M	21	4.36	X			
8/30/00	11:55	OU4-LJ-M04-100A-9	5	M	19.18	4.43	X			
8/28/00	10:50	OU4-LJ-M04-100A-1	6	M	20.81	6.24				
8/28/00	10:50	OU4-LJ-M04-100A-2	6	M	24.56	7.54				
8/28/00	10:50	OU4-LJ-M04-100A-3	6	M	22.29	7.8				
8/28/00	10:50	OU4-LJ-M04-100A-7	5.9	F	17.14	8.22				
8/28/00	10:50	OU4-LJ-M04-100A-4	4.9	M	14.79	5.87				
8/30/00	12:00	OU4-LJ-M05-100A-9	6	F	25.39	6.51	X	OU4-LJ-M05-100A		
8/28/00	10:55	OU4-LJ-M05-100A-1	5.8	M	41.39	6.08	X			
8/28/00	10:55	OU4-LJ-M05-100A-3	5.6	F	26.92	6.79	X			
8/28/00	10:55	OU4-LJ-M05-100A-5	5.4	M	23.01	6.09	X			
8/30/00	12:00	OU4-LJ-M05-100A-7	5.3	M	20.61	5.5	X			
8/28/00	10:55	OU4-LJ-M05-100A-2	6.1	M	28.85	10.47				
8/28/00	10:55	OU4-LJ-M05-100A-4	6	F	35.11	10.42				
8/30/00	12:00	OU4-LJ-M05-100A-8	5.7	M	13.01	7.82				
8/28/00	10:55	OU4-LJ-M05-100A-6	5.4	M*	19.29	6.04				
8/30/00	12:00	OU4-LJ-M05-100A-10	5.4	M	20.57	4.89				
8/30/00	12:05	OU4-LJ-M06-100A-6	5.9	M	26.83	6.24	X	OU4-LJ-M06-100A		
8/28/00	11:00	OU4-LJ-M06-100A-4	5.7	M	29.54	6.71	X			
8/30/00	12:05	OU4-LJ-M06-100A-5	5.6	M	27.83	6.94	X			
8/30/00	12:05	OU4-LJ-M06-100A-7	5.3	M	26.01	5.31	X			
8/28/00	11:00	OU4-LJ-M06-100A-1	5.2	F	23.97	4.97	X			
8/28/00	11:00	OU4-LJ-M06-100A-2	6.2	M	41.12	9.26				
8/28/00	11:00	OU4-LJ-M06-100A-3	5.8	F	34.11	8.07				
8/30/00	12:05	OU4-LJ-M06-100A-8	5.2	M	16.66	4.84				

APPENDIX E

JUVENILE LOBSTER COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Date	Time	Sample Number	Length (cm)	Sex (male/female)	Muscle Weight (grams)	Tomalley Weight (grams)	Use for Composite	Composite Sample Number	Use For Duplicate	Use for MS/MSD
8/28/00	10:00	OU4-LJ-M07-100A-6	6	F	25.33	8.23	X	OU4-LJ-M07-100A		
8/28/00	10:00	OU4-LJ-M07-100A-7	5.7	M	33.75	6.12	X			
8/28/00	10:00	OU4-LJ-M07-100A-2	5.4	F	30.18	5.93	X			
8/28/00	10:00	OU4-LJ-M07-100A-4	5.3	M	25.62	4.64	X			
8/28/00	10:00	OU4-LJ-M07-100A-1	5.2	M	16.55	5.24	X			
8/28/00	10:00	OU4-LJ-M07-100A-9	6.1	M	40.1	7.71				
8/28/00	10:00	OU4-LJ-M07-100A-5	5.8	M	29.19	6.85				
8/28/00	10:00	OU4-LJ-M07-100A-3	5.7	M	31.46	8.19				
8/28/00	10:00	OU4-LJ-M07-100A-8	5.7	F	32.81	8.62				
8/30/00	10:15	OU4-LJ-M07-100A-10	5.7	M	19.64	6.11				
8/30/00	10:15	OU4-LJ-M07-100A-11	5.6	M	24.49	8.62				
8/28/00	10:10	OU4-LJ-M08-100A-10	6	F	25.59	8.62	X	OU4-LJ-M08-100A		
8/28/00	10:10	OU4-LJ-M08-100A-2	5.9	F	23.26	6.3	X			
8/28/00	10:10	OU4-LJ-M08-100A-5	5.7	M	27.76	7.55	X			
8/28/00	10:10	OU4-LJ-M08-100A-3	5.6	M	23.59	5.16	X			
8/28/00	10:10	OU4-LJ-M08-100A-1	5.5	M	19.25	7.13	X			
8/28/00	10:10	OU4-LJ-M08-100A-4	6.1	M	18.04	6.57				
8/28/00	10:10	OU4-LJ-M08-100A-8	6	M	28.93	6.37				
8/28/00	10:10	OU4-LJ-M08-100A-11	6	M	25.14	8.91				
8/28/00	10:10	OU4-LJ-M08-100A-6	5.8	M	31.72	8.45				
8/28/00	10:10	OU4-LJ-M08-100A-9	5.7	M	36.53	8.07				
8/28/00	10:10	OU4-LJ-M08-100A-7	5.5	M*	21.45	4.57				
8/30/00	10:00	OU4-LJ-M09-100A-7	5.6	M	29.19	6.37	X	OU4-LJ-M09-100A		
8/28/00	10:20	OU4-LJ-M09-100A-1	5.5	F	17.95	7.7	X			
8/28/00	10:20	OU4-LJ-M09-100A-3	5.5	M	9	6.4	X			
8/30/00	10:00	OU4-LJ-M09-100A-10	5.3	M	12.85	5.16	X			
8/28/00	10:20	OU4-LJ-M09-100A-2	5.2	F	17.09	6.22	X			
8/28/00	10:20	OU4-LJ-M09-100A-5	6.2	F*	20.06	5.56				
8/28/00	10:20	OU4-LJ-M09-100A-4	6.1	F	31.15	10.27				
8/28/00	10:20	OU4-LJ-M09-100A-6	5.5	F*	17.1	4.73				
8/30/00	10:00	OU4-LJ-M09-100A-9	5	M*	12.51	4.92				
8/30/00	10:00	OU4-LJ-M09-100A-8	4.9	M	11.32	11.75				

APPENDIX E

JUVENILE LOBSTER COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Date	Time	Sample Number	Length (cm)	Sex (male/female)	Muscle Weight (grams)	Tomalley Weight (grams)	Use for Composite	Composite Sample Number	Use For Duplicate	Use for MS/MSD
8/30/00	7:40	OU4-LJ-M10-100A-5	6	F	34.36	10.54	X	OU4-LJ-M10-100A		
8/28/00	13:00	OU4-LJ-M10-100A-3	5.8	M	35.3	7.69	X			
8/30/00	7:40	OU4-LJ-M10-100A-6	5.5	M	22.75	7.81	X			
8/28/00	13:00	OU4-LJ-M10-100A-4	5.3	F	22.83	7.15	X			
8/30/00	7:40	OU4-LJ-M10-100A-7	5	F	16.61	4.81	X			
8/28/00	13:00	OU4-LJ-M10-100A-2	6.2	F	41.26	10.21				
8/28/00	13:00	OU4-LJ-M10-100A-1	5.9	F	27.07	7.6				
8/30/00	7:40	OU4-LJ-M10-100A-9	5.9	M	26.45	8.4				
8/30/00	7:40	OU4-LJ-M10-100A-8	5.3	F+	40.64	7				
8/30/00	7:40	OU4-LJ-M10-100A-10	5.2	M*	12.83	4.55				
8/28/00	13:15	OU4-LJ-M11-100A-1	6	M	27.12	7.36	X	OU4-LJ-M11-100A	Yes	
8/30/00	7:55	OU4-LJ-M11-100A-7	5.8	M	23.53	4.83	X			
8/30/00	7:55	OU4-LJ-M11-100A-11	5.5	M	26.03	5.7	X			
8/30/00	7:55	OU4-LJ-M11-100A-12	5.3	F	21.41	4.99	X			
8/30/00	7:55	OU4-LJ-M11-100A-10	5.2	F	22.34	3.87	X			
8/30/00	7:55	OU4-LJ-M11-100A-5	5.8	F	22.86	7.47				
8/30/00	7:55	OU4-LJ-M11-100A-9	5.7	M	28.57	7.33				
8/30/00	7:55	OU4-LJ-M11-100A-6	5.6	M	25.62	5.45				
8/28/00	13:15	OU4-LJ-M11-100A-2	5.3	F	18.17	7				
8/30/00	7:55	OU4-LJ-M11-100A-3	5.3	F	22.7	5.92				
8/30/00	7:55	OU4-LJ-M11-100A-8	5.3	F	24.89	6				
8/30/00	7:55	OU4-LJ-M11-100A-4	5.2	F	19.04	5.96				
8/30/00	10:55	OU4-LJ-M12-100A-7	5.9	F	35.22	9.21	X	OU4-LJ-M12-100A		
8/30/00	10:55	OU4-LJ-M12-100A-10	5.7	F	22.21	6.05	X			
8/30/00	10:55	OU4-LJ-M12-100A-5	5.6	F	37.25	9.4	X			
8/30/00	10:55	OU4-LJ-M12-100A-4	5.5	M	32.72	8.91	X			
8/30/00	10:55	OU4-LJ-M12-100A-8	5.3	M	20.5	5.21	X			
8/28/00	9:00	OU4-LJ-M12-100A-1	6.4	M	39.51	8.77				
8/30/00	10:55	OU4-LJ-M12-100A-6	6.1	F	38.32	9.98				
8/30/00	10:55	OU4-LJ-M12-100A-3	6	M	40.1	8.53				
8/30/00	10:55	OU4-LJ-M12-100A-9	5.9	M	23.2	9.23				
8/30/00	10:55	OU4-LJ-M12-100A-2	5.5	M	31.28	7.52				

APPENDIX E

JUVENILE LOBSTER COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Date	Time	Sample Number	Length (cm)	Sex (male/female)	Muscle Weight (grams)	Tomalley Weight (grams)	Use for Composite	Composite Sample Number	Use For Duplicate	Use for MS/MSD
8/28/00	8:40	OU4-LJ-M13-100A-5	5.9	F	18.05	8.51	X	OU4-LJ-M13-100A		
8/28/00	8:40	OU4-LJ-M13-100A-7	5.7	M	17.85	8.25	X			
8/28/00	8:40	OU4-LJ-M13-100A-2	5.6	M	22.52	7.88	X			
8/28/00	8:40	OU4-LJ-M13-100A-4	5.5	M*	13.92	4.83	X			
8/28/00	8:40	OU4-LJ-M13-100A-3	5.3	F	18.36	4.9	X			
8/28/00	8:40	OU4-LJ-M13-100A-10	6.1	F	26.96	4.45				
8/28/00	8:40	OU4-LJ-M13-100A-6	6	M	23.75	6.69				
8/28/00	8:40	OU4-LJ-M13-100A-1	5.8	F	19.55	5.37				
8/28/00	8:40	OU4-LJ-M13-100A-8	5.3	F*	15.8	4.21				
8/28/00	8:40	OU4-LJ-M13-100A-9	5.1	M*	13.88	5.11				
8/28/00	8:30	OU4-LJ-M14-100A-9	5.9	M	30.76	7.44	X	OU4-LJ-M14-100A		
8/28/00	8:30	OU4-LJ-M14-100A-1	5.8	M	38.8	10.58	X			
8/28/00	8:30	OU4-LJ-M14-100A-4	5.7	M	37.04	8.06	X			
8/28/00	8:30	OU4-LJ-M14-100A-10	5.5	F	29.1	7.57	X			
8/28/00	8:30	OU4-LJ-M14-100A-8	5.3	F	24.36	4.86	X			
8/28/00	8:30	OU4-LJ-M14-100A-5	6.2	M	40.02	8.78				
8/28/00	8:30	OU4-LJ-M14-100A-2	6.1	F	31.61	7.31				
8/28/00	8:30	OU4-LJ-M14-100A-6	6	M	36.06	6.29				
8/28/00	8:30	OU4-LJ-M14-100A-7	6	M	44.42	9.5				
8/28/00	8:30	OU4-LJ-M14-100A-3	5.5	M**	14.43	6.54				
8/30/00	8:55	OU4-LJ-R01-100A-10	5.9	F	36.58	10.66	X	OU4-LJ-R01-100A		
8/30/00	8:55	OU4-LJ-R01-100A-6	5.5	F	26.34	7.52	X			
8/30/00	8:55	OU4-LJ-R01-100A-11	5.5	F	29.95	6.76	X			
8/28/00	7:45	OU4-LJ-R01-100A-2	5.4	F	16.04	6.82	X			
8/28/00	7:45	OU4-LJ-R01-100A-3	5.2	M	20.93	5.05	X			
8/28/00	7:45	OU4-LJ-R01-100A-5	6.2	M	32.02	11.22				
8/28/00	7:45	OU4-LJ-R01-100A-4	6.1	M*	16.94	9.86				
8/30/00	8:55	OU4-LJ-R01-100A-8	5.8	F	18.91	8.44				
8/28/00	7:45	OU4-LJ-R01-100A-1	5.2	M*	15.54	5				
8/30/00	8:55	OU4-LJ-R01-100A-9	5.2	F*	18.7	6.42				
8/30/00	8:55	OU4-LJ-R01-100A-7	5.1	M*	14.93	5.12				

APPENDIX E

JUVENILE LOBSTER COLLECTION LOG
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Date	Time	Sample Number	Length (cm)	Sex (male/female)	Muscle Weight (grams)	Tomalley Weight (grams)	Use for Composite	Composite Sample Number	Use For Duplicate	Use for MS/MSD
8/30/00	8:30	OU4-LJ-R02-100A-7	6	M	28.52	6.52	X	OU4-LJ-R02-100A		
8/30/00	8:30	OU4-LJ-R02-100A-4	5.8	F	29.66	6.87	X			
8/30/00	8:30	OU4-LJ-R02-100A-8	5.4	F	21.19	7.76	X			
8/30/00	8:30	OU4-LJ-R02-100A-9	5.3	F	19.54	6.1	X			
8/30/00	8:30	OU4-LJ-R02-100A-6	5.2	M*	20.88	4.99	X			
8/28/00	8:15	OU4-LJ-R02-100A-1	6.2	M	33.16	8.74				
8/30/00	8:30	OU4-LJ-R02-100A-2	6	M	43.07	8.87				
8/30/00	8:30	OU4-LJ-R02-100A-5	5.9	F	34.74	6.81				
8/30/00	8:30	OU4-LJ-R02-100A-3	5.5	F*	21.05	5.67				
8/28/00	9:15	OU4-LJ-R03-100A-5	6	M	22.38	9	X	OU4-LJ-R03-100A		
8/28/00	9:15	OU4-LJ-R03-100A-2	5.7	M	21.28	8.85	X			
8/28/00	9:15	OU4-LJ-R03-100A-4	5.4	M	18.48	6.45	X			
8/28/00	9:15	OU4-LJ-R03-100A-8	5.4	M	16.43	5.74	X			
8/28/00	9:15	OU4-LJ-R03-100A-6	5	F	17.2	4.45	X			
8/28/00	9:15	OU4-LJ-R03-100A-1	6.1	F	27.61	7.66				
8/28/00	9:15	OU4-LJ-R03-100A-9	5.9	F	35.11	7.93				
8/28/00	9:15	OU4-LJ-R03-100A-7	5.4	M	18.15	4.98				
8/28/00	9:15	OU4-LJ-R03-100A-3	5.3	F*	14.31	5.58				
8/28/00	9:25	OU4-LJ-R04-100A-5	5.9	M	27.85	4.59	X	OU4-LJ-R04-100A		
8/30/00	11:10	OU4-LJ-R04-100A-10	5.6	M	19.87	7.41	X			
8/28/00	9:25	OU4-LJ-R04-100A-3	5.5	M	16.63	5.97	X			
8/30/00	11:10	OU4-LJ-R04-100A-9	5.4	M	20.63	4.76	X			
8/30/00	11:10	OU4-LJ-R04-100A-8	5.1	M	16.17	6.98	X			
8/28/00	9:25	OU4-LJ-R04-100A-2	6.1	M	32.71	7.95				
8/28/00	9:25	OU4-LJ-R04-100A-7	6	M*	24.29	6.91				
8/28/00	9:25	OU4-LJ-R04-100A-6	5.6	M	23.19	7.16				
8/28/00	9:25	OU4-LJ-R04-100A-4	5.6	F	23.42	6.44				
8/28/00	9:25	OU4-LJ-R04-100A-1	5.5	M	26.82	5.33				

* Missing one claw
** Missing two claws
+ May not have been alive at the time of shipping

APPENDIX F

DATA VALIDATION LETTERS

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 20, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – SELECT METALS**
CTO 201 - PORTSMOUTH NSY
SDG – TS194

SAMPLES: 20/Tissues/

OU4-MU-M01-300A	OU4-MU-M02-100A
OU4-MU-M03-100A	OU4-MU-M03-200A
OU4-MU-M04-100A	OU4-MU-M05-100A
OU4-MU-M05-300A	OU4-MU-M06-100A
OU4-MU-M06-200A	OU4-MU-M06-300A
OU4-MU-M07-300A	OU4-MU-M11-100A
OU4-MU-M11-200A	OU4-MU-M11-300A
OU4-MU-M12-100A	OU4-MU-M12-200A
OU4-MU-M13-300A	OU4-MU-M14-200A
OU4-MU-R01-300A	OU4-MU-R01-400A

Overview

The sample set for CTO 201, Portsmouth, SDG TS194, consists of twenty (20) mussle tissue samples.

The samples were analyzed for select metals namely aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver and zinc. The samples were collected by Tetra Tech NUS on August 27-29, 2000 and analyzed by Geochemical &Environmental Research Group. Metals analyses were conducted using GERG SOPs 9409 and 8208.

Arsenic, cadmium, lead and silver analyses were conducted using Graphite Furnace Atomic Absorption (GFAA) instrumentation. Mercury analyses were conducted using Cold Vapor Atomic Absorption (CVAA) instrumentation. The remaining metals were analyses using Inductively Coupled Plasma (ICP) instrumentation.

The data was evaluated based on the following parameters:

- Data Completeness
- Holding Times
- Calibration Verifications
- Laboratory Blank Analyses
- Blank Spike Results
- Standard Reference Material Results
- Matrix Spike Results
- Laboratory Duplicate Results

- Detection Limits
- Sample Quantitation

- All quality control criteria were met for this parameter.

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Affected samples: all

Analyte	Maximum Concentration	Action Level
Aluminum	0.1035 µg/ml	51.75 µg/g
Arsenic	0.000082 µg/ml	0.041 µg/g
Cadmium	0.000001 µg/ml	0.0005 µg/g
Chromium	0.00153 µg/ml	0.765 µg/g
Copper	0.0014 µg/ml	0.007µg/g
Iron	0.0336 µg/ml	16.8 µg/g
Lead[1]	0.1592 µg/g	0.796 µg/g
Manganese	0.0017 µg/ml	0.85 µg/g
Mercury[1]	0.0422 µg/g	0.211 µg/g
Nickel	0..0135 µg/ml	6.75 µg/g
Silver	0.00036 µg/ml	0.18 µg/g
Zinc	0.0308 µg/ml	15.4 µg/g

(1) Maximum concentration present in a preparation blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken in to consideration when evaluating for blank contamination. Positive results less than the blank action levels for mercury and nickel were qualified, "U", as a result of blank contamination.

The following table summarizes the sample preparations which were used for the tissue samples. The preparation information is needed to establish the blank action levels.

Parameter	Amount of Sample	Final Volume
ICP Metals	0.3 g	30 ml
Mercury	0.2 g	40 ml

Matrix Spike Results

The Matrix Spike (MS) Percent Recoveries (%Rs) for lead and silver were >125% quality control limit. The positive results reported for lead and silver were qualified as estimated, "J".

Notes

The laboratory reported positive results less than the IDL with a qualification of estimated, "J". The data reviewer corrected the Electronic Deliverable Data (EDD) by replacing estimated results less than the IDL with a nondetected result.

Typical holding times did not apply because the samples were freeze dried.

The laboratory reported all field duplicate samples in SDG TS197. The following field duplicates affected this SDG:

OU4-MU-M11-200A-FD / OU4-MU-M11-200A
OU4-MU-M12-100A-FD / OU4-MU-M12-100A

A field duplicate comparison is included in Appendix C. To remain consistent with validation procedures used when validating data from the previous rounds, qualifications were assigned based on field duplicate imprecision. However, no validation action was required for this SDG.

Since the sample matrix is composed of lobster tissue, the results were not qualified based on low percent solids (<30%).

The samples were reported on a dry weight basis because the samples were freeze dried. Therefore, percent solids were not used to calculate sample results and were not taken into consideration in establishing and evaluating blank contamination action levels.

The Standard Reference Material (SRM) %R for aluminum was >120% quality control limit. However, no validation action was taken based on SRM results because a blank spike was analyzed.

Executive Summary

Laboratory Performance: Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Lead and silver were qualified due to MS noncompliances.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A. Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO: PORTSMOUTH
SOIL DATA
GERG
SDG: TS194

SAMPLE NUMBER:	OU4-MU-M01-300A			OU4-MU-M02-100A			OU4-MU-M03-100A			OU4-MU-M03-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/27/00			08/27/00		
LABORATORY ID:	C36424			C36423			C36413			C36414		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	9.1 %			9.9 %			11.7 %			14.2 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	319			196			266			296		
ARSENIC	6.48			6.09			5.41			6.09		
CADMIUM	1.47			1.55			1.91			2.16		
CHROMIUM	2.79			2.31			3.67			5.34		
COPPER	8.76			25.2			28.9			101		
IRON	513			313			866			1106		
LEAD	6.31	J	D	5.53	J	D	20.9	J	D	21.2	J	D
MANGANESE	10.9			10.3			11.1			11.9		
MERCURY	0.28			0.29			0.53			0.35		
NICKEL	3.53	U	A	2.23	U		8.32			7.86		
SILVER	0.3095	U		0.37	U		0.42	J	D	0.36	J	D
ZINC	86.3			101			170			284		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TS194

SAMPLE NUMBER:	OU4-MU-M04-100A			OU4-MU-M05-100A			OU4-MU-M05-300A			OU4-MU-M06-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36415			C36416			C36417			C36418		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.9 %			13.9 %			12.4 %			11.2 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	507			641			269			386		
ARSENIC	7.60			6.56			5.95			6.03		
CADMIUM	1.81			2.85			1.75			1.03		
CHROMIUM	4.62			6.90			2.74			2.92		
COPPER	25.7			20.4			6.09			5.65		
IRON	1057			1027			612			735		
LEAD	11.4	J	D	103	J	D	5.75	J	D	6.25	J	D
MANGANESE	13.3			16.3			9.38			10.4		
MERCURY	0.44			2.31			0.27			0.26		
NICKEL	4.95	U	A	3.90	U	A	1.76	U		1.83	U	
SILVER	0.50	J	D	0.31	U		0.29	U		0.30	U	
ZINC	150			198			97.1			98.5		

CTO: PORTSMOUTH
SOIL DATA
GERG
SDG: TS194

SAMPLE NUMBER:	OU4-MU-M06-200A			OU4-MU-M06-300A			OU4-MU-M07-300A			OU4-MU-M11-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/29/00		
LABORATORY ID:	C36419			C36420			C36421			C36505		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.5 %			9.1 %			12.0 %			14.3 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	302			465			337			174		
ARSENIC	5.38			8.03			8.08			5.90		
CADMIUM	1.77			1.25			1.31			2.22		
CHROMIUM	2.78			4.59			2.47			2.85		
COPPER	6.94			6.63			5.94			6.98		
IRON	536			1074			486			300		
LEAD	5.38	J	D	6.32	J	D	4.96	J	D	11.1	J	D
MANGANESE	9.04			14.3			8.65			11.4		
MERCURY	0.30			0.29			0.25			0.22		
NICKEL	2.53	U	A	2.00	U		2.05	U		3.96	U	
SILVER	0.32	U		0.33	U		0.34	U		0.65	U	
ZINC	96.1			72.7			90.3			73.8		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TS194

SAMPLE NUMBER:	OU4-MU-M11-200A			OU4-MU-M11-300A			OU4-MU-M12-100A			OU4-MU-M12-200A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36506			C36507			C36508			C36509		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.4 %			11.2 %			10.1 %			10.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	233			631			325			291		
ARSENIC	5.45			6.61			6.84			5.62		
CADMIUM	1.98			1.72			1.16			1.35		
CHROMIUM	2.28			3.91			3.23			3.17		
COPPER	7.85			8.36			11.8			9.19		
IRON	347			1686			857			530		
LEAD	28.3	J	D	8.05	J	D	12.8	J	D	9.59	J	D
MANGANESE	14.7			20.9			15.3			24.9		
MERCURY	0.30			0.21	U	A	0.24			0.27		
NICKEL	1.85	U		3.62	U	A	2.20	U	A	1.97	U	
SILVER	0.31	U		0.30	U		0.32	U		0.32	U	
ZINC	105			79.5			120			85.0		

CTO -PORTSMOUTH
SOIL DATA
GERG
SDG: TS194

SAMPLE NUMBER:	OU4-MU-M13-300A			OU4-MU-M14-200A			OU4-MU-R01-300A			OU4-MU-R01-400A		
SAMPLE DATE:	08/28/00			08/28/00			08/29/00			08/27/00		
LABORATORY ID:	C36425			C36422			C36510			C36426		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	12.7 %			12.4 %			11.7 %			12.1 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	288			252			315			338		
ARSENIC	4.01			4.79			5.09			5.95		
CADMIUM	1.51			1.67			1.54			1.29		
CHROMIUM	2.39			2.33			3.09			3.82		
COPPER	6.98			6.01			5.33			7.34		
IRON	399			388			478			696		
LEAD	3.19	J	D	4.45	J	D	2.76	J	D	3.20	J	D
MANGANESE	13.9			11.7			16.8			10.8		
MERCURY	0.21			0.31			0.29			0.28		
NICKEL	0.30	U		1.93	U		1.83	U		2.41	U	A
SILVER	1.33	U		0.32	U		0.49	J	D	0.32	U	
ZINC	81.6			101			70.4			76.8		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 21, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – SELECT METALS**
CTO 201 - PORTSMOUTH NSY
SDG – TS195

SAMPLES: 20/Tissues/

OU4-MU-M01-200A	OU4-MU-M02-200A
OU4-MU-M02-300A	OU4-MU-M07-100A
OU4-MU-M08-100A	OU4-MU-M08-200A
OU4-MU-M08-300A	OU4-MU-M09-100A
OU4-MU-M09-200A	OU4-MU-M10-100A
OU4-MU-M10-200A	OU4-MU-M10-300A
OU4-MU-M13-100A	OU4-MU-M14-100A
OU4-MU-R02-300A	OU4-MU-R02-400A
OU4-MU-R03-300A	OU4-MU-R03-400A
OU4-MU-R04-300A	OU4-MU-R04-400A

Overview

The sample set for CTO 201, Portsmouth, SDG TS195, consists of twenty (20) mussle tissue samples.

The samples were analyzed for select metals namely aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver and zinc. The samples were collected by Tetra Tech NUS on August 28-30, 2000 and analyzed by Geochemical &Environmental Research Group. Metals analyses were conducted using GERG SOPs 9409 and 8208.

Arsenic, cadmium, lead and silver analyses were conducted using Graphite Furnace Atomic Absorption (GFAA) instrumentation. Mercury analyses were conducted using Cold Vapor Atomic Absorption (CVAA) instrumentation. The remaining metals were analyses using Inductively Coupled Plasma (ICP) instrumentation.

The data was evaluated based on the following parameters:

- Data Completeness
- Holding Times
- Calibration Verifications
- Laboratory Blank Analyses
- Blank Spike Results
- Standard Reference Material Results
- Matrix Spike Results
- Laboratory Duplicate Results

- Field Duplicate Results
- * Detection Limits
- * Sample Quantitation

* - All quality control criteria were met for this parameter.

Calibration Verifications

A continuing calibration verification (CCV) Percent Recovery (%R) for zinc was <90% quality control limit. All results reported for zinc were positive. The positive results reported for zinc were qualified as estimated, "J".

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Affected samples: all

Analyte	Maximum Concentration	Action Level
Aluminum	0.03918 µg/ml	19.59 µg/g
Arsenic	0.000006 µg/ml	0.003 µg/g
Chromium	0.00726 µg/ml	3.63 µg/g
Copper	0.001 µg/ml	0.05 µg/g
Iron	0.01005 µg/ml	5.025 µg/g
Lead[1]	0.1347 µg/g	0.6735 µg/g
Manganese	0.00150 µg/ml	0.75 µg/g
Mercury[1]	0.0294 µg/g	0.147 µg/g
Nickel	0.01156 µg/ml	5.78 µg/g
Silver	0.00085 µg/ml	0.425 µg/g
Zinc	0.01230 µg/ml	6.15 µg/g

(1) Maximum concentration present in a preparation blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken in to consideration when evaluating for blank contamination. Positive results less than the blank action levels for chromium and nickel were qualified, "U", as a result of blank contamination.

The following table summarizes the sample preparations which were used for the tissue samples. The preparation information is needed to establish the blank action levels.

Parameter	Amount of Sample	Final Volume
ICP Metals	0.3 g	30 ml
Mercury	0.2 g	40 ml

Matrix Spike Results

The Matrix Spike (MS) %R for zinc was <75% quality control limit. All results reported for zinc were positive. The positive results reported for zinc were qualified as estimated, "J".

Laboratory Duplicate Results

Laboratory duplicate imprecision [Relative Percent Difference (RPD) >30%] was noted for silver. One positive result was reported for silver. The positive result reported for silver was qualified as estimated, "J".

Field Duplicate Results

Field duplicate imprecision (RPD >50%) was noted for copper in field duplicate pair OU4-MU-M10-100A / OU4-MU-M10-100A-FD. All results reported for copper were positive. The positive results reported for copper were qualified as estimated, "J".

Notes

The laboratory reported positive results less than the IDL with a qualification of estimated, "J". The data reviewer corrected the Electronic Deliverable Data (EDD) by replacing estimated results less than the IDL with a nondetected result.

Typical holding times did not apply because the samples were freeze dried.

Since the sample matrix is composed of lobster tissue, the results were not qualified based on low percent solids (<30%).

The samples were reported on a dry weight basis because the samples were freeze dried. Therefore, percent solids were not used to calculate sample results and were not taken into consideration in establishing and evaluating blank contamination action levels.

The laboratory reported all field duplicate samples in SDG TS197. The following field duplicates affected this SDG:

OU4-MU-M10-100A-FD / OU4-MU-M10-100A
OU4-MU-M13-100A-FD / OU4-MU-M13-100A

A field duplicate comparison is included in Appendix C. To remain consistent with validation procedures used when validating data from the previous rounds, qualifications were assigned based on field duplicate imprecision.

The Standard Reference Material (SRM) %Rs for nickel and zinc were <80% quality control limit. The SRM %R for lead was >120% quality control limit. The SRM %R for aluminum was <10% quality control limit. However, no validation action was taken based on SRM results because a blank spike was analyzed.

Executive Summary

Laboratory Performance: Zinc was qualified due to a calibration noncompliance. Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Zinc were qualified due to MS noncompliances. Silver was qualified based on laboratory duplicate imprecision. Copper was qualified based on field duplicate imprecision.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO. PORTSMOUTH
SOIL DATA
GERG
SDG: TS195

SAMPLE NUMBER:	OU4-MU-M01-200A			OU4-MU-M02-200A			OU4-MU-M02-300A			OU4-MU-M07-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36628			C36629			C36630			C36631		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.6 %			12.8 %			12.8 %			11.5 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	380			277			718			303		
ARSENIC	5.46			5.79			6.30			5.70		
CADMIUM	1.74			1.81			1.66			1.37		
CHROMIUM	4.19			3.68			8.82			3.72		
COPPER	29.5	J	G	6.69	J	G	13.6	J	G	6.03	J	G
IRON	896			602			1210			621		
LEAD	6.46			5.25			5.28			3.87		
MANGANESE	12.4			9.11			16.6			8.63		
MERCURY	0.27			0.35			0.21			0.25		
NICKEL	4.37	U	A	3.15	U	A	9.09			3.79	U	A
SILVER	0.34	U		0.32	U		0.29	U		0.29	U	
ZINC	106	J	CD	91.4	J	CD	95.7	J	CD	81.3	J	CD

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TS195

SAMPLE NUMBER:	OU4-MU-M08-100A			OU4-MU-M08-200A			OU4-MU-M08-300A			OU4-MU-M09-100A		
SAMPLE DATE:	08/28/00			08/29/00			08/28/00			08/29/00		
LABORATORY ID:	C36632			C36633			C36634			C36635		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	13.9 %			9.9 %			9.7 %			14.0 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	467			333			511			1175		
ARSENIC	5.80			6.61			4.53			5.19		
CADMIUM	1.44			1.57			1.33			1.41		
CHROMIUM	6.23			4.70			6.28			7.43		
COPPER	10.2	J	G	7.12	J	G	6.46	J	G	52.5	J	G
IRON	1078			515			760			1877		
LEAD	9.52			6.78			4.29			7.28		
MANGANESE	13.3			11.2			17.0			73.9		
MERCURY	0.23			0.25			0.23			0.24		
NICKEL	5.11	U	A	4.09	U	A	2.51	U	A	12.9		
SILVER	0.32	U		0.38	U		0.34	U		0.74	J	E
ZINC	95.3	J	CD	93.4	J	CD	92.7	J	CD	126	J	CD

CTO. -PORTSMOUTH
SOIL DATA
GERG
SDG: TS195

SAMPLE NUMBER:	OU4-MU-M09-200A			OU4-MU-M10-100A			OU4-MU-M10-200A			OU4-MU-M10-300A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36636			C36637			C36638			C36639		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	9.8 %			12.5 %			10.1 %			13.1 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	599			454			215			250		
ARSENIC	7.35			6.68			5.00			4.17		
CADMIUM	1.65			1.36			2.05			2.11		
CHROMIUM	6.60			5.90			3.02	U	A	3.14	U	A
COPPER	8.39	J	G	41.5	J	G	5.09	J	G	6.32	J	G
IRON	980			1118			320			420		
LEAD	7.33			8.19			3.37			9.14		
MANGANESE	12.2			13.9			11.6			11.0		
MERCURY	0.29			0.19			0.25			0.27		
NICKEL	1.88	U		3.86	U	A	2.02	U	A	2.38	U	A
SILVER	0.31	U		0.32	U		0.31	U		0.29	U	
ZINC	104	J	CD	128	J	CD	80.9	J	CD	90.3	J	CD

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TS195

SAMPLE NUMBER:	OU4-MU-M13-100A			OU4-MU-M14-100A			OU4-MU-R02-300A			OU4-MU-R02-400A		
SAMPLE DATE:	08/28/00			08/28/00			08/29/00			08/29/00		
LABORATORY ID:	C36640			C36641			C36511			C36642		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	12.6 %			9.6 %			12.9 %			11.0 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	415			304			353			401		
ARSENIC	4.19			6.61			4.22			5.14		
CADMIUM	1.42			1.29			1.22			1.03		
CHROMIUM	3.74			3.37	U	A	3.79			3.76		
COPPER	32.8	J	G	7.85	J	G	8.30	J	G	6.44	J	G
IRON	675			609			563			695		
LEAD	4.55			3.81			3.54			5.31		
MANGANESE	49.9			10.6			12.6			11.8		
MERCURY	0.26			0.31			0.26			0.29		
NICKEL	4.74	U	A	1.80	U		5.03	U	A	1.93	U	
SILVER	0.32	U		0.30	U		0.29	U		0.32	U	
ZINC	129	J	CD	94.4	J	CD	87.9	J	CD	76.4	J	CD

CTO PORTSMOUTH
SOIL DATA
GERG
SDG: TS195

SAMPLE NUMBER:	OU4-MU-R03-300A			OU4-MU-R03-400A			OU4-MU-R04-300A			OU4-MU-R04-400A		
SAMPLE DATE:	08/30/00			08/30/00			08/30/00			08/29/00		
LABORATORY ID:	C36512			C36513			C36514			C36643		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	12.0 %			11.9 %			11.8 %			14.4 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	280			477			218			579		
ARSENIC	4.63			5.27			5.38			5.01		
CADMIUM	1.51			1.14			1.65			1.26		
CHROMIUM	3.50	U	A	4.88			3.21	U	A	5.17		
COPPER	19.8	J	G	15.4	J	G	14.5	J	G	33.0	J	G
IRON	382			805			387			808		
LEAD	3.95			3.39			4.20			5.19		
MANGANESE	9.40			14.1			8.08			15.4		
MERCURY	0.29			0.22			0.34			0.28		
NICKEL	3.53	U	A	5.40	U	A	1.85	U	A	2.24	U	A
SILVER	0.33	U		0.33	U		0.30	U		0.29	U	
ZINC	95.8	J	CD	86.4	J	CD	87.4	J	CD	105	J	CD

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 29, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – SELECT METALS**
CTO 201 - PORTSMOUTH NSY
SDG – TS196

SAMPLES: 20/Tissues/

OU4-LJ-M01-100A	OU4-LJ-M01-100A-FD
OU4-LJ-M02-100A	OU4-LJ-M03-100A
OU4-LJ-M04-100A	OU4-LJ-M05-100A
OU4-LJ-M06-100A	OU4-LJ-M07-100A
OU4-LJ-M10-100A	OU4-LJ-M11-100A
OU4-LJ-M11-100A-FD	OU4-LJ-M12-100A
OU4-LJ-M13-100A	OU4-LJ-M14-100A
OU4-LJ-R01-100A	OU4-LJ-R02-100A
OU4-LJ-R03-100A	OU4-LJ-R04-100A

Overview

The sample set for CTO 201, Portsmouth, SDG TS196, consists of twenty (20) lobster tissue samples. Two (2) field duplicate pairs (OU4-LJ-M01-100A / OU4-LJ-M01-100A-FD and OU4-LJ-M11-100A / OU4-LJ-M11-100A-FD) were included within this SDG.

The samples were analyzed for select metals namely aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver and zinc. The samples were collected by Tetra Tech NUS on August 26 and 28, 2000 and analyzed by Geochemical &Environmental Research Group. Metals analyses were conducted using GERG SOPs 9409 and 8208.

Arsenic, cadmium, lead and silver analyses were conducted using Graphite Furnace Atomic Absorption (GFAA) instrumentation. Mercury analyses were conducted using Cold Vapor Atomic Absorption (CVAA) instrumentation. The remaining metals were analyses using Inductively Coupled Plasma (ICP) instrumentation.

The data was evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- Calibration Verifications
- Laboratory Blank Analyses
- * Blank Spike Results
- Standard Reference Material Results
- Matrix Spike Results
- * Laboratory Duplicate Results

- Field Duplicate Results
- Detection Limits
- Sample Quantitation

- All quality control criteria were met for this parameter.

Calibration Verifications

Continuing Calibration Verification (CCV) Percent Recoveries (%Rs) for iron and zinc were <90% quality control limit. The positive results reported for iron and zinc were qualified as estimated, "J".

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Affected samples: all

Analyte	Maximum Concentration	Action Level
Aluminum	0.11 µg/ml	55 µg/g
Arsenic	0.000034	0.017 µg/g
Iron	0.01 µg/ml	5 µg/g
Lead[1]	0.049 µg/g	0.4745 µg/g
Mercury[1]	0.0439 µg/g	0.2195 µg/g
Nickel	0.02 µg/ml	10 µg/g
Zinc[1]	2.2192 µg/g	11.096 µg/g

(1) Maximum concentration present in a preparation blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken in to consideration when evaluating for blank contamination. Positive results less than the blank action level for aluminum, lead and nickel were qualified, "U", as a result of blank contamination.

The following table summarizes the sample preparations which were used for the tissue samples. The preparation information is needed to establish the blank action levels.

Parameter	Amount of Sample	Final Volume
ICP Metals	0.3 g	30 ml
Mercury	0.2 g	40 ml

Matrix Spike Results

The Matrix Spike (MS) %R for arsenic and silver were >125% quality control limit. All results reported for aluminum were positive. The positive results reported for arsenic and silver were qualified as estimated, "J".

Notes

The laboratory reported positive results less than the IDL with a qualification of estimated, "J". The data reviewer corrected the Electronic Deliverable Data (EDD) by replacing estimated results less than the IDL with a nondetected result.

Typical holding times did not apply because the samples were freeze dried.

Since the sample matrix is composed of lobster tissue, the results were not qualified based on low percent solids (<30%).

The samples were reported on a dry weight basis because the samples were freeze dried. Therefore, percent solids were not used to calculate sample results and were not taken into consideration in establishing and evaluating blank contamination action levels.

Sample IDs for the field duplicate samples were changed from LD to FD.

The Standard Reference Material (SRM) %Rs for aluminum and lead were outside the 80-120% quality control limit. However, no validation action was taken based on SRM results because a blank spike was analyzed.

Several CCVs for manganese and arsenic were reported incorrectly. The %R calculation reported by the laboratory was based on an incorrect standard concentration. The laboratory was notified.

Executive Summary

Laboratory Performance: Iron and zinc were qualified due to calibration noncompliances. Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Arsenic and silver were qualified due to MS noncompliances.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TS196

SAMPLE NUMBER:	OU4-LJ-M01-100A			OU4-LJ-M01-100A-LD			OU4-LJ-M02-100A			OU4-LJ-M03-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36920			C36938			C36921			C36922		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.8 %			20.2 %			20.2 %			23.2 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	3.21	U		3.44	U		3.28	U		3.23	U	
ARSENIC	4.53	J	D	3.91	J	D	4.01	J	D	3.45	J	D
CADMIUM	0.0427			0.0354			0.0338			0.0237		
CHROMIUM	0.70			0.55	U		0.59			0.77		
COPPER	46.1			48.9			43.7			61.0		
IRON	5.09	J	C	8.87	J	C	8.77	J	C	10.9	J	C
LEAD	0.12	U	A	0.62			0.12	U	A	0.31	U	A
MANGANESE	3.19			2.74			2.49			5.18		
MERCURY	0.62			0.68			0.66			0.55		
NICKEL	1.97	U		2.11	U		2.01	U		3.87	U	A
SILVER	0.85	J	D	0.78	J	D	0.86	J	D	1.34	J	D
ZINC	94.2	J	C	97.3	J	C	86.7	J	C	90.5	J	C

CTO2( )ORTSMOUTH
SOIL DATA
GERG
SDG: TS196

SAMPLE NUMBER:	OU4-LJ-M04-100A			OU4-LJ-M05-100A			OU4-LJ-M06-100A			OU4-LJ-M07-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36923			C36924			C36925			C36926		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.9 %			18.9 %			22.7 %			19.2 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	5.95	U	A	4.52	U		2.85	U		3.23	U	
ARSENIC	3.00	J	D	4.89	J	D	4.96	J	D	3.91	J	D
CADMIUM	0.0209			0.0400			0.0231			0.0478		
CHROMIUM	0.82			0.72	U		0.56			0.64		
COPPER	38.8			52.5			41.3			58.4		
IRON	17.2	J	C	9.55	J	C	21.2	J	C	10.4	J	C
LEAD	0.14	U	A	0.22	U	A	0.26	U	A	0.47	U	A
MANGANESE	4.62			2.00			1.65			2.42		
MERCURY	0.63			0.60			0.59			0.54		
NICKEL	3.25	U	A	2.99	U	A	2.47	U	A	1.98	U	
SILVER	1.14	J	D	0.49	J	D	1.01	J	D	1.29	J	D
ZINC	81.0	J	C	89.1	J	C	93.1	J	C	93.0	J	C

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TS196

SAMPLE NUMBER:	OU4-LJ-M08-100A			OU4-LJ-M09-100A			OU4-LJ-M10-100A			OU4-LJ-M11-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36927			C36928			C36929			C36930		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	23.1 %			21.5 %			20.7 %			19.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	3.18	U		19.1	U	A	3.15	U		2.74	U	
ARSENIC	4.64	J	D	5.13	J	D	3.82	J	D	4.66	J	D
CADMIUM	0.0187			0.0394			0.0256			0.0442		
CHROMIUM	0.51	U		0.95			1.63			1.06		
COPPER	46.2			37.5			39.2			38.5		
IRON	13.4	J	C	13.2	J	C	11.3	J	C	8.08	J	C
LEAD	0.17	U	A	2.26			0.13	U	A	0.14	U	A
MANGANESE	1.62			1.66			2.57			3.34		
MERCURY	0.66			0.50			0.49			0.52		
NICKEL	1.95	U		1.94	U		1.93	U		1.68	U	
SILVER	1.13	J	D	0.80	J	D	1.08	J	D	0.75	J	D
ZINC	81.0	J	C	101	J	C	92.2	J	C	94.1	J	C

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: TS196

SAMPLE NUMBER:	OU4-LJ-M11-100A-LD			OU4-LJ-M12-100A			OU4-LJ-M13-100A			OU4-LJ-M14-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36939			C36931			C36932			C36933		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	20.1 %			20.5 %			21.4 %			21.3 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	6.53	U	A	3.00	U		19.9	U	A	2.91	U	
ARSENIC	4.85	J	D	4.92	J	D	3.31	J	D	3.43	J	D
CADMIUM	0.0430			0.0419			0.0329			0.0386		
CHROMIUM	0.82			0.54			0.98			0.62		
COPPER	37.9			47.7			60.5			48.5		
IRON	16.2	J	C	9.61	J	C	27.7	J	C	8.45	J	C
LEAD	0.15	U	A	0.13	U	A	1.50			0.13	U	A
MANGANESE	4.18			3.04			6.07			9.30		
MERCURY	0.50			0.48			0.61			0.66		
NICKEL	1.97	U		1.83	U		1.94	U		1.79	U	
SILVER	1.02	J	D	1.16	J	D	0.84	J	D	0.92	J	D
ZINC	94.9	J	C	91.3	J	C	98.6	J	C	90.7	J	C

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TS196

SAMPLE NUMBER:	OU4-LJ-R01-100A			OU4-LJ-R02-100A			OU4-LJ-R03-100A			OU4-LJ-R04-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36934			C36935			C36936			C36937		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	22.4 %			21.5 %			21.3 %			21.3 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	3.04	U		3.10	U		6.90	U	A	3.19	U	
ARSENIC	4.52	J	D	4.13	J	D	4.15	J	D	4.11	J	D
CADMIUM	0.0248			0.0202			0.0332			0.0282		
CHROMIUM	0.62			0.61			0.87			0.67		
COPPER	55.4			31.8			41.6			41.4		
IRON	24.9	J	C	9.56	J	C	14.8	J	C	10.7	J	C
LEAD	0.11	U	A	0.15	U	A	0.42	U	A	0.66		
MANGANESE	3.82			3.80			2.34			1.66		
MERCURY	0.96			0.74			0.74			0.64		
NICKEL	1.86	U		1.90	U		2.12	U		1.96	U	
SILVER	1.63	J	D	0.80	J	D	0.72	J	D	1.03	J	D
ZINC	95.3	J	C	84.2	J	C	77.1	J	C	101	J	C

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 21, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – SELECT METALS**
CTO 201 - PORTSMOUTH NSY
SDG – TS197

SAMPLES: 4/Tissues/

OU4-MU-M10-100A-FD OU4-MU-M11-200A-FD
OU4-MU-M12-100A-FD OU4-MU-M13-100A-FD

Overview

The sample set for CTO 201, Portsmouth, SDG TS197, consists of four (4) mussle tissue samples. The samples in this SDG are field duplicate samples. The following table indicates their original samples and the SDGs of the original samples:

Field Duplicate	Original Sample	SDG
OU4-MU-M10-100A-FD	OU4-MU-M10-100A	TS195
OU4-MU-M11-200A-FD	OU4-MU-M11-200A	TS194
OU4-MU-M12-100A-FD	OU4-MU-M12-100A	TS194
OU4-MU-M13-100A-FD	OU4-MU-M13-100A	TS195

The samples were analyzed for select metals namely aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver and zinc. The samples were collected by Tetra Tech NUS on August 29, 2000 and analyzed by Geochemical &Environmental Research Group. Metals analyses were conducted using GERG SOPs 9409 and 8208.

Arsenic, cadmium, lead and silver analyses were conducted using Graphite Furnace Atomic Absorption (GFAA) instrumentation. Mercury analyses were conducted using Cold Vapor Atomic Absorption (CVAA) instrumentation. The remaining metals were analyses using Inductively Coupled Plasma (ICP) instrumentation.

The data was evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Calibration Verifications
  • Laboratory Blank Analyses
  • Blank Spike Results
  • Standard Reference Material Results
  • Matrix Spike Results
  • Laboratory Duplicate Results
  • Field Duplicate Results

* • Detection Limits
* • Sample Quantitation

* - All quality control criteria were met for this parameter.

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Affected samples: all

Analyte	Maximum Concentration	Action Level
Aluminum	0.059829 µg/ml	44.87175 µg/g
Arsenic	0.000034 µg/ml	0.0255 µg/g
Cadmium	0.000001 µg/ml	0.00075 µg/g
Chromium	0.001150 µg/ml	0.8625 µg/g
Copper	0.002734 µg/ml	2.0505 µg/g
Iron	0.005647 µg/ml	4.23525 µg/g
Lead	0.000025 µg/ml	0.1875 µg/g
Manganese	0.003110 µg/ml	2.3325 µg/g
Mercury[1]	0.0369 µg/g	0.1845 µg/g
Nickel	0.011021 µg/ml	8.26575 µg/g
Zinc	0.009359 µg/ml	7.01925 µg/g

(1) Maximum concentration present in a preparation blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken in to consideration when evaluating for blank contamination. Positive results less than the blank action level for nickel were qualified, "U", as a result of blank contamination.

The following table summarizes the sample preparations which were used for the tissue samples. The preparation information is needed to establish the blank action levels.

Parameter	Amount of Sample	Final Volume
ICP Metals	0.2 g	30 ml
Mercury	0.2 g	40 ml

Matrix Spike Results

The Matrix Spike (MS) Percent Recovery (%R) for aluminum was <75% quality control limit. All results reported for aluminum were positive. The positive results reported for aluminum were qualified as estimated, "J".

Blank Spike Results

The Blank Spike %R for aluminum was <80% quality control limit. All results reported for aluminum were positive. The positive results reported for aluminum were qualified as estimated, "J"

Field Duplicate Results

Field duplicate imprecision [Relative Percent Difference (RPD) >50%] was noted for copper in field duplicate pair OU4-MU-M10-100A / OU4-MU-M10-100A-FD. The original sample is contained in SDG TS195. Therefore, the positive results reported for copper in field duplicate samples OU4-MU-M10-100A-FD and OU4-MU-M13-100A -FD were qualified as estimated, "J". (Note: The positive results for copper in SDG TS195 will be qualified as estimated, "J").

Notes

The laboratory reported positive results less than the IDL with a qualification of estimated, "J". The data reviewer corrected the Electronic Deliverable Data (EDD) by replacing estimated results less than the IDL with a nondetected result.

Typical holding times did not apply because the samples were freeze dried.

Since the sample matrix is composed of lobster tissue, the results were not qualified based on low percent solids (<30%).

The samples were reported on a dry weight basis because the samples were freeze dried. Therefore, percent solids were not used to calculate sample results and were not taken into consideration in establishing and evaluating blank contamination action levels.

Sample IDs were changed from LD to FD.

Laboratory duplicate imprecision (RPD >30%) was noted for silver. All results reported for silver were nondetected. Therefore, no validation action was required.

The Standard Reference Material (SRM) %Rs for aluminum, lead and silver were outside the 80-120% quality control limit. However, no validation action was taken based on SRM results because a blank spike was analyzed.

Executive Summary

Laboratory Performance: Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Aluminum was qualified due to MS noncompliances. Aluminum was qualified due to the Blank Spike recovery. Copper was qualified due to field duplicate imprecision.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A. Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TS197

SAMPLE NUMBER:	OU4-MU-M10-100A-LD			OU4-MU-M11-200A-LD			OU4-MU-M12-100A-LD			OU4-MU-M13-100A-LD		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36940			C36943			C36941			C36942		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	11.6 %			11.5 %			11.5 %			13.0 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	547	J	DE	260	J	DE	345	J	DE	457	J	DE
ARSENIC	6.80			7.01			7.48			4.97		
CADMIUM	1.43			1.85			1.22			1.48		
CHROMIUM	5.38			3.08			4.21			3.04		
COPPER	6.41	J	G	8.02			9.16			34.5	J	G
IRON	941			448			811			745		
LEAD	5.75			40.2			9.60			4.59		
MANGANESE	18.4			15.7			15.0			50.4		
MERCURY	0.20			0.40			0.28			0.27		
NICKEL	5.33	U		2.12	U		4.76	U	A	3.49	U	A
SILVER	0.88	U		0.35	U		0.52	U		0.45	U	
ZINC	90.9			121			98.4			121		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 28, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – SELECT METALS**
CTO 201 - PORTSMOUTH NSY
SDG – SD145

SAMPLES: 16/Sediments/

OU4-SD-M03-100A	OU4-SD-M03-200A
OU4-SD-M03-300A	OU4-SD-M04-400A
OU4-SD-M04-200A	OU4-SD-M04-300A
OU4-SD-M05-100A	OU4-SD-M05-200A
OU4-SD-M05-300A	OU4-SD-M06-200A
OU4-SD-M06-300A	OU4-SD-M07-200A
OU4-SD-M07-300A	OU4-SD-M08-200A
OU4-SD-M09-300A	OU4-SD-R01-100A

Overview

The sample set for CTO 201, Portsmouth, SDG SD145, consists of sixteen (16) sediment samples.

The samples were analyzed for select metals namely aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver and zinc. The samples were collected by Tetra Tech NUS on August 27, 2000 and analyzed by Geochemical &Environmental Research Group. Metals analyses were conducted using GERG SOPs 9409 and 8208.

Arsenic, cadmium, lead and silver analyses were conducted using Graphite Furnace Atomic Absorption (GFAA) instrumentation. Mercury analyses were conducted using Cold Vapor Atomic Absorption (CVAA) instrumentation. The remaining metals were analyses using Inductively Coupled Plasma (ICP) instrumentation.

The data was evaluated based on the following parameters:

- Data Completeness
- Holding Times
- Calibration Verifications
- Laboratory Blank Analyses
- Blank Spike Results
- Standard Reference Material Results
- Matrix Spike Results
- Laboratory Duplicate Results
- Field Duplicate Results
- Detection Limits
- Sample Quantitation

- All quality control criteria were met for this parameter.

Calibration Verifications

A Continuing Calibration Verification (CCV) Percent Recovery (%R) for zinc was >110% quality control limit. The positive results reported for zinc were qualified as estimated, "J".

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Affected samples: all

Analyte	Maximum Concentration	Action Level
Aluminum	0.09 µg/ml	45.0 µg/g
Arsenic	0.000211 µg/ml	0.1055 µg/g
Cadmium[1]	0.0064 µg/g	0.032 µg/g
Chromium[1]	2.58 µg/g	12.9 µg/g
Copper	0.01 µg/ml	5.0 µg/g
Iron	0.081 µg/ml	40.5 µg/g
Lead[1]	0.1160 µg/g	0.58 µg/g
Mercury	0.00001 µg/ml	0.01 µg/g
Silver	0.0042 µg/ml	2.1 µg/g
Zinc[1]	1.38 µg/g	6.9 µg/g

[1] Maximum concentration present in a preparation blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken in to consideration when evaluating for blank contamination. No validation action was taken as all results were either greater than the blank action levels or nondetected.

The following table summarizes the sample preparations which were used for the sediment samples. The preparation information is needed to establish the blank action levels.

Parameter	Amount of Sample	Final Volume
ICP Metals	0.2 g	20 ml
Mercury	0.2 g	40 ml

Matrix Spike Results

The Matrix Spike (MS) %Rs for iron and nickel were <75% quality control limit. All results reported for nickel were positive. The positive results reported for iron and nickel were qualified as estimated, "J".

The MS %R for copper was >125% quality control limit. The positive results reported for copper were qualified as estimated, "J".

Blank Spike Results

The Blank Spike %R for silver was <80% quality control limit. The positive results reported for silver were qualified as estimated, "J".

Notes

The laboratory reported positive results less than the IDL with a qualification of estimated, "J". The data reviewer corrected the Electronic Deliverable Data (EDD) by replacing estimated results less than the IDL with a nondetected result.

Typical holding times did not apply because the samples were frozen until preparation.

The samples analyzed for total metals samples were reported on a dry weight basis because the samples were freeze dried. Therefore, percent solids were not used to calculate sample results and were not taken into consideration in establishing and evaluating blank contamination action levels.

The laboratory did not report field duplicate samples in the same SDGs as the original samples. The following field duplicates affected this SDG:

OU4-SD-M05-100A / OU4-FD-002-000A	SDG SD146
OU4-SD-M09-300A / OU4-FD-004-000A	SDG SD146

The **bolded** samples are in this SDG. The SDGs of the other samples are listed to the right of the field duplicate pairs.

A field duplicate comparison is included in Appendix C.

The Standard Reference Material (SRM) %R for silver was >120% quality control limit. The SRM %Rs for manganese, nickel and zinc were <80% quality control limit. However, no validation action was taken based on SRM results because a blank spike was analyzed.

Executive Summary

Laboratory Performance: Zinc was qualified due to calibration noncompliances. Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Copper, iron and nickel were qualified due to a MS noncompliance. Silver was qualified due to blank spike noncompliances.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

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2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

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A = Lab Blank Contamination
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D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO. -PORTSMOUTH
SOIL DATA
GERG
SDG: SD145

SAMPLE NUMBER:	OU4-SD-M03-100A			OU4-SD-M03-200A			OU4-SD-M03-300A			OU4-SD-M04-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36516			C36521			C36526			C36531		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	41.2 %			75.2 %			56.8 %			72.3 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	60547			39791			51612			36081		
ARSENIC	19.9			19.9			11.5			27.6		
CADMIUM	0.66			0.64			0.45			0.91		
CHROMIUM	110			125			57.6			107		
COPPER	186	J	D	1902	J	D	27.2	J	D	20507	J	D
IRON	35582	J	D	44337	J	D	19576	J	D	89742	J	D
LEAD	164			292			51.5			788		
MANGANESE	354			446			331			665		
MERCURY	0.52			0.52			0.17			2.41		
NICKEL	39.4	J	D	102	J	D	14.5	J	D	197	J	D
SILVER	4.56	J	E	3.77	J	E	3.34	J	E	8.11	J	E
ZINC	196	J	C	647	J	C	63.7	J	C	2633	J	C

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD145

SAMPLE NUMBER:	OU4-SD-M04-200A			OU4-SD-M04-300A			OU4-SD-M05-100A			OU4-SD-M05-200A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36536			C36541			C36546			C36551		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	46.8 %			78.9 %			39.5 %			37.8 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	56241			44541			62766			60457		
ARSENIC	14.3			17.9			18.3			14.0		
CADMIUM	0.56			0.13			0.59			0.63		
CHROMIUM	67.6			56.6			97.7			88.8		
COPPER	33.1	J	D	118	J	D	65.0	J	D	33.0	J	D
IRON	23080	J	D	24920	J	D	33256	J	D	30228	J	D
LEAD	58.2			123			116			66.6		
MANGANESE	313			556			358			345		
MERCURY	0.38			0.1749	U		0.37			0.19		
NICKEL	16.6	J	D	25.1	J	D	25.4	J	D	25.1	J	D
SILVER	3.13	J	E	3.19	J	E	4.43	J	E	4.38	J	E
ZINC	63.4	J	C	42.1	J	C	95.9	J	C	97.4	J	C

CTO_ .-PORTSMOUTH
SOIL DATA
GERG
SDG: SD145

SAMPLE NUMBER:	OU4-SD-M05-300A			OU4-SD-M06-200A			OU4-SD-M06-300A			OU4-SD-M07-200A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36556			C36561			C36566			C36571		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	70.8 %			37.1 %			72.4 %			44.1 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	57212			54597			44154			56383		
ARSENIC	14.1			13.3			17.4			14.7		
CADMIUM	0.56			0.49			0.18			0.65		
CHROMIUM	87.6			77.0			51.9			93.7		
COPPER	31.4	J	D	30.5	J	D	12.7	J	D	35.8	J	D
IRON	28333	J	D	25798	J	D	22841	J	D	27688	J	D
LEAD	65.0			64.7			25.9			70.2		
MANGANESE	356			341			797			327		
MERCURY	0.1878	U		0.35			0.1694	U		0.25		
NICKEL	22.8	J	D	18.1	J	D	27.4	J	D	19.5	J	D
SILVER	4.11	J	E	4.00	J	E	3.72	J	E	3.95	J	E
ZINC	71.9	J	C	63.3	J	C	28.5	J	C	75.5	J	C

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD145

SAMPLE NUMBER:	OU4-SD-M07-300A			OU4-SD-M08-200A			OU4-SD-M09-300A			OU4-SD-R01-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36576			C36581			C36586			C36591		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	47.4 %			49.1 %			36.6 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	54179			51595			61780			49202		
ARSENIC	13.3			13.6			19.0			13.8		
CADMIUM	0.42			0.57			0.82			0.53		
CHROMIUM	78.9			85.8			118			69.4		
COPPER	19.9	J	D	118	J	D	76.9	J	D	21.1	J	D
IRON	23382	J	D	26387	J	D	34799	J	D	23744	J	D
LEAD	52.5			78.3			100			96.6		
MANGANESE	356			334			359			335		
MERCURY	0.22			0.26			0.31			0.31		
NICKEL	15.9	J	D	25.2	J	D	31.5	J	D	17.5	J	D
SILVER	3.51	J	E	4.18	J	E	7.00	J	E	3.88	J	E
ZINC	50.1	J	C	90.0	J	C	114	J	C	85.1	J	C

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 22, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – SELECT METALS**
CTO 201 - PORTSMOUTH NSY
SDG – SD146

SAMPLES: 16/Sediments/

OU4-FD-002-000A	OU4-FD-004-000A
OU4-SD-M01-100A	OU4-SD-M01-200A
OU4-SD-M01-300A	OU4-SD-M02-100A
OU4-SD-M02-200A	OU4-SD-M02-300A
OU4-SD-M06-100A	OU4-SD-M07-100A
OU4-SD-M08-100A	OU4-SD-M08-300A
OU4-SD-M09-200A	OU4-SD-R01-400A
OU4-SD-R03-100A	OU4-SD-R04-100A

Overview

The sample set for CTO 201, Portsmouth, SDG SD 146, consists of sixteen (16) sediment samples.

The samples were analyzed for select metals namely aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver and zinc. The samples were collected by Tetra Tech NUS on August 27-29, 2000 and analyzed by Geochemical &Environmental Research Group. Metals analyses were conducted using GERG SOPs 9409 and 8208.

Arsenic, cadmium, lead and silver analyses were conducted using Graphite Furnace Atomic Absorption (GFAA) instrumentation. Mercury analyses were conducted using Cold Vapor Atomic Absorption (CVAA) instrumentation. The remaining metals were analyses using Inductively Coupled Plasma (ICP) instrumentation.

The data was evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * Calibration Verifications
- Laboratory Blank Analyses
- * Blank Spike Results
- Standard Reference Material Results
- Matrix Spike Results
- * Laboratory Duplicate Results
- Field Duplicate Results
- * Detection Limits

* • Sample Quantitation

* - All quality control criteria were met for this parameter.

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Affected samples: all

Analyte	Maximum Concentration	Action Level
Aluminum[1]	11.4615 µg/g	57.3075 µg/g
Arsenic	0.00021 µg/ml	0.105 µg/g
Chromium[1]	2.5136 µg/g	12.568 µg/g
Copper	0.00006 µg/ml	0.03 µg/g
Iron	0.12790 µg/ml	63.95 µg/g
Lead	0.00013 µg/ml	0.065 µg/g
Manganese	0.000159 µg/ml	0.795 µg/g
Nickel	0.001237 µg/ml	6.185 µg/g
Silver	0.00089 µg/ml	0.445 µg/g
Zinc[1]	1.3732 µg/g	6.866 µg/g

[1] Maximum concentration present in a preparation blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken in to consideration when evaluating for blank contamination. All results were greater than the blank action levels. Therefore, no validation action was taken on this basis.

The following table summarizes the sample preparations which were used for the sediment samples. The preparation information is needed to establish the blank action levels.

Parameter	Amount of Sample	Final Volume
ICP Metals	0.2 g	20 ml
Mercury	0.2 g	40 ml

Matrix Spike Results

A Matrix Spike (MS) Percent Recovery (%R) for nickel was <75% quality control limit. All results reported for nickel were positive. The positive results reported for nickel were qualified as estimated, "J".

Field Duplicate Results

Field duplicate imprecision [Relative Percent Difference (RPD) >50%] was noted for nickel in field duplicate pair OU4-SD-M08-100A / OU4-FD-003-000A. All results reported for nickel were positive. The positive results reported for nickel were qualified as estimated, "J".

Notes

The laboratory reported positive results less than the IDL with a qualification of estimated, "J". The data reviewer corrected the Electronic Deliverable Data (EDD) by replacing estimated results less than the IDL with a nondetected result.

Typical holding times did not apply because the samples were frozen until preparation.

The samples analyzed for total metals samples were reported on a dry weight basis because the samples were freeze dried. Therefore, percent solids were not used to calculate sample results and were not taken into consideration in establishing and evaluating blank contamination action levels.

The laboratory did not report field duplicate samples in same SDGs as the original samples. The following field duplicates affected this SDG:

OU4-SD-M05-100A / **OU4-FD-002-000A**	SDG SD145
OU4-SD-M09-300A / **OU4-FD-004-000A**	SDG SD145
OU4-SD-M01-300A / OU4-FD-001-000A	SDG SD148
OU4-SD-M08-100A / OU4-FD-003-000A	SDG SD148

The **bolded** samples are in this SDG. The SDGs of the other samples are listed to the right of the field duplicate pairs.

A field duplicate comparison is included in Appendix C. To remain consistent with validation procedures used when validating data from the previous rounds, qualifications were assigned based on field duplicate imprecision.

The Standard Reference Material (SRM) %Rs for nickel and zinc were <80% quality control limit. The SRM %Rs for arsenic and silver were >120% quality control limit. However, no validation action was taken based on SRM results because a blank spike was analyzed.

Executive Summary

Laboratory Performance: Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Nickel were qualified due to a MS noncompliance and field duplicate imprecision.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO. -PORTSMOUTH
SOIL DATA
GERG
SDG: SD146

SAMPLE NUMBER:	OU4-FD-002-000A	OU4-FD-004-000A	OU4-SD-M01-100A	OU4-SD-M01-200A
SAMPLE DATE:	08/27/00	08/27/00	08/28/00	08/28/00
LABORATORY ID:	C36611	C36616	C36645	C36650
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	39.8 %	36.7 %	64.2 %	80.8 %
UNITS:	UG/G	UG/G	UG/G	UG/G
FIELD DUPLICATE OF:	OU4-SD-M05-100A	OU4-SD-M09-300A		

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	58894			59116			45561			45582		
ARSENIC	18.9			18.0			10.5			14.4		
CADMIUM	0.57			0.82			0.24			0.15		
CHROMIUM	92.5			110			56.4			49.5		
COPPER	57.3			79.0			35.2			26.1		
IRON	30611			32379			19561			34775		
LEAD	118			99.4			62.5			99.5		
MANGANESE	350			346			590			1503		
MERCURY	0.39			0.33			0.28			0.0851	U	
NICKEL	25.9	J	DG	34.1	J	DG	12.9	J	DG	20.2	J	DG
SILVER	3.95			4.36			2.30			3.56		
ZINC	116			139			54.5			61.9		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD146

SAMPLE NUMBER:	OU4-SD-M01-300A			OU4-SD-M02-100A			OU4-SD-M02-200A			OU4-SD-M02-300A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36655			C36660			C36665			C36670		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	54.2 %			68.1 %			73.1 %			35.2 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	50667			59723			51651			53293		
ARSENIC	15.7			14.4			13.6			17.7		
CADMIUM	0.35			0.0984			0.30			0.41		
CHROMIUM	66.9			58.3			72.9			135		
COPPER	36.8			39.2			68.2			36.9		
IRON	23076			31319			26704			23473		
LEAD	137			35.9			146			87.9		
MANGANESE	387			780			437			333		
MERCURY	0.28			0.0962	U		1.06			0.31		
NICKEL	15.2	J	DG	22.8	J	DG	28.2	J	DG	24.1	J	DG
SILVER	2.96			3.46			3.27			4.07		
ZINC	90.8			63.7			84.6			89.6		

CTO -PORTSMOUTH
SOIL DATA
GERG
SDG: SD146

SAMPLE NUMBER:	OU4-SD-M06-100A			OU4-SD-M07-100A			OU4-SD-M08-100A			OU4-SD-M08-300A		
SAMPLE DATE:	08/29/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36675			C36680			C36685			C36690		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	74.8 %			69.9 %			69.8 %			94.8 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	38825			44008			51430			56262		
ARSENIC	7.97			10.7			12.5			13.1		
CADMIUM	0.31			0.27			0.32			0.14		
CHROMIUM	44.2			53.5			141			155		
COPPER	13.9			18.3			280			407		
IRON	15498			17994			55844			80067		
LEAD	49.1			51.1			183			164		
MANGANESE	417			282			357			958		
MERCURY	0.26			0.0926	U		0.19			0.0953	U	
NICKEL	14.8	J	DG	18.8	J	DG	55.2	J	DG	130	J	DG
SILVER	2.33			2.73			4.51			4.46		
ZINC	46.7			54.3			486			738		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD146

SAMPLE NUMBER:	OU4-SD-M09-200A			OU4-SD-R01-400A			OU4-SD-R03-100A			OU4-SD-R04-100A		
SAMPLE DATE:	08/29/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36695			C36596			C36601			C36606		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	62.8 %			74.0 %			28.5 %			65.8 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	52761			41501			41983			44211		
ARSENIC	13.7			9.91			14.4			8.70		
CADMIUM	0.46			0.21			0.81			0.25		
CHROMIUM	76.9			30.9			89.3			51.3		
COPPER	101			6.58			24.5			8.47		
IRON	31552			12014			20001			15978		
LEAD	97.7			28.8			82.9			53.6		
MANGANESE	389			322			343			316		
MERCURY	0.25			0.10			0.26			0.13		
NICKEL	32.4	J	DG	8.51	J	DG	21.5	J	DG	10.5	J	DG
SILVER	3.33			1.86			2.64			2.37		
ZINC	208			29.6			90.2			34.8		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 28, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – SELECT METALS**
CTO 201 - PORTSMOUTH NSY
SDG – SD147

SAMPLES: *15/Sediments/*

OU4-SD-M10-100A	OU4-SD-M10-200A
OU4-SD-M10-300A	OU4-SD-M13-100A
OU4-SD-M13-200A	OU4-SD-M13-300A
OU4-SD-M14-100A	OU4-SD-M14-200A
OU4-SD-M14-300A	OU4-SD-R02-100A
OU4-SD-R02-400A	OU4-SD-R03-200A
OU4-SD-R03-300A	OU4-SD-R04-200A
OU4-SD-R04-300A	

Overview

The sample set for CTO 201, Portsmouth, SDG SD147, consists of ffiteen (15) sediment samples.

The samples were analyzed for select metals namely aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver and zinc. The samples were collected by Tetra Tech NUS on August 28-29, 2000 and analyzed by Geochemical &Environmental Research Group. Metals analyses were conducted using GERG SOPs 9409 and 8208.

Arsenic, cadmium, lead and silver analyses were conducted using Graphite Furnace Atomic Absorption (GFAA) instrumentation. Mercury analyses were conducted using Cold Vapor Atomic Absorption (CVAA) instrumentation. The remaining metals were analyses using Inductively Coupled Plasma (ICP) instrumentation.

The data was evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * Calibration Verifications
- Laboratory Blank Analyses
- Blank Spike Results
- Standard Reference Material Results
- Matrix Spike Results
- * Laboratory Duplicate Results
- Field Duplicate Results
- * Detection Limits

* • Sample Quantitation

* - All quality control criteria were met for this parameter.

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Affected samples: all

Analyte	Maximum Concentration	Action Level
Aluminum	0.0905706 µg/ml	45.2853 µg/g
Arsenic	0.0001760 µg/ml	0.088 µg/g
Cadmium	0.000002 µg/ml	0.001 µg/g
Chromium(1)	2.0686 µg/g	10.343 µg/g
Copper	0.0012149 µg/ml	0.60745 µg/g
Iron(1)	2.8211 µg/g	14.1055 µg/g
Lead	0.0000960 µg/ml	0.048 µg/g
Mercury	0.0000091 µg/ml	0.0091 µg/g
Nickel	0.128846 µg/ml	6.4423 µg/g
Silver	0.0019865 µg/ml	0.99325 µg/g
Zinc	0.09217 µg/ml	46.35 µg/g

(1) Maximum concentration present in a preparation blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken in to consideration when evaluating for blank contamination. Positive results than the blank action level for zinc were qualified, "U", as a result of blank contamination. No validation action was taken for the remaining analytes as all results were either greater than the blank action levels or nondetected.

The following table summarizes the sample preparations which were used for the sediment samples. The preparation information is needed to establish the blank action levels.

Parameter	Amount of Sample	Final Volume
ICP Metals	0.2 g	20 ml
Mercury	0.2 g	40 ml

Matrix Spike Results

The Matrix Spike (MS) %Rs for iron, nickel and zinc were <75% quality control limit. All results reported for nickel were positive. The positive results reported for iron, nickel and zinc were qualified as estimated, "J".

The MS %R for copper was >125% quality control limit. The positive results reported for copper were qualified as estimated, "J".

Blank Spike Results

The Blank Spike %Rs for cadmium, lead, nickel and zinc were <80% quality control limit. The positive results reported for cadmium, lead, nickel and zinc were qualified as estimated, "J".

Field Duplicate Results

Field duplicate imprecision [Relative Percent Difference (RPD) >50%] was noted for zinc in field duplicate pair OU4-SD-M10-100A / OU4-FD-005-000A. The positive results reported for zinc were qualified as estimated, "J".

Notes

The laboratory reported positive results less than the IDL with a qualification of estimated, "J". The data reviewer corrected the Electronic Deliverable Data (EDD) by replacing estimated results less than the IDL with a nondetected result.

Typical holding times did not apply because the samples were frozen until preparation.

The samples analyzed for total metals samples were reported on a dry weight basis because the samples were freeze dried. Therefore, percent solids were not used to calculate sample results and were not taken into consideration in establishing and evaluating blank contamination action levels.

The laboratory did not report field duplicate samples in the same SDGs as the original samples. The following field duplicates affected this SDG:

OU4-SD-M10-100A / OU4-FD-005-000A SDG SD148

The **bolded** samples are in this SDG. The SDGs of the other samples are listed to the right of the field duplicate pairs.

A field duplicate comparison is included in Appendix C. To remain consistent with validation procedures used when validating data from the previous rounds, qualifications were assigned based on field duplicate imprecision.

The Standard Reference Material (SRM) %Rs for manganese, silver and zinc were <80% quality control limit. However, no validation action was taken based on SRM results because a blank spike was analyzed.

Executive Summary

Laboratory Performance: Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Copper, iron, nickel and zinc were qualified due to a MS noncompliance. Cadmium, lead, nickel and zinc were qualified due to blank spike noncompliances. Zinc was qualified for field duplicate imprecision.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A. Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO2 -PORTSMOUTH
SOIL DATA
GERG
SDG: SD147

SAMPLE NUMBER:	OU4-SD-M10-100A	OU4-SD-M10-200A	OU4-SD-M10-300A	OU4-SD-M13-100A
SAMPLE DATE:	08/29/00	08/29/00	08/29/00	08/28/00
LABORATORY ID:	C36700	C36705	C36710	C36715
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	71.0 %	59.9 %	41.4 %	34.4 %
UNITS:	UG/G	UG/G	UG/G	UG/G
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	43299.0495	~~D1~~		45462.8802	~~D1~~ 5		53657.9349	~~D2~~		56557.5625	~~D2~~	
ARSENIC	8.9989	~~D1~~		10.6603	~~D1~~		17.5526	~~D1~~		18.7176	~~D1~~	
CADMIUM	0.1408	~~D1~~ J	E	0.2383	~~D1~~ J	E	0.5755	~~D1~~ J	E	0.4818	~~D1~~ J	E
CHROMIUM	43.454			54.0048			84.9286			84.0838		
COPPER	18.7756	J	D	19.9987	J	D	36.5897	J	D	44.5294	J	D
IRON	22121.5618	~~D1~~ J	D	19096.2057	~~D1~~ J	D	31848.7428	~~D2~~ J	D	33229.3151	~~D2~~ J	D
LEAD	64.7357	~~D1~~ J	E	78.9525	~~D1~~ J	E	104.9425	~~D1~~ J	E	70.7219	~~D1~~ J	E
MANGANESE	403.9902			331.0222			328.77			360.4597		
MERCURY	0 0.174 ~~0.0916~~	J U		0.1679			0.211			0.1897		
NICKEL	24.1626	J	DE	19.4072	J	DE	22.9078	J	DE	24.9054	J	DE
SILVER	2.5073			3.0899			4.1078			3.4372		
ZINC	32.9133	U	A	52.8619	J	DEG	117.4573	J	GDE	107.2286	J	DEG

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD147

SAMPLE NUMBER:	OU4-SD-M13-200A			OU4-SD-M13-300A			OU4-SD-M14-100A			OU4-SD-M14-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36720			C36725			C36730			C36735		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	39.3 %			33.1 %			42.6 %			54.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	54862.776	D2		56929.6068	D2		49074.3438	D1		48057.4492	D1	
ARSENIC	17.2805	D1		20.623	D1		11.5927	D2		11.0993	D2	
CADMIUM	0.5785	D1 J	E	0.592	D1 J	E	0.3162	D2 J	E	0.331	D2 J	E
CHROMIUM	81.6986			104.0091			65.4333			53.2933		
COPPER	35.7224	J	D	87.2794	J	D	44.0244	J	D	16.3043	J	D
IRON	30132.6582	D2 J	D	35859.1471	D2 J	D	20919.806	D1 J	D	18298.5794	D1 J	D
LEAD	63.495	D1 J	E	88.3582	D1 J	E	94.3434	D2 J	E	53.6864	D2 J	E
MANGANESE	345.6734			364.8844			340.4173			297.0794		
MERCURY	0.3491			0.227			0.3363			0.255		
NICKEL	22.9302	J	DE	28.8153	J	DE	22.4587	J	DE	16.6491	J	DE
SILVER	3.922			3.8979			3.4256			2.8312		
ZINC	94.1297	J	DEG	146.9173	J	DEG	60.4177	J	GDE	58.6867	J	DEG

CTO. -PORTSMOUTH
SOIL DATA
GERG
SDG: SD147

SAMPLE NUMBER:	OU4-SD-M14-200A-LD			OU4-SD-M14-300A			OU4-SD-R02-100A			OU4-SD-R02-400A		
SAMPLE DATE:	08/28/00			08/28/00			08/29/00			08/29/00		
LABORATORY ID:	C36735D			C36740			C36745			C36750		
QC_TYPE:	DUPLICATE			NORMAL			NORMAL			NORMAL		
% SOLIDS:	54.9 %			42.1 %			75.2 %			53.7 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM				50238.3984	~~D1~~		44540.7487	~~D1~~		55985.8086	D2	
ARSENIC				12.2701	~~D2~~		8.5601	~~D2~~		14.8487	D1	
CADMIUM				0.4485	~~D2~~ J	E	0.1226	~~D2~~ J	E	0.4408	D1 J	E
CHROMIUM				92.13			37.22			86.0867		
COPPER				28.9454	J	D	13.8963	J	D	28.2853	J	D
IRON				24139.446	D1, J	D	15228.7721	~~D1~~ J	D	25987.5514	D2 J	D
LEAD				67.1278	D2 J	E	86.1427	~~D2~~ J	E	107.0162	D1 J	E
MANGANESE				307.046			216.6591			367.3833		
MERCURY	0.2567			0.2362			0.0621 0.0196 J U			0.2839		
NICKEL				24.7009	J	DE	16.6296	J	DE	24.6282	J	DE
SILVER				3.3096			1.9847			4.1479		
ZINC				77.2516	J	(+) DE	63.9975	J	DE G	75.2806	J	DEG

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD147

SAMPLE NUMBER:	OU4-SD-R03-200A	OU4-SD-R03-300A	OU4-SD-R04-200A	OU4-SD-R04-300A
SAMPLE DATE:	08/29/00	08/29/00	08/29/00	08/29/00
LABORATORY ID:	C36755	C36760	C36765	C36770
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	56.1 %	63.5 %	78.3 %	79.6 %
UNITS:	UG/G	UG/G	UG/G	UG/G
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	46959.0273	~~D1~~		48768.6068	~~D1~~		41039.6927	~~D1~~		46198.7617	D1	
ARSENIC	11.0547	~~D1~~		10.2421	~~D1~~		5.3635	~~D1~~		6.2951	~~D1~~	
CADMIUM	0.3305	~~D1~~ J	E	0.2259	~~D1~~ J	E	0.0532	~~D1~~ J	E	0.0845	~~D1~~ J	E
CHROMIUM	54.8467			60.55			31.52			37.0067		
COPPER	13.6897	J	D	10.4697	J	D	2.5398	J	D	3.0072	J	D
IRON	18147.3841	~~D1~~ J	D	18434.5065	~~D1~~ J	D	11176.0801	~~D1~~ J	D	14784.8135	~~D1~~ J	D
LEAD	50.6894	~~D1~~ J	E	38.3865	~~D1~~ J	E	16.1757	~~D1~~ J	E	18.3573	~~D1~~ J	E
MANGANESE	299.4751			396.285			265.5097			272.2578		
MERCURY	0.1337			0.1049			~~0.0477~~ 0.0318	J U		~~0.0511~~ 0.0331	J U	
NICKEL	15.4575	J	DE	17.1623	J	DE	11.4699	J	DE	20.7804	J	DE
SILVER	2.8221			2.781			1.6908			2.0251		
ZINC	47.8192	J	(H) E	40.6435	J	(G) E	17.0886	U	A	24.046	U	A

CTO[illegible] -PORTSMOUTH
SOIL DATA
GERG
SDG: SD147

SAMPLE NUMBER:	OU4-SD-M10-100A			OU4-SD-M10-200A			OU4-SD-M10-300A			OU4-SD-M13-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/28/00		
LABORATORY ID:	C36700			C36705			C36710			C36715		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	71.0 %			59.9 %			41.4 %			34.4 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	43299			45463			53658			56558		
ARSENIC	9.00			10.7			17.6			18.7		
CADMIUM	0.14	J	E	0.24	J	E	0.58	J	E	0.48	J	E
CHROMIUM	43.5			54.0			84.9			84.1		
COPPER	18.8	J	D	20.0	J	D	36.6	J	D	44.5	J	D
IRON	22122	J	D	19096	J	D	31849	J	D	33229	J	D
LEAD	64.7	J	E	79.0	J	E	105	J	E	70.7	J	E
MANGANESE	404			331			329			360		
MERCURY	0.0974	U		0.17			0.21			0.19		
NICKEL	24.2	J	DE	19.4	J	DE	22.9	J	DE	24.9	J	DE
SILVER	2.51			3.09			4.11			3.44		
ZINC	32.9	U	A	52.9	J	DGE	117	J	DGE	107	J	DGE

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD147

SAMPLE NUMBER:	OU4-SD-M13-200A			OU4-SD-M13-300A			OU4-SD-M14-100A			OU4-SD-M14-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36720			C36725			C36730			C36735		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	39.3 %			33.1 %			42.6 %			54.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	54863			56930			49074			48057		
ARSENIC	17.3			20.6			11.6			11.1		
CADMIUM	0.58	J	E	0.59	J	E	0.32	J	E	0.33	J	E
CHROMIUM	81.7			104			65.4			53.3		
COPPER	35.7	J	D	87.3	J	D	44.0	J	D	16.3	J	D
IRON	30133	J	D	35859	J	D	20920	J	D	18299	J	D
LEAD	63.5	J	E	88.4	J	E	94.3	J	E	53.7	J	E
MANGANESE	346			365			340			297		
MERCURY	0.35			0.23			0.34			0.26		
NICKEL	22.9	J	DE	28.8	J	DE	22.5	J	DE	16.6	J	DE
SILVER	3.92			3.90			3.43			2.83		
ZINC	94.1	J	DGE	147	J	DGE	60.4	J	DGE	58.7	J	DGE

CTO: PORTSMOUTH
SOIL DATA
GERG
SDG: SD147

SAMPLE NUMBER:	OU4-SD-M14-300A			OU4-SD-R02-100A			OU4-SD-R02-400A			OU4-SD-R03-200A		
SAMPLE DATE:	08/28/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36740			C36745			C36750			C36755		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	42.1 %			75.2 %			53.7 %			56.1 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	50238			44541			55986			46959		
ARSENIC	12.3			8.56			14.8			11.1		
CADMIUM	0.45	J	E	0.12	J	E	0.44	J	E	0.33	J	E
CHROMIUM	92.1			37.2			86.1			54.8		
COPPER	28.9	J	D	13.9	J	D	28.3	J	D	13.7	J	D
IRON	24139	J	D	15229	J	D	25988	J	D	18147	J	D
LEAD	67.1	J	E	86.1	J	E	107	J	E	50.7	J	E
MANGANESE	307			217			367			299		
MERCURY	0.24			0.0756	U		0.28			0.13		
NICKEL	24.7	J	DE	16.6	J	DE	24.6	J	DE	15.5	J	DE
SILVER	3.31			1.98			4.15			2.82		
ZINC	77.3	J	DGE	64.0	J	DGE	75.3	J	DGE	47.8	J	DGE

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD147

SAMPLE NUMBER:	OU4-SD-R03-300A			OU4-SD-R04-200A			OU4-SD-R04-300A					
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			/ /		
LABORATORY ID:	C36760			C36765			C36770					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	63.5 %			78.3 %			79.6 %			100.0 %		
UNITS:	UG/G			UG/G			UG/G					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	48769			41040			46199					
ARSENIC	10.2			5.36			6.30					
CADMIUM	0.23	J	E	0.0532	J	E	0.0845	J	E			
CHROMIUM	60.6			31.5			37.0					
COPPER	10.5	J	D	2.54	J	D	3.01	J	D			
IRON	18435	J	D	11176	J	D	14785	J	D			
LEAD	38.4	J	E	16.2	J	E	18.4	J	E			
MANGANESE	396			266			272					
MERCURY	0.10			0.0798	U		0.0839	U				
NICKEL	17.2	J	DE	11.5	J	DE	20.8	J	DE			
SILVER	2.78			1.69			2.03					
ZINC	40.6	J	DGE	17.1	U	A	24.0	U	A			

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 27, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – SELECT METALS**
CTO 201 - PORTSMOUTH NSY
SDG – SD148

SAMPLES: 15/Sediments/

OU4-FD-001-000A	OU4-FD-003-000A
OU4-FD-005-000A	OU4-FD-006-000A
OU4-SD-M09-100A	OU4-SD-M11-300A
OU4-SD-M12-100A	OU4-SD-M12-200A
OU4-SD-M12-300A	OU4-SD-R01-200A
OU4-SD-R01-300A	OU4-SD-R02-200A
OU4-SD-R03-400A	OU4-SD-R03-400A
OU4-SD-R04-400A	

Overview

The sample set for CTO 201, Portsmouth, SDG SD148, consists of fifteen (15) sediment samples.

The samples were analyzed for select metals namely aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver and zinc. The samples were collected by Tetra Tech NUS on August 28-30, 2000 and analyzed by Geochemical &Environmental Research Group. Metals analyses were conducted using GERG SOPs 9409 and 8208.

Arsenic, cadmium, lead and silver analyses were conducted using Graphite Furnace Atomic Absorption (GFAA) instrumentation. Mercury analyses were conducted using Cold Vapor Atomic Absorption (CVAA) instrumentation. The remaining metals were analyses using Inductively Coupled Plasma (ICP) instrumentation.

The data was evaluated based on the following parameters:

- Data Completeness
- Holding Times
- Calibration Verifications
- Laboratory Blank Analyses
- Blank Spike Results
- Standard Reference Material Results
- Matrix Spike Results
- Laboratory Duplicate Results
- Field Duplicate Results
- Detection Limits

* • Sample Quantitation

* - All quality control criteria were met for this parameter.

Calibration Verifications

A Continuing Calibration Verification (CCV) Percent Recovery (%R) for zinc was >110% quality control limit. The positive results reported for zinc were qualified as estimated, "J".

A CCV %R for iron was <90% quality control limit. The positive results reported for iron were qualified as estimated, "J".

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Affected samples: all

Analyte	Maximum Concentration	Action Level
Aluminum	0.047601 µg/ml	23.802 µg/g
Arsenic	0.000176 µg/ml	0.088 µg/g
Cadmium	0.0000002 µg/ml	0.0001 µg/g
Chromium[1]	2.1751 µg/g	10.8755 µg/g
Copper	0.002138 µg/ml	1.069 µg/g
Iron[1]	7.0652 µg/g	35.326 µg/g
Lead	0.002933 µg/ml	1.4665 µg/g
Manganese	0.001504 µg/ml	0.752 µg/g
Mercury	0.000013 µg/ml	0.013 µg/g
Nickel[1]	2.9081 µg/g	14.5405 µg/g
Silver	0.003486 µg/ml	1.743 µg/g
Zinc	0.004769 µg/ml	2.3845 µg/g

[1] Maximum concentration present in a preparation blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken in to consideration when evaluating for blank contamination. Positive results less than the blank action levels for nickel and silver were qualified, "U", as a result of blank contamination. No validation action was taken for the remaining analytes as all results were either greater than the blank action levels or nondetected.

The following table summarizes the sample preparations which were used for the sediment samples. The preparation information is needed to establish the blank action levels.

Parameter	Amount of Sample	Final Volume
ICP Metals	0.2 g	20 ml
Mercury	0.2 g	40 ml

Matrix Spike Results

A Matrix Spike (MS) %R for nickel was <75% quality control limit. All results reported for nickel were positive. The positive results reported for nickel were qualified as estimated, "J".

Blank Spike Results

The Blank Spike %Rs for cadmium and lead were <80% quality control limit. The positive results reported for cadmium and lead were qualified as estimated, "J".

Field Duplicate Results

Field duplicate imprecision [Relative Percent Difference (RPD) >50%] was noted for nickel in field duplicate pair OU4-SD-M08-100A / OU4-FD-003-000A. The positive results reported for nickel were qualified as estimated, "J".

Field duplicate imprecision (RPD >50%) was noted for zinc in field duplicate pair OU4-SD-M10-100A / OU4-FD-005-000A. The positive results reported for zinc were qualified as estimated, "J".

Field duplicate imprecision (RPD >50%) was noted for copper, nickel and zinc in field duplicate pair OU4-DS-M12-200A / OU4-FD-006-000A. The positive results reported for copper, nickel and zinc were qualified as estimated, "J".

Notes

The laboratory reported positive results less than the IDL with a qualification of estimated, "J". The data reviewer corrected the Electronic Deliverable Data (EDD) by replacing estimated results less than the IDL with a nondetected result.

Typical holding times did not apply because the samples were frozen until preparation.

The samples analyzed for total metals samples were reported on a dry weight basis because the samples were freeze dried. Therefore, percent solids were not used to calculate sample results and were not taken into consideration in establishing and evaluating blank contamination action levels.

The laboratory did not report field duplicate samples in the same SDGs as the original samples. The following field duplicates affected this SDG:

OU4-SD-M01-300A / **OU4-FD-001-000A**	SDG SD146
OU4-SD-M08-100A / **OU4-FD-003-000A**	SDG SD146
OU4-SD-M10-100A / **OU4-FD-005-000A**	SDG SD147
OU4-SD-M12-200A / OU4-FD-006-000A	

The **bolded** samples are in this SDG. The SDGs of the other samples are listed to the right of the field duplicate pairs.

A field duplicate comparison is included in Appendix C. To remain consistent with validation procedures used when validating data from the previous rounds, qualifications were assigned based on field duplicate imprecision.

The Standard Reference Material (SRM) %R for silver was >120% quality control limit. However, no validation action was taken based on SRM results because a blank spike was analyzed.

Executive Summary

Laboratory Performance: Iron and zinc were qualified due to calibration noncompliances. Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Nickel was qualified due to a MS noncompliance. Cadmium and lead were qualified due to blank spike noncompliances. Copper, nickel and zinc were qualified due to field duplicate imprecision.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD148

SAMPLE NUMBER:	OU4-FD-001-000A			OU4-FD-003-000A			OU4-FD-005-000A			OU4-FD-006-000A		
SAMPLE DATE:	08/28/00			08/28/00			08/29/00			08/29/00		
LABORATORY ID:	C36780			C36785			C36790			C36853		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	53.1 %			68.7 %			66.5 %			56.1 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	OU4-SD-M01-300A			OU4-SD-M08-100A			OU4-SD-M10-100A			OU4-SD-M12-200A-D		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	51496			46339			38397			50651		
ARSENIC	15.6			13.8			8.57			10.8		
CADMIUM	0.31	J	E	0.31	J	E	0.15	J	E	0.33	J	E
CHROMIUM	92.6			132			38.6			100		
COPPER	58.3	J	G	341	J	G	20.6	J	G	254	J	G
IRON	23607	J	C	42097	J	C	14164	J	C	29130	J	C
LEAD	102	J	E	218	J	E	98.6	J	E	204	J	E
MANGANESE	600			422			337			432		
MERCURY	0.26			0.73			0.0898			0.32		
NICKEL	24.4	J	DG	98.0	J	DG	18.3	J	DG	50.0	J	DG
SILVER	3.84			4.19			2.21			3.48		
ZINC	93.0	J	CG	497	J	CG	59.8	J	CG	1164	J	CG

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD148

SAMPLE NUMBER:	OU4-SD-M09-100A			OU4-SD-M11-300A			OU4-SD-M12-100A			OU4-SD-M12-200A		
SAMPLE DATE:	08/30/00			08/30/00			08/29/00			08/29/00		
LABORATORY ID:	C36803			C36808			C36813			C36818		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	89.8 %			87.6 %			54.7 %			54.4 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	45148			34560			47914			44621		
ARSENIC	17.1			17.9			14.9			10.7		
CADMIUM	0.43	J	E	0.87	J	E	0.59	J	E	0.27	J	E
CHROMIUM	115			104			125			77.5		
COPPER	413	J	G	1479	J	G	375	J	G	128	J	G
IRON	43601	J	C	45637	J	C	30833	J	C	17959	J	C
LEAD	87.7	J	E	1265	J	E	330	J	E	142	J	E
MANGANESE	592			843			442			328		
MERCURY	0.12			1.14			0.64			0.29		
NICKEL	72.3	J	DG	56.2	J	DG	72.8	J	DG	28.1	J	DG
SILVER	3.93			7.02			3.88			3.21		
ZINC	106	J	CG	524	J	CG	1497	J	CG	399	J	CG

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD148

SAMPLE NUMBER:	OU4-SD-M12-300A			OU4-SD-R01-200A			OU4-SD-R01-300A			OU4-SD-R02-200A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36823			C36828			C36833			C36838		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	51.1 %			73.0 %			75.3 %			74.4 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	51367			36205			38101			49863		
ARSENIC	18.6			4.72			6.47			11.8		
CADMIUM	0.57	J	E	0.0689	J	E	0.0954	J	E	0.33	J	E
CHROMIUM	93.2			19.3			28.8			51.6		
COPPER	76.5	J	G	3.41	J	G	6.75	J	G	29.2	J	G
IRON	23639	J	C	8866	J	C	11209	J	C	21926	J	C
LEAD	201	J	E	21.0	J	E	47.0	J	E	88.6	J	E
MANGANESE	370			438			336			380		
MERCURY	0.48			0.0862	U		0.0669	U		0.23		
NICKEL	28.4	J	DG	4.73	U	A	8.50	U	A	17.3	J	DG
SILVER	3.85			2.17			2.34			3.15		
ZINC	189	J	CG	13.4	J	CG	21.8	J	CG	70.7	J	CG

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SD148

SAMPLE NUMBER:	OU4-SD-R02-300A			OU4-SD-R03-400A			OU4-SD-R04-400A					
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			/ /		
LABORATORY ID:	C36843			C36848			C36775					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	57.2 %			67.6 %			72.0 %			100.0 %		
UNITS:	UG/G			UG/G			UG/G					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	46164			44345			35399					
ARSENIC	9.40			10.3			3.32					
CADMIUM	0.26	J	E	0.24	J	E	0.0841	J	E			
CHROMIUM	64.0			62.4			25.3					
COPPER	12.8	J	G	12.5	J	G	2.10	J	G			
IRON	18220	J	C	18770	J	C	7086	J	C			
LEAD	45.2	J	E	42.2	J	E	16.1	J	E			
MANGANESE	401			463			277					
MERCURY	0.40			0.14			0.0946	U				
NICKEL	14.9	J	DG	16.4	J	DG	9.17	U	A			
SILVER	3.15			3.23			1.54	U	A			
ZINC	34.6	J	CG	34.6	J	CG	14.7	J	CG			

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 16, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **MISCELLANEOUS DATA VALIDATION – GRAIN SIZE**
CTO 201 - PORTSMOUTH NSY
SDG – GRSIZR3

SAMPLES: 62/Sediments/

OU4-FD-001-000A	OU4-FD-002-000A
OU4-FD-003-000A	OU4-FD-004-000A
OU4-FD-005-000A	OU4-FD-006-000A
OU4-SD-M01-100A	OU4-SD-M01-200A
OU4-SD-M01-300A	OU4-SD-M02-100A
OU4-SD-M02-200A	OU4-SD-M02-300A
OU4-SD-M03-100A	OU4-SD-M03-200A
OU4-SD-M03-300A	OU4-SD-M04-100A
OU4-SD-M04-200A	OU4-SD-M04-300A
OU4-SD-M05-100A	OU4-SD-M05-200A
OU4-SD-M05-300A	OU4-SD-M06-100A
OU4-SD-M06-200A	OU4-SD-M06-300A
OU4-SD-M07-100A	OU4-SD-M07-200A
OU4-SD-M07-300A	OU4-SD-M08-100A
OU4-SD-M08-200A	OU4-SD-M08-300A
OU4-SD-M09-100A	OU4-SD-M09-200A
OU4-SD-M09-300A	OU4-SD-M10-100A
OU4-SD-M10-200A	OU4-SD-M10-300A
OU4-SD-M11-300A	OU4-SD-M12-100A
OU4-SD-M12-200A	OU4-SD-M12-300A
OU4-SD-M13-100A	OU4-SD-M13-200A
OU4-SD-M13-300A	OU4-SD-M14-100A
OU4-SD-M14-200A	OU4-SD-M14-300A
OU4-SD-R01-100A	OU4-SD-R01-200A
OU4-SD-R01-300A	OU4-SD-R01-400A
OU4-SD-R02-100A	OU4-SD-R02-200A
OU4-SD-R02-300A	OU4-SD-R02-400A
OU4-SD-R03-100A	OU4-SD-R03-200A
OU4-SD-R03-300A	OU4-SD-R03-400A
OU4-SD-R04-100A	OU4-SD-R04-200A
OU4-SD-R04-300A	OU4-SD-R04-400A

Overview

The sample set for CTO 201, Portsmouth, SDG TOCR3, consists of sixty-two (62) sediment environmental samples. Six (6) field duplicate pairs were included within this SDG:

OU4-FD-001-000A / OU4-SD-M01-300A

OU4-FD-002-000A / OU4-SD-M05-100A
OU4-FD-003-000A / OU4-SD-M08-100A
OU4-FD-004-000A / OU4-SD-M09-300A
OU4-FD-005-000A / OU4-SD-M10-100A
OU4-FD-006-000A / OU4-SD-M12-200A

All samples were analyzed for grain size. The samples were collected by Tetra Tech NUS on August 27-30, 2000 and analyzed by Geochemical &Environmental Research Group under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria.

The data was evaluated based on the following parameters:

- Data Completeness
- Holding Times
- Laboratory Duplicate Results
- Field Duplicate Results

- All quality control criteria were met for this parameter.

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: None.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-FD-001-000A	OU4-FD-002-000A	OU4-FD-003-000A	OU4-FD-004-000A
SAMPLE DATE:	08/28/00	08/27/00	08/28/00	08/27/00
LABORATORY ID:	C36781	C36612	C36786	C36617
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	100.0 %	100.0 %	100.0 %	100.0 %
FIELD DUPLICATE OF:	OU4-SD-M01-300A	OU4-SD-M05-100A	OU4-SD-M08-100A	OU4-SD-M09-300A

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	17.2			30.6			8.8			32.1		
% SAND(%)	51.4			18.5			79.4			11.5		
% SILT(%)	31.4			50.9			11.8			56.4		

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-FD-005-000A	OU4-FD-006-000A	OU4-SD-M01-100A	OU4-SD-M01-200A
SAMPLE DATE:	08/29/00	08/29/00	08/28/00	08/28/00
LABORATORY ID:	C36791	C36854	C36646	C36651
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	100.0 %	100.0 %	100.0 %	100.0 %
FIELD DUPLICATE OF:	OU4-SD-M10-100A	OU4-SD-M12-200A-		

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	2.5			8			11.1			0.3		
% SAND(%)	97.1			71.5			80.8			97.4		
% SILT(%)	0.4			20.5			8.2			2.4		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-M01-300A			OU4-SD-M02-100A			OU4-SD-M02-200A			OU4-SD-M02-300A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36656			C36661			C36666			C36671		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	17.6			21.7			5.4			17.9		
% SAND(%)	60.4			53.1			86.9			30		
% SILT(%)	22			25.2			7.7			52.1		

CTO2\ ,'ORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-M03-100A			OU4-SD-M03-200A			OU4-SD-M03-300A			OU4-SD-M04-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36517			C36522			C36527			C36532		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	47.9			9.3			13.3			1.8		
% SAND(%)	29.4			77.6			63.9			96		
% SILT(%)	22.8			13.1			22.7			2.2		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-M04-200A			OU4-SD-M04-300A			OU4-SD-M05-100A			OU4-SD-M05-200A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36537			C36542			C36547			C36552		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	15.4			2.7			30.9			31		
% SAND(%)	51.6			92.4			19.1			29.3		
% SILT(%)	33			4.9			50			39.7		

CTO2(PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-M05-300A			OU4-SD-M06-100A			OU4-SD-M06-200A			OU4-SD-M06-300A		
SAMPLE DATE:	08/27/00			08/29/00			08/27/00			08/27/00		
LABORATORY ID:	C36557			C36676			C36562			C36567		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	15.7			4.1			28.7			3.4		
% SAND(%)	76.2			86.3			29.5			81.6		
% SILT(%)	8.1			9.7			41.8			15		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-M07-100A	OU4-SD-M07-200A	OU4-SD-M07-300A	OU4-SD-M08-100A
SAMPLE DATE:	08/28/00	08/27/00	08/27/00	08/28/00
LABORATORY ID:	C36681	C36572	C36577	C36686
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	100.0 %	100.0 %	100.0 %	100.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	5.4			18.6			17			5.4		
% SAND(%)	80.4			34.3			45			81		
% SILT(%)	14.2			47.1			38			13.6		

SAMPLE NUMBER:	OU4-SD-M08-200A			OU4-SD-M08-300A			OU4-SD-M09-100A			OU4-SD-M09-200A		
SAMPLE DATE:	08/27/00			08/28/00			08/30/00			08/29/00		
LABORATORY ID:	C36582			C36691			C36804			C36696		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	11.5			0			0.6			8.2		
% SAND(%)	49.7			99.7			98.1			76.9		
% SILT(%)	38.8			0.3			1.2			14.8		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-M09-300A	OU4-SD-M10-100A	OU4-SD-M10-200A	OU4-SD-M10-300A
SAMPLE DATE:	08/27/00	08/29/00	08/29/00	08/29/00
LABORATORY ID:	C36587	C36701	C36706	C36711
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	100.0 %	100.0 %	100.0 %	100.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	25.9			1.2			8.8			24.5		
% SAND(%)	16.4			97.7			79.8			28.7		
% SILT(%)	57.8			1.2			11.5			46.8		

SAMPLE NUMBER:	OU4-SD-M11-300A			OU4-SD-M12-100A			OU4-SD-M12-200A			OU4-SD-M12-300A		
SAMPLE DATE:	08/30/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36809			C36814			C36819			C36824		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	2.3			13.3			10.5			20.7		
% SAND(%)	96.4			55.8			72.6			46.3		
% SILT(%)	1.3			30.9			16.9			33.1		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-M13-100A	OU4-SD-M13-200A	OU4-SD-M13-300A	OU4-SD-M14-100A
SAMPLE DATE:	08/28/00	08/28/00	08/28/00	08/28/00
LABORATORY ID:	C36716	C36721	C36726	C36731
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	100.0 %	100.0 %	100.0 %	100.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	34.6			31.9			34.7			15		
% SAND(%)	19.8			31.9			29			32.7		
% SILT(%)	45.6			36.2			36.3			52.4		

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-M14-200A	OU4-SD-M14-300A	OU4-SD-R01-100A	OU4-SD-R01-200A
SAMPLE DATE:	08/28/00	08/28/00	08/27/00	08/29/00
LABORATORY ID:	C36736	C36741	C36592	C36829
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	100.0 %	100.0 %	100.0 %	100.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	12.3			22.4			2.6			2.5		
% SAND(%)	64.3			39.1			23.6			94.7		
% SILT(%)	23.4			38.5			73.8			2.8		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-R01-300A	OU4-SD-R01-400A	OU4-SD-R02-100A	OU4-SD-R02-200A
SAMPLE DATE:	08/29/00	08/27/00	08/29/00	08/29/00
LABORATORY ID:	C36834	C36597	C36746	C36839
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	100.0 %	100.0 %	100.0 %	100.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	2.4			5.3			1.7			5.2		
% SAND(%)	96.9			86			95.3			92.2		
% SILT(%)	0.6			8.7			3			2.6		

CTO2(PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-R02-300A			OU4-SD-R02-400A			OU4-SD-R03-100A			OU4-SD-R03-200A		
SAMPLE DATE:	08/29/00			08/29/00			08/27/00			08/29/00		
LABORATORY ID:	C36844			C36751			C36602			C36756		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	17.2			22.7			49			12.1		
% SAND(%)	67.9			32.6			26.5			67.1		
% SILT(%)	14.9			44.7			24.5			20.8		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-R03-300A	OU4-SD-R03-400A	OU4-SD-R04-100A	OU4-SD-R04-200A
SAMPLE DATE:	08/29/00	08/29/00	08/27/00	08/29/00
LABORATORY ID:	C36761	C36849	C36607	C36766
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	100.0 %	100.0 %	100.0 %	100.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	9.9			10.7			12.2			2		
% SAND(%)	71.2			74.8			73.4			96.8		
% SILT(%)	18.9			14.5			14.4			1.2		

CTO2(,PORTSMOUTH
SOIL DATA
GERG
SDG: GRSIZR3

SAMPLE NUMBER:	OU4-SD-R04-300A			OU4-SD-R04-400A			/ /			/ /		
SAMPLE DATE:	08/29/00			08/29/00								
LABORATORY ID:	C36771			C36776								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
% CLAY(%)	3.3			3.5								
% SAND(%)	95.3			96								
% SILT(%)	1.4			0.5								

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 16, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	• **DV FILE**

SUBJECT: **MISCELLANEOUS DATA VALIDATION – TOC**
CTO 201 - PORTSMOUTH NSY
SDG – TOCR3

SAMPLES: 62/Sediments/

OU4-FD-001-000A	OU4-FD-002-000A
OU4-FD-003-000A	OU4-FD-004-000A
OU4-FD-005-000A	OU4-FD-006-000A
OU4-SD-M01-100A	OU4-SD-M01-200A
OU4-SD-M01-300A	OU4-SD-M02-100A
OU4-SD-M02-200A	OU4-SD-M02-300A
OU4-SD-M03-100A	OU4-SD-M03-200A
OU4-SD-M03-300A	OU4-SD-M04-100A
OU4-SD-M04-200A	OU4-SD-M04-300A
OU4-SD-M05-100A	OU4-SD-M05-200A
OU4-SD-M05-300A	OU4-SD-M06-100A
OU4-SD-M06-200A	OU4-SD-M06-300A
OU4-SD-M07-100A	OU4-SD-M07-200A
OU4-SD-M07-300A	OU4-SD-M08-100A
OU4-SD-M08-200A	OU4-SD-M08-300A
OU4-SD-M09-100A	OU4-SD-M09-200A
OU4-SD-M09-300A	OU4-SD-M10-100A
OU4-SD-M10-200A	OU4-SD-M10-300A
OU4-SD-M11-300A	OU4-SD-M12-100A
OU4-SD-M12-200A	OU4-SD-M12-300A
OU4-SD-M13-100A	OU4-SD-M13-200A
OU4-SD-M13-300A	OU4-SD-M14-100A
OU4-SD-M14-200A	OU4-SD-M14-300A
OU4-SD-R01-100A	OU4-SD-R01-200A
OU4-SD-R01-300A	OU4-SD-R01-400A
OU4-SD-R02-100A	OU4-SD-R02-200A
OU4-SD-R02-300A	OU4-SD-R02-400A
OU4-SD-R03-100A	OU4-SD-R03-200A
OU4-SD-R03-300A	OU4-SD-R03-400A
OU4-SD-R04-100A	OU4-SD-R04-200A
OU4-SD-R04-300A	OU4-SD-R04-400A

Overview

The sample set for CTO 201, Portsmouth, SDG TOCR3, consists of sixty-two (62) sediment environmental samples. Six (6) field duplicate pairs were included within this SDG:

OU4-FD-001-000A / OU4-SD-M01-300A

OU4-FD-002-000A / OU4-SD-M05-100A
OU4-FD-003-000A / OU4-SD-M08-100A
OU4-FD-004-000A / OU4-SD-M09-300A
OU4-FD-005-000A / OU4-SD-M10-100A
OU4-FD-006-000A / OU4-SD-M12-200A

All samples were analyzed for total organic carbon (TOC). The samples were collected by Tetra Tech NUS on August 27-30, 2000 and analyzed by Geochemical &Environmental Research Group under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. TOC analyses were conducted using the following SOPs: ST14 and 9730.

The data was evaluated based on the following parameters:

- Data Completeness
- Holding Times
- Laboratory Blanks
- SRM Recoveries
- Laboratory Duplicate Results
- Field Duplicate Results

- All quality control criteria were met for this parameter.

Holding Time

The 28 day holding time for TOC was exceeded by 23-32 days affecting all samples. All positive results reported for TOC were qualified as estimated, "J".

Other Factors Affecting Data Quality

The Percent Solids in sample OU4-SD-R03-100 was <30%. The positive result reported for TOC in the affected sample was qualified, "J".

Executive Summary

Laboratory Performance: The holding time for TOC was exceeded.

Other Factors Affecting Data Quality: Sample OU4-SD-R03-100 was qualified due to a percent solids of <30%.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

CTO2C PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-FD-001-000A			OU4-FD-002-000A			OU4-FD-003-000A			OU4-FD-004-000A		
SAMPLE DATE:	08/28/00			08/27/00			08/28/00			08/27/00		
LABORATORY ID:	C36779			C36610			C36784			C36615		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	53.1 %			39.8 %			68.7 %			36.7 %		
FIELD DUPLICATE OF:	OU4-SD-M01-300A			OU4-SD-M05-100A			OU4-SD-M08-100A			OU4-SD-M09-300A		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	1.93	J	H	2.47	J	H	0.87	J	H	2.67	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-FD-005-000A	OU4-FD-006-000A	OU4-SD-M01-100A	OU4-SD-M01-200A
SAMPLE DATE:	08/29/00	08/29/00	08/28/00	08/28/00
LABORATORY ID:	C36789	C36852	C36644	C36649
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	66.5 %	56.1 %	64.2 %	80.8 %
FIELD DUPLICATE OF:	OU4-SD-M10-100A	OU4-SD-M12-200A-		

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	0.91	J	H	1.22	J	H	1.13	J	H	0.58	J	H

CTO2(PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-SD-M01-300A			OU4-SD-M02-100A			OU4-SD-M02-200A			OU4-SD-M02-300A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36654			C36659			C36664			C36669		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	54.2 %			68.1 %			73.1 %			35.2 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	1.52	J	H	0.41	J	H	2.72	J	H	3.99	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-SD-M03-100A	OU4-SD-M03-200A	OU4-SD-M03-300A	OU4-SD-M04-100A
SAMPLE DATE:	08/27/00	08/27/00	08/27/00	08/27/00
LABORATORY ID:	C36515	C36520	C36525	C36530
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	41.2 %	75.2 %	56.8 %	72.3 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	2.5	J	H	0.64	J	H	1.31	J	H	1.84	J	H

SAMPLE NUMBER:	OU4-SD-M04-200A			OU4-SD-M04-300A			OU4-SD-M05-100A			OU4-SD-M05-200A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36535			C36540			C36545			C36550		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	46.8 %			78.9 %			39.5 %			37.8 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	1.83	J	H	0.62	J	H	2.57	J	H	2.59	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-SD-M05-300A			OU4-SD-M06-100A			OU4-SD-M06-200A			OU4-SD-M06-300A		
SAMPLE DATE:	08/27/00			08/29/00			08/27/00			08/27/00		
LABORATORY ID:	C36555			C36674			C36560			C36565		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	70.8 %			74.8 %			37.1 %			72.4 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	0.57	J	H	0.53	J	H	2.27	J	H	0.36	J	H

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-SD-M07-100A			OU4-SD-M07-200A			OU4-SD-M07-300A			OU4-SD-M08-100A		
SAMPLE DATE:	08/28/00			08/27/00			08/27/00			08/28/00		
LABORATORY ID:	C36679			C36570			C36575			C36684		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	69.9 %			44.1 %			47.4 %			69.8 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	0.77	J	H	2.09	J	H	1.67	J	H	0.88	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-SD-M08-200A			OU4-SD-M08-300A			OU4-SD-M09-100A			OU4-SD-M09-200A		
SAMPLE DATE:	08/27/00			08/28/00			08/30/00			08/29/00		
LABORATORY ID:	C36580			C36689			C36802			C36694		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	49.1 %			94.8 %			89.8 %			62.8 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	2.01	J	H	0.2	J	H	1.03	J	H	1.48	J	H

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-SD-M09-300A			OU4-SD-M10-100A			OU4-SD-M10-200A			OU4-SD-M10-300A		
SAMPLE DATE:	08/27/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36585			C36699			C36704			C36709		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	36.6 %			71.0 %			59.9 %			41.4 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	2.9	J	H	0.61	J	H	0.87	J	H	1.92	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-SD-M11-300A			OU4-SD-M12-100A			OU4-SD-M12-200A			OU4-SD-M12-300A		
SAMPLE DATE:	08/30/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36807			C36812			C36817			C36822		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	87.6 %			54.7 %			54.4 %			51.1 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	0.26	J	H	1.38	J	H	1.17	J	H	1.42	J	H

SAMPLE NUMBER:	OU4-SD-M13-100A			OU4-SD-M13-200A			OU4-SD-M13-300A			OU4-SD-M14-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36714			C36719			C36724			C36729		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	34.4 %			39.3 %			33.1 %			42.6 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	2.18	J	H	1.73	J	H	2.13	J	H	4.64	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-SD-M14-200A			OU4-SD-M14-300A			OU4-SD-R01-100A			OU4-SD-R01-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/27/00			08/29/00		
LABORATORY ID:	C36734			C36739			C36590			C36827		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	54.9 %			42.1 %			33.9 %			73.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	1.61	J	H	2.1	J	H	3.24	J	H	0.22	J	H

SAMPLE NUMBER:	OU4-SD-R01-300A			OU4-SD-R01-400A			OU4-SD-R02-100A			OU4-SD-R02-200A		
SAMPLE DATE:	08/29/00			08/27/00			08/29/00			08/29/00		
LABORATORY ID:	C36832			C36595			C36744			C36837		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	75.3 %			74.0 %			75.2 %			74.4 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	0.2	J	H	0.64	J	H	0.88	J	H	0.48	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-SD-R02-300A			OU4-SD-R02-400A			OU4-SD-R03-100A			OU4-SD-R03-200A		
SAMPLE DATE:	08/29/00			08/29/00			08/27/00			08/29/00		
LABORATORY ID:	C36842			C36749			C36600			C36754		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	57.2 %			53.7 %			28.5 %			56.1 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	1.54	J	H	2	J	H	5.69	J	HY	1.17	J	H

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-SD-R03-300A	OU4-SD-R03-400A	OU4-SD-R04-100A	OU4-SD-R04-200A
SAMPLE DATE:	08/29/00	08/29/00	08/27/00	08/29/00
LABORATORY ID:	C36759	C36847	C36605	C36764
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	63.5 %	67.6 %	65.8 %	78.3 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	0.99	J	H	0.84	J	H	1.82	J	H	0.21	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: TOCR3

SAMPLE NUMBER:	OU4-SD-R04-300A	OU4-SD-R04-400A		
SAMPLE DATE:	08/29/00	08/29/00	/ /	/ /
LABORATORY ID:	C36769	C36774		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	79.6 %	72.0 %	100.0 %	100.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
TOTAL ORGANIC CARBON(%)	0.19	J	H	0.15	J	H						

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**DECEMBER 1, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION –SEM METALS**
CTO 201 - PORTSMOUTH NSY
SDG – SEMR3

SAMPLES: 62/Sediments

OU4-FD-001-000A	OU4-FD-002-000A
OU4-FD-003-000A	OU4-FD-004-000A
OU4-FD-005-000A	OU4-FD-005-000A
OU4-SD-M01-100A	OU4-SD-M01-200A
OU4-SD-M01-300A	OU4-SD-M02-100A
OU4-SD-M02-200A	OU4-SD-M02-300A
OU4-SD-M03-100A	OU4-SD-M03-200A
OU4-SD-M03-400A	OU4-SD-M04-100A
OU4-SD-M04-200A	OU4-SD-M04-300A
OU4-SD-M05-100A	OU4-SD-M05-200A
OU4-SD-M05-300A	OU4-SD-M06-100A
OU4-SD-M06-200A	OU4-SD-M06-300A
OU4-SD-M07-100A	OU4-SD-M02-200A
OU4-SD-M07-300A	OU4-SD-M08-100A
OU4-SD-M08-200A	OU4-SD-M08-300A
OU4-SD-M09-100A	OU4-SD-M09-200A
OU4-SD-M09-300A	OU4-SD-M10-100A
OU4-SD-M10-200A	OU4-SD-M10-300A
OU4-SD-M11-300A	OU4-SD-M12-100A
OU4-SD-M12-200A	OU4-SD-M12-300A
OU4-SD-M13-100A	OU4-SD-M13-200A
OU4-SD-M13-300A	OU4-SD-M14-100A
OU4-SD-M14-200A	OU4-SD-M14-300A
OU4-SD-R01-100A	OU4-SD-R01-200A
OU4-SD-R01-300A	OU4-SD-R01-400A
OU4-SD-R02-100A	OU4-SD-R02-200A
OU4-SD-R02-300A	OU4-SD-R02-400A
OU4-SD-R03-100A	OU4-SD-R03-200A
OU4-SD-R03-300A	OU4-SD-R03-400A
OU4-SD-R04-100A	OU4-SD-R04-200A
OU4-SD-R04-300A	OU4-SD-R04-400A

Overview

The sample set for CTO 201, Portsmouth, SDG SEMR3, consists of sixty-two (62) sediment environmental samples. Six (6) field duplicate were included within this SDG:

OU4-SD-M01-300A / OU-FD-001-000A
OU4-SD-M05-100A / OU-FD-002-000A
OU4-SD-M08-100A / OU-FD-003-000A
OU4-SD-M09-300A / OU-FD-004-000A
OU4-SD-M10-100A / OU-FD-005-000A
OU4-SD-M12-200A / OU-FD-006-000A

All samples were analyzed for simultaneously extracted metals (SEM) namely cadmium, copper, lead, nickel and zinc. The samples were collected by Tetra Tech NUS on August 27-30, 2000 and analyzed by Geochemical &Environmental Research Group (GERG). SEM analyses were conducted using GERG SOP 9802.

The data was evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
• Calibration Verifications
• Laboratory Blank Analyses
• Blank Spike Results
• Matrix Spike Results
• Field Duplicate Results
* • Detection Limits
* • Sample Quantitation

• - All quality control criteria were met for this parameter.

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Affected samples: all

Analyte	Maximum Concentration	Action Level
Cadmium	0.001 µg/ml	0.1 µg/g
Copper	0.0019 µg/ml	0.19 µg/g
Lead	0.0096 µg/ml	0.96 µg/g
Nickel	0.0035 µg/ml	0.35 µg/g
Zinc[1]	4.95 µg/g	24.75 µg/g

[1] Maximum concentration present in a method blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken in to consideration when evaluating for blank contamination. Positive results < the action level cadmium, copper, nickel and zinc were qualified as, "U", as a result of blank contamination. No action was taken for the remaining analytes since all results were either nondetected or greater than the action level.

The following table summarizes the sample preparations which were used for the SEM analyses. The preparation information is needed to establish the blank action levels.

Amount of Sample	Final Volume
5 g	100 ml

Matrix Spike Results

The Matrix Spike (MS) Percent Recoveries (%Rs) for copper and lead were <10% quality control limit. The nondetected results reported for copper were qualified as rejected, "UR". The positive results reported for copper and lead were qualified as estimated, "J".

The MS %Rs for nickel and zinc were both above and below the 75-125% quality control limit. The positive results reported for nickel and zinc were qualified as estimated, "J".

Blank Spike Results

The Blank Spike %Rs for copper was <80% quality control limit. The positive results reported for copper were qualified as estimated, "J".

Field Duplicate Results

Field duplicate imprecision [Relative Percent Difference (RPD) >50%] was noted for cadmium, copper, lead and zinc. The positive results reported for cadmium, copper, lead and zinc were qualified as estimated, "J".

Notes

The laboratory reported positive results less than the IDL with a qualification of estimated, "J". The data reviewer corrected the Electronic Deliverable Data (EDD) by replacing estimated results less than the IDL with a nondetected result.

Typical holding times did not apply because the samples were frozen until preparation.

The samples analyzed for total metals samples were reported on a dry weight basis because the samples were freeze dried. Therefore, percent solids were not used to calculate sample results and were not taken into consideration in establishing and evaluating blank contamination action levels.

A field duplicate comparison is included in Appendix C.

All recoveries for continuing calibration verification (CCV) 985 were O% due to no sample intake. No validation action was taken.

Executive Summary

Laboratory Performance: Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Copper, lead, nickel and zinc were qualified due to a MS noncompliance. Copper was qualified due to blank spike noncompliances. Cadmium, copper, lead and zinc were qualified for field duplicate imprecision.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A. Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO2(PORTSMOUTH
SOIL DATA
GERG
SDG: SEMR3

SAMPLE NUMBER:	OU4-FD-001-000A	OU4-FD-002-000A	OU4-FD-003-000A	OU4-FD-004-000A
SAMPLE DATE:	08/28/00	08/27/00	08/28/00	08/27/00
LABORATORY ID:	C36782	C36613	C36787	C36618
QC_TYPE:	NM	NM	NM	NM
% SOLIDS:	33.9 %	33.9 %	33.9 %	33.9 %
UNITS:	UG/G	UG/G	UG/G	UG/G
FIELD DUPLICATE OF:	SOIL DATA	SOIL DATA	SOIL DATA	SOIL DATA

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.0901	U		0.23	J	G	0.0830	U		0.40	J	G
COPPER	6.06	J	DEG	23.6	J	DEG	55.89	J	DEG	29.58	J	DEG
LEAD	40.56	J	DG	89.75	J	DG	68.6	J	DG	68.47	J	DG
NICKEL	2.19	J	D	6.31	J	D	18.12	J	D	7.31	J	D
ZINC	30.42	J	DG	89.77	J	DG	323.48	J	DG	97.38	J	DG

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SEMR3

SAMPLE NUMBER:	OU4-FD-005-000A			OU4-FD-006-000A			OU4-SD-M01-100A			OU4-SD-M01-200A		
SAMPLE DATE:	08/29/00			08/29/00			08/28/00			08/28/00		
LABORATORY ID:	C36792			C36855			C36647			C36652		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.0718	U		0.0840	U		0.1435	U		0.1005	U	
COPPER	3.28	J	DEG	13.96	J	DEG	19.16	J	DEG	9.25	J	DEG
LEAD	12.95	J	DG	67.45	J	DG	56.62	J	DG	76.12	J	DG
NICKEL	2.27	J	D	11.8	J	D	3.65	J	D	2.21	J	D
ZINC	22.75	U	A	348.76	J	DG	58.08	J	DG	27.74	J	DG

SAMPLE NUMBER:	OU4-SD-M01-300A			OU4-SD-M02-100A			OU4-SD-M02-200A			OU4-SD-M02-300A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36657			C36662			C36667			C36672		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.1651	U		0.1182	U		0.1188	U		0.38	J	G
COPPER	18.32	J	DEG	14.09	J	DEG	13.81	J	DEG	10.5	J	DEG
LEAD	105.88	J	DG	16.72	J	DG	66.45	J	DG	82.21	J	DG
NICKEL	5.18	J	D	6.26	J	D	3.66	J	D	14.56	J	D
ZINC	61.84	J	DG	29.76	J	DG	42.85	J	DG	76.26	J	DG

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SEMR3

SAMPLE NUMBER:	OU4-SD-M03-100A			OU4-SD-M03-200A			OU4-SD-M03-300A			OU4-SD-M04-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36518			C36523			C36528			C36533		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.25	J	G	0.12	J	G	0.1368	U		0.1069	U	
COPPER	1.27	J	DEG	468.49	J	DEG	0.0889	UR	D	9282.11	J	DEG
LEAD	96.64	J	DG	113.72	J	DG	23.25	J	DG	414.88	J	DG
NICKEL	8.65	J	D	20.05	J	D	2.6	J	D	132.04	J	D
ZINC	141.61	J	DG	375.4	J	DG	46.39	J	DG	906.64	J	DG

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: SEMR3

SAMPLE NUMBER:	OU4-SD-M04-200A			OU4-SD-M04-300A			OU4-SD-M05-100A			OU4-SD-M05-200A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36538			C36543			C36548			C36553		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.1789	U		0.1165	U		0.43	J	G	0.32	J	G
COPPER	10.2	J	DEG	387.97	J	DEG	2.14	J	DEG	9.22	J	DEG
LEAD	30.66	J	DG	78.5	J	DG	77.81	J	DG	39.94	J	DG
NICKEL	3.71	J	D	4.45	J	D	5.71	J	D	5.3	J	D
ZINC	42.67	J	DG	36.43	J	DG	101.63	J	DG	59.23	J	DG

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SEMR3

SAMPLE NUMBER:	OU4-SD-M05-300A			OU4-SD-M06-100A			OU4-SD-M06-200A			OU4-SD-M06-300A		
SAMPLE DATE:	08/27/00			08/29/00			08/27/00			08/27/00		
LABORATORY ID:	C36558			C36677			C36563			C36568		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.2	J	G	0.1156	U		0.38	J	G	0.0914	U	
COPPER	5.6	J	DEG	6.55	J	DEG	8.23	J	DEG	3.23	J	DEG
LEAD	20.13	J	DG	27.93	J	DG	30.72	J	DG	8.76	J	DG
NICKEL	3.59	J	D	2.16	J	D	3.13	J	D	4.55	J	D
ZINC	27.37	J	DG	32.43	J	DG	46.1	J	DG	9.95	U	A

SAMPLE NUMBER:	OU4-SD-M07-100A			OU4-SD-M07-200A			OU4-SD-M07-300A			OU4-SD-M08-100A		
SAMPLE DATE:	08/28/00			08/27/00			08/27/00			08/28/00		
LABORATORY ID:	C36682			C36573			C36578			C36687		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.1296	U		0.39	J	G	0.23	J	G	0.1219	U	
COPPER	8.36	J	DEG	10.74	J	DEG	6.98	J	DEG	145.31	J	DEG
LEAD	19.43	J	DG	38.16	J	DG	27.78	J	DG	126.42	J	DG
NICKEL	3.54	J	D	4	J	D	3.4	J	D	30.81	J	D
ZINC	41.38	J	DG	62.26	J	DG	45.02	J	DG	573.13	J	DG

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SEMR3

SAMPLE NUMBER:	OU4-SD-M08-200A			OU4-SD-M08-300A			OU4-SD-M09-100A			OU4-SD-M09-200A		
SAMPLE DATE:	08/27/00			08/28/00			08/30/00			08/29/00		
LABORATORY ID:	C36583			C36692			C36805			C36697		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.27	J	G	0.0883	U		0.21	J	G	0.1405	U	
COPPER	10.73	J	DEG	214.06	J	DEG	123.28	J	DEG	33.39	J	DEG
LEAD	40.58	J	DG	79.91	J	DG	52.42	J	DG	40.45	J	DG
NICKEL	4.35	J	D	40.32	J	D	9.43	J	D	7.64	J	D
ZINC	86.54	J	DG	445.8	J	DG	53.54	J	DG	75.26	J	DG

SAMPLE NUMBER:	OU4-SD-M09-300A			OU4-SD-M10-100A			OU4-SD-M10-200A			OU4-SD-M10-300A		
SAMPLE DATE:	08/27/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36588			C36702			C36707			C36712		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.52	J	G	0.1134	U		0.1258	U		0.1952	U	
COPPER	25.71	J	DEG	8.49	J	DEG	7.22	J	DEG	16.04	J	DEG
LEAD	67.25	J	DG	23.11	J	DG	41.67	J	DG	89.32	J	DG
NICKEL	7.3	J	D	3.72	J	D	3.24	J	D	6.24	J	D
ZINC	120.04	J	DG	41.69	J	DG	98.93	J	DG	133.88	J	DG

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SEMR3

SAMPLE NUMBER:	OU4-SD-M11-300A			OU4-SD-M12-100A			OU4-SD-M12-200A			OU4-SD-M12-300A		
SAMPLE DATE:	08/30/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36810			C36815			C36820			C36825		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.0934	U		0.12	J	G	0.0876	U		0.12	J	G
COPPER	189.77	J	DEG	51.16	J	DEG	31.41	J	DEG	6	J	DEG
LEAD	136.78	J	DG	89.09	J	DG	67.17	J	DG	48.97	J	DG
NICKEL	15.26	J	D	12.59	J	D	9.94	J	D	2.62	J	D
ZINC	63.07	J	DG	448.44	J	DG	283.35	J	DG	54.07	J	DG

SAMPLE NUMBER:	OU4-SD-M13-100A			OU4-SD-M13-200A			OU4-SD-M13-300A			OU4-SD-M14-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36717			C36722			C36727			C36732		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.2199	U		0.2002	U		0.47	J	G	0.0871	U	
COPPER	3.71	J	DEG	14.64	J	DEG	2.83	J	DEG	6.47	J	DEG
LEAD	34.55	J	DG	39.48	J	DG	50.1	J	DG	26.96	J	DG
NICKEL	6.22	J	D	6.27	J	D	8.63	J	D	1.63	J	D
ZINC	68.16	J	DG	81.65	J	DG	151.42	J	DG	10.27	U	A

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SEMR3

SAMPLE NUMBER:	OU4-SD-M14-200A			OU4-SD-M14-300A			OU4-SD-R01-100A			OU4-SD-R01-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/27/00			08/29/00		
LABORATORY ID:	C36737			C36742			C36593			C36830		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.08	U	A	0.0849	U		0.3314	U		0.0791	U	
COPPER	1.94	J	DEG	1.74	J	DEG	6.11	J	DEG	0.73	J	DEG
LEAD	13.97	J	DG	15.85	J	DG	50.74	J	DG	3.65	J	DG
NICKEL	1.33	J	D	1.64	J	D	5.55	J	D	0.48	J	D
ZINC	23.06	J	DG	32.12	J	DG	62.92	J	DG	6.86	U	A

SAMPLE NUMBER:	OU4-SD-R01-300A			OU4-SD-R01-400A			OU4-SD-R02-100A			OU4-SD-R02-200A		
SAMPLE DATE:	08/29/00			08/27/00			08/29/00			08/29/00		
LABORATORY ID:	C36835			C36598			C36747			C36840		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.0676	U		0.1069	U		0.0724	U		0.0817	U	
COPPER	0.34	J	DEG	2.69	J	DEG	3.74	J	DEG	1.81	J	DEG
LEAD	2.19	J	DG	9.98	J	DG	25.3	J	DG	13.95	J	DG
NICKEL	0.3622	U		1.44	J	D	1.13	J	D	0.88	J	D
ZINC	4.7	U	A	33.65	J	DG	28.53	J	DG	9.98	U	A

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SEMR3

SAMPLE NUMBER:	OU4-SD-R02-300A			OU4-SD-R02-400A			OU4-SD-R03-100A			OU4-SD-R03-200A		
SAMPLE DATE:	08/29/00			08/29/00			08/27/00			08/29/00		
LABORATORY ID:	C36845			C36752			C36603			C36757		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.1	U	A	0.11	J	G	0.3179	U		0.0842	U	
COPPER	0.15	U	A	5.19	J	DEG	5.65	J	DEG	1.52	J	DEG
LEAD	26.33	J	DG	38.83	J	DG	27.27	J	DG	12.54	J	DG
NICKEL	1.05	J	D	1.6	J	D	30.58	J	D	1.18	J	D
ZINC	31.27	J	DG	29.24	J	DG	51.77	J	DG	19.79	U	A

SAMPLE NUMBER:	OU4-SD-R03-300A			OU4-SD-R03-400A			OU4-SD-R04-100A			OU4-SD-R04-200A		
SAMPLE DATE:	08/29/00			08/29/00			08/27/00			08/29/00		
LABORATORY ID:	C36762			C36850			C36608			C36767		
QC_TYPE:	NM			NM			NM			NM		
% SOLIDS:	33.9 %			33.9 %			33.9 %			33.9 %		
UNITS:	UG/G			UG/G			UG/G			UG/G		
FIELD DUPLICATE OF:	SOIL DATA			SOIL DATA			SOIL DATA			SOIL DATA		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.0867	U		0.0934	U		0.1384	U		0.0806	U	
COPPER	2.46	J	DEG	1.9	J	DEG	2.45	J	DEG	0.36	J	DEG
LEAD	9.96	J	DG	13	J	DG	25.05	J	DG	4.76	J	DG
NICKEL	1.2	J	D	1.1	J	D	2.47	J	D	0.5	J	D
ZINC	16.8	U	A	14.35	U	A	29.26	J	DG	4.41	U	A

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: SEMR3

SAMPLE NUMBER:	OU4-SD-R04-300A	OU4-SD-R04-400A		
SAMPLE DATE:	08/29/00	08/29/00	/ /	/ /
LABORATORY ID:	C36772	C36777		
QC_TYPE:	NM	NM		
% SOLIDS:	33.9 %	33.9 %	100.0 %	100.0 %
UNITS:	UG/G	UG/G		
FIELD DUPLICATE OF:	SOIL DATA	SOIL DATA		

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.0865	U		0.0836	U							
COPPER	0.65	J	DEG	0.29	J	DEG						
LEAD	2.44	J	DG	1.42	J	DG						
NICKEL	0.41	J	D	0.35	U	A						
ZINC	5.8	U	A	3.14	U	A						

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE:** **NOVEMBER 17, 2000**

FROM: **GRETCHEN PHIPPS** **COPIES:** **DV FILE**

SUBJECT: **MISCELLANEOUS DATA VALIDATION – AVS**
CTO 201 - PORTSMOUTH NSY
SDG – AVSR3

SAMPLES: 124/Sediments/

OU4-FD-001-000A	OU4-FD-001-000A-2
OU4-FD-002-000A	OU4-FD-002-000A-2
OU4-FD-003-000A	OU4-FD-003-000A-2
OU4-FD-004-000A	OU4-FD-004-000A-2
OU4-FD-005-000A	OU4-FD-005-000A-2
OU4-FD-006-000A	OU4-FD-006-000A-2
OU4-SD-M01-100A	OU4-SD-M01-100A-2
OU4-SD-M01-200A	OU4-SD-M01-200A-2
OU4-SD-M01-300A	OU4-SD-M01-300A-2
OU4-SD-M02-100A	OU4-SD-M02-100A-2
OU4-SD-M02-200A	OU4-SD-M02-200A-2
OU4-SD-M02-300A	OU4-SD-M02-300A-2
OU4-SD-M03-100A	OU4-SD-M03-100A-2
OU4-SD-M03-200A	OU4-SD-M03-200A-2
OU4-SD-M03-300A	OU4-SD-M03-300A-2
OU4-SD-M04-100A	OU4-SD-M04-100A-2
OU4-SD-M04-200A	OU4-SD-M04-200A-2
OU4-SD-M04-300A	OU4-SD-M04-300A-2
OU4-SD-M05-100A	OU4-SD-M05-100A-2
OU4-SD-M05-200A	OU4-SD-M05-200A-2
OU4-SD-M05-300A	OU4-SD-M05-300A-2
OU4-SD-M06-100A	OU4-SD-M06-100A-2
OU4-SD-M06-200A	OU4-SD-M06-200A-2
OU4-SD-M06-300A	OU4-SD-M06-300A-2
OU4-SD-M07-100A	OU4-SD-M07-100A-2
OU4-SD-M07-200A	OU4-SD-M07-200A-2
OU4-SD-M07-300A	OU4-SD-M07-300A-2
OU4-SD-M08-100A	OU4-SD-M08-100A-2
OU4-SD-M08-200A	OU4-SD-M08-200A-2
OU4-SD-M08-300A	OU4-SD-M08-300A-2
OU4-SD-M09-100A	OU4-SD-M09-100A-2
OU4-SD-M09-200A	OU4-SD-M09-200A-2
OU4-SD-M09-300A	OU4-SD-M09-300A-2
OU4-SD-M10-100A	OU4-SD-M10-100A-2
OU4-SD-M10-200A	OU4-SD-M10-200A-2
OU4-SD-M10-300A	OU4-SD-M10-300A-2
OU4-SD-M11-300A	OU4-SD-M11-300A-2
OU4-SD-M12-100A	OU4-SD-M12-100A-2

OU4-SD-M12-200A	OU4-SD-M12-200A-2
OU4-SD-M12-300A	OU4-SD-M12-300A-2
OU4-SD-M13-100A	OU4-SD-M13-100A-2
OU4-SD-M13-200A	OU4-SD-M13-200A-2
OU4-SD-M13-300A	OU4-SD-M13-300A-2
OU4-SD-M14-100A	OU4-SD-M14-100A-2
OU4-SD-M14-200A	OU4-SD-M14-200A-2
OU4-SD-M14-300A	OU4-SD-M14-300A-2
OU4-SD-R01-100A	OU4-SD-R01-100A-2
OU4-SD-R01-200A	OU4-SD-R01-200A-2
OU4-SD-R01-300A	OU4-SD-R01-300A-2
OU4-SD-R01-400A	OU4-SD-R01-400A-2
OU4-SD-R02-100A	OU4-SD-R02-100A-2
OU4-SD-R02-200A	OU4-SD-R02-200A-2
OU4-SD-R02-300A	OU4-SD-R02-300A-2
OU4-SD-R02-400A	OU4-SD-R02-400A-2
OU4-SD-R03-100A	OU4-SD-R03-100A-2
OU4-SD-R03-200A	OU4-SD-R03-200A-2
OU4-SD-R03-300A	OU4-SD-R03-300A-2
OU4-SD-R03-400A	OU4-SD-R03-400A-2
OU4-SD-R04-100A	OU4-SD-R04-100A-2
OU4-SD-R04-200A	OU4-SD-R04-200A-2
OU4-SD-R04-300A	OU4-SD-R04-300A-2
OU4-SD-R04-400A	OU4-SD-R04-400A-2

Overview

The sample set for CTO 201, Portsmouth, SDG AVSR3, consists of one hundred and twenty-four (124) sediment environmental samples. Twelve (12) field duplicate pairs were included within this SDG:

OU4-FD-001-000A / OU4-SD-M01-300A
OU4-FD-001-000A-2 / OU4-SD-M01-300A-2
OU4-FD-002-000A / OU4-SD-M05-100A
OU4-FD-002-000A-2 / OU4-SD-M05-100A-2
OU4-FD-003-000A / OU4-SD-M08-100A
OU4-FD-003-000A-2 / OU4-SD-M08-100A-2
OU4-FD-004-000A / OU4-SD-M09-300A
OU4-FD-004-000A-2 / OU4-SD-M09-300A-2
OU4-FD-005-000A / OU4-SD-M10-100A
OU4-FD-005-000A-2 / OU4-SD-M10-100A-2
OU4-FD-006-000A / OU4-SD-M12-200A
OU4-FD-006-000A-2 / OU4-SD-M12-200A-2

All samples were analyzed for acid volatile sulfide (AVS). The samples were collected by Tetra Tech NUS on August 27-30, 2000 and analyzed by Geochemical &Environmental Research Group under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. AVS analyses were conducted using the GERG SOP 9412.

The data was evaluated based on the following parameters:

- Data Completeness
- Holding Times
- Laboratory Blanks
- Matrix Spike / Matrix Spike Duplicate Results
- * Blank Spike Results

- Field Duplicate Results

* - All quality control criteria were met for this parameter.

Holding Time

The 7 day holding time for AVS was grossly exceeded affecting all samples. All positive results reported for AVS were qualified as estimated, "J".

Laboratory Blank Analyses

AVS was detected in the laboratory method blanks at the following maximum concentration:

Affected samples: all

Analyte	Maximum Concentration	Action Level
AVS	3.96µg/g	19.8µg/g

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken in to consideration when evaluating for blank contamination. Positive results less than the blank action level for AVS were qualified, "U", as a result of blank contamination.

Matrix Spike / Matrix Spike Duplicate Results

The Matrix Spike Duplicate (MSD) Percent Recovery (%R) for AVS was <30% quality control limit and the Matrix Spike / Matrix Spike Duplicate (MS/MSD) Relative Percent Difference (RPD) was >30% quality control limit affecting sample OU4-SD-M04-300A. The AVS result in the affected sample was previously qualified, U, as a result of blank contamination. No further validation action was required.

The MSD %R for AVS was <75% quality control limit affecting sample OU4-SD-M01-300A. The positive result reported for AVS in the affected sample was qualified as estimated, "J".

The MS/MSD %Rs for AVS were >125% quality control limit affecting sample OU4-SD-R02-200A. The positive result reported for AVS in the affected sample was qualified as estimated, "J".

The MSD %R for AVS was >125% quality control limit affecting sample OU4-SD-M01-200A-2. The AVS result in the affected sample was previously qualified, U, as a result of blank contamination. No further validation action was required.

Field Duplicate Results

Field duplicate imprecision [Relative Percent Difference (RPD) >50%] was noted for AVS in field duplicate pair OU4-FD-005-00A / OU4-DS-M10-100A. The positive results reported for AVS in the affected field duplicate pair were qualified as estimated, "J".

Other Factors Affecting Data Quality

Percent Solids were <30% in the following samples:

OU4-SD-R01-100A
OU4-SD-R03-100A
OU4-SD-R03-100A-2
OU4-SD-M14-100A

All results reported for the above listed samples were previously qualified, U, as a result of blank contamination. No further validation action is required.

Notes

Sample OU4-FD-002-000A-2 was not included in the original data package. The laboratory was contacted.

Executive Summary

Laboratory Performance: The holding time for AVS was exceeded. AVS was present in the laboratory method blank.

Other Factors Affecting Data Quality: Several MS/MSD %Rs were outside quality control limits. AVS is samples OU4-FD-005-00A / OU4-DS-M10-100A were qualified due to field duplicate imprecision.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A. Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-FD-001-000A			OU4-FD-001-000A-2			OU4-FD-002-000A			OU4-FD-002-000A-2		
SAMPLE DATE:	08/28/00			08/28/00			08/27/00			08/27/00		
LABORATORY ID:	C36782			C36783			C36613			C36614		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	55.0 %			53.1 %			38.5 %			39.8 %		
FIELD DUPLICATE OF:	OU4-SD-M01-300A			OU4-SD-M01-300A-			OU4-SD-M05-100A			OU4-SD-M05-100A-		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	263	J	H	243	J	H	245	J	H	267	J	H

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-FD-003-000A			OU4-FD-003-000A-2			OU4-FD-004-000A			OU4-FD-004-000A-2		
SAMPLE DATE:	08/28/00			08/28/00			08/27/00			08/27/00		
LABORATORY ID:	C36787			C36788			C36618			C36619		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	69.0 %			68.7 %			36.4 %			36.7 %		
FIELD DUPLICATE OF:	OU4-SD-M08-100A			OU4-SD-M08-100A-			OU4-SD-M09-300A			OU4-SD-M09-300A-		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	211	J	H	188	J	H	376	J	H	290	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-FD-005-000A			OU4-FD-005-000A-2			OU4-FD-006-000A			OU4-FD-006-000A-2		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36792			C36793			C36855			C36856		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	68.3 %			66.5 %			58.2 %			56.1 %		
FIELD DUPLICATE OF:	OU4-SD-M10-100A			OU4-SD-M10-100A-			OU4-SD-M12-200A-			OU4-SD-M12-200A-		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	187	J	GH	92.3	J	H	249	J	H	221	J	H

SAMPLE NUMBER:	OU4-SD-M01-100A			OU4-SD-M01-100A-2			OU4-SD-M01-200A			OU4-SD-M01-200A-2		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36647			C36648			C36652			C36653		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	60.9 %			64.2 %			84.3 %			80.8 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	258	J	H	20.2	U	A	0.602	U	A	0.223	U	A

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M01-300A			OU4-SD-M01-300A-2			OU4-SD-M02-100A			OU4-SD-M02-100A-2		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36657			C36658			C36662			C36663		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	56.8 %			54.2 %			73.0 %			68.1 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	233	J	DH	279	J	H	118	J	H	77.6	J	H

SAMPLE NUMBER:	OU4-SD-M02-200A	OU4-SD-M02-200A-2	OU4-SD-M02-300A	OU4-SD-M02-300A-2
SAMPLE DATE:	08/28/00	08/28/00	08/28/00	08/28/00
LABORATORY ID:	C36667	C36668	C36672	C36673
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	74.9 %	73.1 %	32.9 %	35.2 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	89.8	J	H	145	J	H	15.7	U	A	8.81	U	A

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M03-100A			OU4-SD-M03-100A-2			OU4-SD-M03-200A			OU4-SD-M03-200A-2		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36518			C36519			C36523			C36524		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	39.9 %			41.4 %			68.2 %			75.2 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	250	J	H	370	J	H	71.7	J	H	195	J	H

CTO2. PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M03-300A			OU4-SD-M03-300A-2			OU4-SD-M04-100A			OU4-SD-M04-100A-2		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36528			C36529			C36533			C36534		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	62.1 %			56.8 %			77.9 %			72.3 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	125	J	H	3.86	U	A	5.06	U	A	120	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M04-200A			OU4-SD-M04-200A-2			OU4-SD-M04-300A			OU4-SD-M04-300A-2		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36538			C36539			C36543			C36544		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	47.6 %			46.8 %			79.7 %			78.9 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	20.5	U	A	84.1	J	H	7.91	U	A	4.73	U	A

SAMPLE NUMBER:	OU4-SD-M05-100A			OU4-SD-M05-100A-2			OU4-SD-M05-200A			OU4-SD-M05-200A-2		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36548			C36549			C36553			C36554		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	38.1 %			39.5 %			36.8 %			37.8 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	272	J	H	388	J	H	287	J	H	385	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M05-300A			OU4-SD-M05-300A-2			OU4-SD-M06-100A			OU4-SD-M06-100A-2		
SAMPLE DATE:	08/27/00			08/27/00			08/29/00			08/29/00		
LABORATORY ID:	C36558			C36559			C36677			C36678		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	69.0 %			70.8 %			76.7 %			74.8 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	147	J	H	13.0	U	A	44.1	U	A	45.4	J	H

CTO2(,'ORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M06-200A			OU4-SD-M06-200A-2			OU4-SD-M06-300A			OU4-SD-M06-300A-2		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36563			C36564			C36568			C36569		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	36.5 %			37.1 %			77.9 %			72.4 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	352	J	H	379	J	H	8.42	U	A	1.17	U	A

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M07-100A	OU4-SD-M07-100A-2	OU4-SD-M07-200A	OU4-SD-M07-200A-2
SAMPLE DATE:	08/28/00	08/28/00	08/27/00	08/27/00
LABORATORY ID:	C36682	C36683	C36573	C36574
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	72.3 %	69.9 %	43.7 %	44.1 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	181	J	H	154	J	H	306	J	H	74.9	J	H

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M07-300A			OU4-SD-M07-300A-2			OU4-SD-M08-100A			OU4-SD-M08-100A-2		
SAMPLE DATE:	08/27/00			08/27/00			08/28/00			08/28/00		
LABORATORY ID:	C36578			C36579			C36687			C36688		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	46.7 %			47.4 %			68.4 %			69.8 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	252	J	H	249	J	H	200	J	H	186	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M08-200A			OU4-SD-M08-200A-2			OU4-SD-M08-300A			OU4-SD-M08-300A-2		
SAMPLE DATE:	08/27/00			08/27/00			08/28/00			08/28/00		
LABORATORY ID:	C36583			C36584			C36692			C36693		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	47.5 %			49.1 %			95.2 %			94.8 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	257	J	H	275	J	H	4.86	U	A	5.79	U	A

SAMPLE NUMBER:	OU4-SD-M09-100A			OU4-SD-M09-100A-2			OU4-SD-M09-200A			OU4-SD-M09-200A-2		
SAMPLE DATE:	08/30/00			08/30/00			08/29/00			08/29/00		
LABORATORY ID:	C36805			C36806			C36697			C36698		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	89.9 %			89.8 %			64.6 %			62.8 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	1.03	U	A	4.91	U	A	242	J	H	134	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M09-300A	OU4-SD-M09-300A-2	OU4-SD-M10-100A	OU4-SD-M10-100A-2
SAMPLE DATE:	08/27/00	08/27/00	08/29/00	08/29/00
LABORATORY ID:	C36588	C36589	C36702	C36703
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	36.9 %	36.6 %	72.4 %	71.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	243	J	H	396	J	H	89.9	J	GH	20.2	U	A

SAMPLE NUMBER:	OU4-SD-M10-200A	OU4-SD-M10-200A-2	OU4-SD-M10-300A	OU4-SD-M10-300A-2
SAMPLE DATE:	08/29/00	08/29/00	08/29/00	08/29/00
LABORATORY ID:	C36707	C36708	C36712	C36713
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	68.1 %	59.9 %	45.3 %	41.4 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	195	J	H	243	J	H	257	J	H	374	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M11-300A			OU4-SD-M11-300A-2			OU4-SD-M12-100A			OU4-SD-M12-100A-2		
SAMPLE DATE:	08/30/00			08/30/00			08/29/00			08/29/00		
LABORATORY ID:	C36810			C36811			C36815			C36816		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	86.8 %			87.6 %			55.3 %			54.7 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	0.445	U	A	0.231	U	A	203	J	H	196	J	H

SAMPLE NUMBER:	OU4-SD-M12-200A			OU4-SD-M12-200A-2			OU4-SD-M12-300A			OU4-SD-M12-300A-2		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36820			C36821			C36825			C36826		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	60.2 %			54.4 %			50.8 %			51.1 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	251	J	H	238	J	H	274	J	H	298	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M13-100A			OU4-SD-M13-100A-2			OU4-SD-M13-200A			OU4-SD-M13-200A-2		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36717			C36718			C36722			C36723		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	37.3 %			34.4 %			41.4 %			39.3 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	345	J	H	452	J	H	307	J	H	323	J	H

SAMPLE NUMBER:	OU4-SD-M13-300A			OU4-SD-M13-300A-2			OU4-SD-M14-100A			OU4-SD-M14-100A-2		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36727			C36728			C36732			C36733		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	36.8 %			33.1 %			28.3 %			42.6 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	153	J	H	394	J	H	28.5	U	A	3.88	U	A

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-M14-200A	OU4-SD-M14-200A-2	OU4-SD-M14-300A	OU4-SD-M14-300A-2
SAMPLE DATE:	08/28/00	08/28/00	08/28/00	08/28/00
LABORATORY ID:	C36737	C36738	C36742	C36743
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	54.6 %	54.9 %	44.4 %	42.1 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	198	J	H	224	J	H	235	J	H	279	J	H

SAMPLE NUMBER:	OU4-SD-R01-100A			OU4-SD-R01-100A-2			OU4-SD-R01-200A			OU4-SD-R01-200A-2		
SAMPLE DATE:	08/27/00			08/27/00			08/29/00			08/29/00		
LABORATORY ID:	C36593			C36594			C36830			C36831		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	25.8 %			33.9 %			74.5 %			73.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	30.3	U	A	15.2	U	A	23.1	U	A	1.86	U	A

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-R01-300A	OU4-SD-R01-300A-2	OU4-SD-R01-400A	OU4-SD-R01-400A-2
SAMPLE DATE:	08/29/00	08/29/00	08/27/00	08/27/00
LABORATORY ID:	C36835	C36836	C36598	C36599
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	71.1 %	75.3 %	72.2 %	74.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	2.14	U	A	9.27	U	A	137	J	H	13.2	U	A

SAMPLE NUMBER:	OU4-SD-R02-100A			OU4-SD-R02-100A-2			OU4-SD-R02-200A			OU4-SD-R02-200A-2		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36747			C36748			C36840			C36841		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	80.6 %			75.2 %			75.1 %			74.4 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	4.62	U	A	0.669	U	A	62.3	J	DH	5.87	U	A

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-R02-300A			OU4-SD-R02-300A-2			OU4-SD-R02-400A			OU4-SD-R02-400A-2		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36845			C36846			C36752			C36753		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	53.2 %			57.2 %			54.9 %			53.7 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	301	J	H	25.1	U	A	38.3	J	H	129	J	H

SAMPLE NUMBER:	OU4-SD-R03-100A			OU4-SD-R03-100A-2			OU4-SD-R03-200A			OU4-SD-R03-200A-2		
SAMPLE DATE:	08/27/00			08/27/00			08/29/00			08/29/00		
LABORATORY ID:	C36603			C36604			C36757			C36758		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	29.6 %			28.5 %			60.5 %			56.1 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	1.57	U	A	11.4	U	A	180	J	H	218	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-R03-300A			OU4-SD-R03-300A-2			OU4-SD-R03-400A			OU4-SD-R03-400A-2		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36762			C36763			C36850			C36851		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	61.4 %			63.5 %			66.4 %			67.6 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	260	J	H	156	J	H	109	J	H	165	J	H

SAMPLE NUMBER:	OU4-SD-R04-100A			OU4-SD-R04-100A-2			OU4-SD-R04-200A			OU4-SD-R04-200A-2		
SAMPLE DATE:	08/27/00			08/27/00			08/29/00			08/29/00		
LABORATORY ID:	C36608			C36609			C36767			C36768		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	62.1 %			65.8 %			80.4 %			78.3 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	129	J	H	0.845	U	A	25.4	J	H	49.4	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: AVSR3

SAMPLE NUMBER:	OU4-SD-R04-300A			OU4-SD-R04-300A-2			OU4-SD-R04-400A			OU4-SD-R04-400A-2		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36772			C36773			C36777			C36778		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	81.1 %			79.3 %			78.1 %			72.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
AVS(UG/G)	18.6	U	A	118	J	H	5.44	U	A	2.05	U	A

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 15, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**
SUBJECT:	**INORGANIC DATA VALIDATION – DOC CTO 201 - PORTSMOUTH NSY SDG – DOCR3**		
SAMPLES:	3/Aqueous/		
	OU4-FB-001-000A OU4-RB-003-000A	OU4-RB-001-000A	

Overview

The sample set for CTO 201, Portsmouth, SDG DOCR3, consists of one (1) field blank and two (2) rinsate blanks.

The samples were collected by Tetra Tech NUS on August 27 and 29, 2000 and analyzed by Trace Element Research Laboratory (a division of Texas A&M University). DOC analyses were conducted using SW 846 method 9060.

The data was evaluated based on the following parameters:

- • Data Completeness
- • Holding Times
- * • Laboratory Blank Analyses
- * • Laboratory Control Sample Results
- • Matrix Spike Results
- • Detection Limits
- * • Sample Quantitation

* - All quality control criteria were met for this parameter.

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: None.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual" (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A. Phipps

Tetra Tech NUS
Gretchen A. Phipps
Chemist

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO2 PORTSMOUTH
WATER DATA
TAMU
SDG: DOCR3

SAMPLE NUMBER:	OU4-FB-001-000A	OU4-RB-001-000A	OU4-RB-003-000A	
SAMPLE DATE:	08/27/00	08/27/00	08/29/00	/ /
LABORATORY ID:	C36627	C36623	C36797	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	100.0 %	100.0 %	100.0 %	100.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
DISSOLVED ORGANIC CARBON(MG/L)	0.47	.		0.46	.		0.62	.				

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**D. COHEN**	**DATE:**	**NOVEMBER 20, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – SELECT METALS**
CTO 201 - PORTSMOUTH NSY
SDG – WAT122

SAMPLES: 3/Aqueous/

OU4-FB-001-000A OU4-RB-001-000A
OU4-RB-003-000A

Overview

The sample set for CTO 201, Portsmouth, SDG WAT122, consists of one (1) field blank and two (2) rinsate blank samples.

The samples were analyzed for select metals namely aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver and zinc. The samples were collected by Tetra Tech NUS on October 27 and 29, 2000 and analyzed by Geochemical &Environmental Research Group. Metals analyses were conducted using GERG SOPs 9802, 9410 and 9409.

The data was evaluated based on the following parameters:

* • Data Completeness
• Holding Times
• Calibration Verifications
• Laboratory Blank Analyses
• Blank Spike / Blank Spike Duplicate Results
• Matrix Spike Results
• Laboratory Duplicate Precision
* • Detection Limits
* • Sample Quantitation

* - All quality control criteria were met for this parameter.

Holding Times

The 28 day holding time for mercury analysis was exceeded by 10-12 days affecting all samples. All results reported for mercury were positive. The positive results reported for mercury were qualified as estimated, "J".

Calibration Verifications

A continuing calibration verification (CCV) Percent Recovery (%R) for zinc was <90% quality control limit. All results reported for zinc were positive. The positive results reported for zinc were qualified as estimated, "J".

Blank Spike / Blank Spike Duplicate Results

The Blank Spike %R for silver was <75% quality control limit. Positive and nondetected results were reported for silver. The positive result reported for silver was qualified as estimated, "J". The nondetected results reported for silver were qualified as estimated, "UJ".

Matrix Spike Results

The Matrix Spike (MS) %R for silver was <75% quality control limit. Positive and nondetected results were reported for silver. The positive result reported for silver was qualified as estimated, "J". The nondetected results reported for silver were qualified as estimated, "UJ".

Notes

A CCV %R for nickel was >125% quality control limit. All results reported for nickel were nondetected. Therefore, no validation action was required.

The laboratory reported positive results less than the IDL with a qualification of estimated, "J". The data reviewer corrected the Electronic Deliverable Data (EDD) by replacing estimated results less than the IDL with a nondetected result.

Field quality control blank (i.e., field blanks and rinsate blanks) are not qualified for laboratory blank contamination. Therefore, although several analytes were present in the laboratory method/preparation blanks, no qualifications were assigned.

Executive Summary

Laboratory Performance: The holding time for mercury was exceeded. Zinc was qualified due to a calibration noncompliance.

Other Factors Affecting Data Quality: Silver was qualified due to a MS and a blank spike noncompliance.

The Data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitles "Navy Installation Restoration Chemical Data Quality Manual." (September 1999).

The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Gretchen A. Phipps

Tetra Tech NUS
Gretchen A. Phipps

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
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C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
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Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO201-PORTSMOUTH
WATER DATA
GERG
SDG: WAT122

SAMPLE NUMBER:	OU4-FB-001-000A	OU4-RB-001-000A	OU4-RB-003-000A	
SAMPLE DATE:	08/27/00	08/27/00	08/29/00	/ /
LABORATORY ID:	C36625	C36621	C36795	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	0.0 %	0.0 %	0.0 %	100.0 %
UNITS:	UG/L	UG/L	UG/L	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	27.3	U		27.3	U		27.3	U				
ARSENIC	1.16			0.85	U		0.85	U				
CADMIUM	0.06	U		0.06	U		0.06	U				
CHROMIUM	4.36	U		4.36	U		4.36	U				
COPPER	3.06	U		3.06	U		3.06	U				
IRON	9.16			13.4			7.95					
LEAD	0.70	U		0.70	U		0.70	U				
MANGANESE	1.23	U		3.50			1.23	U				
MERCURY	0.17	J	H	0.16	J	H	0.12	J	H			
NICKEL	16.7	U		16.7	U		16.7	U				
SILVER	2.77	UJ	DE	3.46	J	DE	2.77	UJ	DE			
ZINC	15.0	J	C	37.6	J	C	32.0	J	C			

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 5, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – DIOXIN/FURAN**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – DX0475

SAMPLES: 14/Sediment/

OU4-FD-004-000A	OU4-SD-M07-100A	OU4-SD-M07-200A	OU4-SD-M07-300A
OU4-SD-M08-100A	OU4-SD-M08-200A	OU4-SD-M08-300A	OU4-SD-M09-200A
OU4-SD-M09-300A	OU4-SD-M10-100A	OU4-SD-R01-100A	OU4-SD-R01-400A
OU4-SD-R03-100A	OU4-SD-R04-100A		

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG DX0475 consisting of fourteen (14) sediment samples were included in this SDG. The samples were analyzed for dioxins and furans. Four field duplicates were included in this SDG: OU4-FD-004-000A and OU4-SD-M09-300A; OU4-SD-M08-100A and OU4-FD-003-000A (in SDG DX0476); and OU4-SD-M10-100A and OU4-FD-005-000A (in SDG DX0476).

The samples were collected by Tetra Tech NUS on August 27-29, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using EPA Method 1613B analytical and reporting protocols.

The data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Calibration
• Blank Results
• Surrogate/Internal Standard Recoveries
• Recovery Standards Performance
• Clean-up Standard Performance
* • Blank Spike/Blank Spike Duplicate Results
• Matrix Spike/Matrix Spike Duplicate Results
* • Instrument Performance
* • Compound Identification
* • Compound Quantitation

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANK RESULTS

The following compounds were detected in the laboratory method blank.

Compound	Maximum Concentration	Blank Action Level
12378-PECDF	0.21 pg/g	1.05 pg/g
1234678-HPCDD	0.27 pg/g	1.35 pg/g
OCDD	1.24 pg/g	6.2 pg/g
Total PECDF	0.21 pg/g	1.05 pg/g
Total Furans	0.21 pg/g	1.05 pg/g
Total TCDD	1.38 pg/g	6.9 pg/g
Total HPCDD	0.27 pg/g	1.35 pg/g
Total Dioxins	2.89 pg/g	14.45 pg/g

Samples Affected: All

Sample aliquot, dilution factors, and percent solids were taken into consideration when applying the blank action level. Positive results for 12378-PECDF, Total PECDF, and Total TCDD below the blank action level were qualified as nondetected, U. The method blank had a sample aliquot of 33.47g (dry weight). Sample aliquots ranged from ~6 to 61 g (dry weight).

INTERNAL STANDARD RESULTS

Recovery of 13C-123678-HXCDD exceeded the upper quality control limit in OU4-SD-R03-100A. Positive results associated with this standard were qualified as estimated, J. No qualifiers were assigned to nondetected results on this basis.

CLEAN-UP STANDARD RESULTS

Recovery of 37Cl-2378-TCDD exceeded the upper quality control limit in OU4-SD-R04-100A. Positive results were qualified as estimated, J. No qualifiers were assigned to nondetected results on this basis.

RESPONSE STANDARD RESULTS

Recovery of 13C-1234-TCDD fell below the lower quality control limit in OU4-SD-M08-300A. Positive and nondetected results associated with this standard were qualified as estimated, J and UJ.

Recovery of 13C-123789-HXCDD fell below the lower quality control limit in OU4-SD-M10-100A. Positive and nondetected results associated with this standard were qualified as estimated, J and UJ.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Recovery of OCDD fell below 10% in the MS and MSD. The relative percent difference (RPD) for 1234678-HPCDD exceeded the upper quality control limit. No qualifiers were assigned on this basis since the concentration on OCDD present in the unspiked sample, OU4-SD-R01-400A, exceeded 5X the spiked concentration.

FIELD DUPLICATE RESULTS

Several results exceeded the 50% quality control limit for RPD in the field duplicate pair OU4-SD-M08-100A and OU4-FD-003-000A. Positive and nondetected results were qualified as estimated, J and UJ.

All RPDs exceeded the 50% quality control limit for the field duplicate pair OU4-FD-004-000A and OU4-SD-M09 300A. Positive and nondetected results were qualified as estimated, J and UJ.

Several results exceeded the 50% quality control limit for RPD in the field duplicate pair OU4-SD-M10-100A and OU4-FD-005-000A. Positive and nondetected results were qualified as estimated, J and UJ.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

Sample OU4-SD-R03-100A contained less than 30% solids. Positive and nondetected results were qualified as estimated, J and UJ, on this basis.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the DL were qualified as estimated, (J).

The laboratory did not provide the following documentation: recovery standard table, clean-up standard recovery table, toxicity equivalence summary forms, second column confirmation of TCDF results, and retention time windows.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses. Several surrogate, internal standards, response standards, and clean-up standard were noncompliant.

Other Factors Affecting Data Quality: Samples were qualified due to field duplicate imprecision.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

FIELD DUPLICATES

Compound	OU4-FD-003-000A DX0476	OU4-SD-M08-100A DX0475	RPD
1234678-HPCDD	114.3 U*	117	200
1234678-HPCDF	32.7 U*	32.8	200
1234789-HPCDF	1.9	2.12	-11
123478-HXCDD	1.4	1.2	15
123478-HXCDF	3.3	3.28	1
123678-HXCDD	6	5.17	15
123678-HXCDF	2.7	2.33	15
123789-HXCDD	0.97 U	3.64	200
123789-HXCDF	0.97 U	0.91 U	NA
12378-PECDD	0.97 U	1.1	200
12378-PECDF	2.3	1.71 U*	29
234678-HXCDF	3.9	3.2	20
23478-PECDF	0.97 U	2.24	200
2378-TCDD	0.19 U	0.5	200
2378-TCDF	3.4	2.53	29
OCDD	959.8	957	0
OCDF	50.4 U*	44.3	NC
TOTAL DIOXINS	1355.1	1380	-2
TOTAL FURANS	232.1 U*	217	NC
TOTAL HPCDD	321.1 U*	336	200
TOTAL HPDCF	79.1 U*	75.4	NC
TOTAL HXCDD	67.4	73	-8
TOTAL HXCDF	48.3	50.6	-5
TOTAL PECDD	0.97 U	1.1	-13
TOTAL PECDF	29.6	31.3	-6
TOTAL TCDD	6.8	11.5	-51
TOTAL TCDF	24.7	15.5	46

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

FIELD DUPLICATES

Compound	OU4-FD-004-000A DX0475	OU4-SD-M09-300A DX0475	RPD
1234678-HPCDD	370	10.9	189
1234678-HPCDF	116	3.03	190
1234789-HPCDF	5.47	0.08 J	194
123478-HXCDD	5.43	2.44 U	200
123478-HXCDF	90.6	2.44 U	200
123678-HXCDD	17.7	2.44 U	200
123678-HXCDF	8.34	2.44 U	200
123789-HXCDD	11	2.44 U	200
123789-HXCDF	0.89 J	2.44 U	NC
12378-PECDD	5.81	2.44 U	200
12378-PECDF	4.78	0.15 U*	NC
234678-HXCDF	10.3	0.18 J	193
23478-PECDF	7.58	2.44 U	NC
2378-TCDD	1.81	0.49 U	NC
2378-TCDF	9.22	0.34 J	186
OCDD	3150	71.7	191
OCDF	130	3.98	188
TOTAL DIOXINS	4260	101	191
TOTAL FURANS	733	14.8	192
TOTAL HPCDD	829	23.5	189
TOTAL HPDCF	246	6.49	190
TOTAL HXCDD	228	4.87	192
TOTAL HXCDF	128	3.24	190
TOTAL PECDD	25.1	2.44 U	NC
TOTAL PECDF	81.8	0.15 U*	NC
TOTAL TCDD	31	0.88 U*	NC
TOTAL TCDF	147	0.97	197

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

FIELD DUPLICATES

Compound	OU4-FD-005-000A DX0476	OU4-SD-M10-100A DX0475	RPD
1234678-HPCDD	35.3 U*	13	NC
1234678-HPCDF	8.9 U*	3.89	NC
1234789-HPCDF	1.56 U	1.17 U	NA
123478-HXCDD	1.56 U	0.16 J	NC
123478-HXCDF	1.56 U	0.39 J	NC
123678-HXCDD	1.9	1.3	38
123678-HXCDF	1.56 U	1.17 U	NA
123789-HXCDD	1.56 U	0.23 J	NC
123789-HXCDF	1.56 U	1.17 U	NA
12378-PECDD	1.56 U	0.08 J	NC
12378-PECDF	2.1	0.39 U*	200
234678-HXCDF	1.56 U	0.21 J	NC
23478-PECDF	1.56 U	0.34 U	NA
2378-TCDD	0.31 U	0.23 U	NA
2378-TCDF	1	0.72	33
OCDD	324.3 U*	97.5	NC
OCDF	12.8 U*	6.95	NC
TOTAL DIOXINS	426.8 U*	144	NC
TOTAL FURANS	61.6 U*	36.7	NC
TOTAL HPCDD	82.4 U*	31	NC
TOTAL HPDCF	19.3 U*	9.17	NC
TOTAL HXCDD	16.9	13.2	25
TOTAL HXCDF	2	9.64	-131
TOTAL PECDD	1.56 U	0.08 J	NC
TOTAL PECDF	19.7	8.84	76
TOTAL TCDD	3.2	2.05 U	200
TOTAL TCDF	7.7	2.13	113

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: DX0475

SAMPLE NUMBER:	OU4-FD-004-000A			OU4-SD-M07-100A			OU4-SD-M07-200A			OU4-SD-M07-300A		
SAMPLE DATE:	08/27/00			08/28/00			08/27/00			08/27/00		
LABORATORY ID:	C36615			C36679			C36570			C36575		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	36.7 %			69.9 %			44.1 %			47.4 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:	OU4-SD-M09-300A											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	370	J	G	84.0			16.2			9.46		
1,2,3,4,6,7,8-HPCDF	116	J	G	22.1			4.55			2.48		
1,2,3,4,7,8,9-HPCDF	5.47	J	G	0.98	J	P	0.10	J	P	1.95	U	
1,2,3,4,7,8-HXCDD	5.43	J	G	1.07			0.12	J	P	1.95	U	
1,2,3,4,7,8-HXCDF	9.06	J	G	1.32			0.26	J	P	0.11	J	P
1,2,3,6,7,8-HXCDD	17.7	J	G	4.00			0.68	J	P	1.95	U	
1,2,3,6,7,8-HXCDF	8.34	J	G	1.00	J	P	0.14	J	P	0.14	J	P
1,2,3,7,8,9-HXCDD	11.0	J	G	2.35			0.42	J	P	0.12	J	P
1,2,3,7,8,9-HXCDF	0.89	J	GP	1.02	U		1.61	U		1.95	U	
1,2,3,7,8-PECDD	5.81	J	G	0.44	J	P	0.06	J	P	1.95	U	
1,2,3,7,8-PECDF	4.78	J	G	0.62	U	A	0.09	U	A	0.20	U	A
2,3,4,6,7,8-HXCDF	10.3	J	G	0.93	J	P	0.26	J	P	0.12	J	P
2,3,4,7,8-PECDF	7.58	J	G	1.02	U		1.61	U		0.14	J	P
2,3,7,8-TCDD	1.81	J	G	0.76			0.32	U		0.11	J	P
2,3,7,8-TCDF	9.22	J	G	1.22			0.30	J	P	0.23	J	P
OCDD	3150	J	G	716			124			67.4		
OCDF	130	J	G	29.1			6.88			3.90	U	
TOTAL DIOXINS	4263	J	G	972			166			93.0		
TOTAL FURANS	733	J	G	112			24.7			8.48		
TOTAL HPCDD	829	J	G	198			37.5			21.2		
TOTAL HPCDF	246	J	G	51.6			10.5			6.40		
TOTAL HXCDD	228	J	G	48.4			4.62			3.17		
TOTAL HXCDF	128	J	G	23.2			5.14			1.51	J	P
TOTAL PECDD	25.1	J	G	0.44	J	P	0.06	J	P	1.95	U	
TOTAL PECDF	81.8	J	G	6.26			1.17	U	A	0.34	U	A
TOTAL TCDD	31.0	J	G	8.43	U	A	0.50	U	A	1.21	U	A
TOTAL TCDF	147	J	G	2.26			1.06			0.23	J	P

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: DX0475

SAMPLE NUMBER:	OU4-SD-M08-100A			OU4-SD-M08-200A			OU4-SD-M08-300A			OU4-SD-M09-200A		
SAMPLE DATE:	08/28/00			08/27/00			08/28/00			08/29/00		
LABORATORY ID:	C36684			C36580			C36689			C36694		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	69.8 %			49.1 %			94.8 %			62.8 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	117	J	G	17.7			7.62			119		
1,2,3,4,6,7,8-HPCDF	32.8	J	G	4.42			4.47			36.6		
1,2,3,4,7,8,9-HPCDF	2.12			2.22	U		0.20	J	P	1.79		
1,2,3,4,7,8-HXCDD	1.20			2.22	U		0.23	J	P	1.32	U	
1,2,3,4,7,8-HXCDF	3.28			0.37	J	P	1.00	U		3.92		
1,2,3,6,7,8-HXCDD	5.17			0.49	J	P	0.28	J	P	6.17		
1,2,3,6,7,8-HXCDF	2.33			2.22	U		1.00	U		3.37		
1,2,3,7,8,9-HXCDD	3.64	J	G	0.50	J	P	1.00	U		3.70		
1,2,3,7,8,9-HXCDF	0.91	U		2.22	U		1.00	U		0.19	J	P
1,2,3,7,8-PECDD	1.10	J	G	0.06	J	P	1.00	UJ	N	1.47		
1,2,3,7,8-PECDF	1.71	U	A	0.25	U	A	0.40	U	A	2.36		
2,3,4,6,7,8-HXCDF	3.20			0.20	J	P	1.00	U		4.57		
2,3,4,7,8-PECDF	2.24	J	G	2.22	U		1.00	UJ	N	3.16		
2,3,7,8-TCDD	0.50	J	G	0.07	J	P	0.20	UJ	N	0.35		
2,3,7,8-TCDF	2.53			0.36	J	P	0.35	J	N	3.67		
OCDD	957			125			64.3			934		
OCDF	44.3			7.80			4.06			48.7		
TOTAL DIOXINS	1378			170			85.1			1304		
TOTAL FURANS	217			22.3			22.3			247		
TOTAL HPCDD	336	J	G	40.3			19.2			290		
TOTAL HPCDF	75.4			11.3			4.67			78.7		
TOTAL HXCDD	73.0			4.81			0.51	J	P	78.1		
TOTAL HXCDF	50.6			0.57	J	P	4.59			61.2		
TOTAL PECDD	1.10			0.06	J	P	1.00	UJ	N	1.47		
TOTAL PECDF	31.3			1.19	U	A	7.44	J	N	22.7		
TOTAL TCDD	11.5	J	G	0.07	U	A	1.08	U	A	0.35	U	A
TOTAL TCDF	15.5			1.48			1.54	J	N	35.9		

SAMPLE NUMBER:	OU4-SD-M09-300A			OU4-SD-M10-100A			OU4-SD-R01-100A			OU4-SD-R01-400A		
SAMPLE DATE:	08/27/00			08/29/00			08/27/00			08/27/00		
LABORATORY ID:	C36585			C36699			C36590			C36595		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	36.6 %			71.0 %			33.9 %			74.0 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	10.9	J	G	13.0	J	N	28.0			56.0		
1,2,3,4,6,7,8-HPCDF	3.03	J	G	3.89	J	N	9.49			14.5		
1,2,3,4,7,8,9-HPCDF	0.08	J	GP	1.17	UJ	N	0.09	J	P	0.75	J	P
1,2,3,4,7,8-HXCDD	2.44	UJ	G	0.16	J	NP	2.05	U		0.55	J	P
1,2,3,4,7,8-HXCDF	2.44	UJ	G	0.39	J	NP	2.05	U		0.66	J	P
1,2,3,6,7,8-HXCDD	2.44	UJ	G	1.30	J	N	1.47	J	P	2.39		
1,2,3,6,7,8-HXCDF	2.44	UJ	G	1.17	UJ	N	0.40	J	P	0.48	J	P
1,2,3,7,8,9-HXCDD	2.44	UJ	G	0.23	J	NP	0.98	J	P	1.76		
1,2,3,7,8,9-HXCDF	2.44	U		1.17	UJ	N	2.05	U		0.08	J	P
1,2,3,7,8-PECDD	2.44	UJ	G	0.08	J	P	2.05	U		0.35	J	P
1,2,3,7,8-PECDF	0.15	U	AG	0.39	U	AG	0.50	U	A	0.33	U	A
2,3,4,6,7,8-HXCDF	0.18	J	GP	0.21	J	NP	2.05	U		0.87		
2,3,4,7,8-PECDF	2.44	U		0.34	U	A	0.67	U	A	0.32	U	A
2,3,7,8-TCDD	0.49	U		0.23	U		0.41	U		0.26		
2,3,7,8-TCDF	0.34	J	GP	0.72			1.26			0.81		
OCDD	71.7	J	G	97.5	J	N	160			543		
OCDF	3.98	J	GP	6.95	J	N	7.77			22.4		
TOTAL DIOXINS	101	J	G	144	J	N	261			690		
TOTAL FURANS	14.8	J	G	36.7	J	N	50.7			78.5		
TOTAL HPCDD	23.5	J	G	31.0	J	N	79.0			134		
TOTAL HPCDF	6.49	J	G	9.17	J	N	19.3			33.5		
TOTAL HXCDD	4.87	J	G	13.2	J	N	22.2			5.71		
TOTAL HXCDF	3.24	J	G	9.64	J	GN	14.7			15.0		
TOTAL PECDD	2.44	U		0.08	J	P	2.05	U		1.75		
TOTAL PECDF	0.15	U	A	8.84	J	G	3.99			4.75		
TOTAL TCDD	0.88	U	A	2.05	U	AG	0.41	U		5.69	U	A
TOTAL TCDF	0.97	J	G	2.13	J	G	4.86			2.90		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 5, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – DIOXIN/FURAN**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – DX0476

SAMPLES: 14/Sediment/

OU4-FD-003-000A	OU4-FD-005-000A	OU4-SD-M09-100A	OU4-SD-M10-200A
OU4-SD-M10-300A	OU4-SD-M11-300A	OU4-SD-M12-100A	OU4-SD-R02-100A
OU4-SD-R02-400A	OU4-SD-R03-200A	OU4-SD-R03-300A	OU4-SD-R04-200A
OU4-SD-R04-300A	OU4-SD-R04-400A		

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG DX0476 consisting of fourteen (14) sediment samples were included in this SDG. The samples were analyzed for dioxins and furans. Two field duplicates were included in this SDG: OU4-SD-M08-100A (in SDG DX0475) and OU4-FD-003-000A; and OU4-SD-M10-100A (in SDG DX0475) and OU4-FD-005-000A.

The samples were collected by Tetra Tech NUS on August 28-30, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using EPA Method 1613B analytical and reporting protocols.

The data were evaluated based on the following parameters:

* • Data Completeness
• Holding Times
• Calibration
• Blank Results
• Surrogate/Internal Standard Recoveries
• Recovery Standards Performance
• Clean-up Standard Performance
* • Blank Spike/Blank Spike Duplicate Results
• Matrix Spike/Matrix Spike Duplicate Results
* • Instrument Performance
• Compound Identification
* • Compound Quantitation

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANK RESULTS

The following compounds were detected in the laboratory method blank.

Compound	Maximum Concentration	Blank Action Level
1234678-HPCDF	0.5 pg/g	2.5 pg/g
1234678-HPCDD	0.5 pg/g	2.5 pg/g
OCDD	1.9 pg/g	9.5 pg/g
OCDF	1.6 pg/g	8.0 pg/g
Total HPCDF	0.5 pg/g	2.5 pg/g
Total Furans	2.09 pg/g	10.45 pg/g
Total HPCDD	0.53 pg/g	2.65 pg/g
Total Dioxins	2.41 pg/g	12.05 pg/g

Samples Affected: All

Sample aliquot, dilution factors, and percent solids were taken into consideration when applying the blank action level. Positive results for all compounds listed above below the blank action level were qualified as nondetected, U. The method blank had a sample aliquot of 1 g (dry weight). Sample aliquots ranged from ~23 to 75 g (dry weight).

HOLD TIME

Sample OU4-FD-005-000A was analyzed 42 days after sample extraction. The technical statement of work specified a 40 day holding time from extraction to analysis. Therefore, positive and nondetected results were qualified as estimated, J and UJ, on this basis.

CALIBRATION

Percent recoveries of several internal standards fell below the verification range specified in Table 6 of Method 1613B for the CCV analyzed on 10/18/00 at 10:32. No qualifiers were assigned on this basis since the associated analyte results were within the acceptance ranges.

The ion ratio for the internal standard 13C-12378-PECDD failed to meet the acceptance criteria for the CCV analyzed on 10/18/00 at 10:32. No qualifiers were assigned on this basis since the associated analyte ion ratio was within the acceptance range.

CLEAN-UP STANDARD RESULTS

Recovery of 37Cl-2378-TCDD fell below the lower quality control limit in samples OU4-SD-R02-100A and OU4-SD-M09-100A. Positive and nondetected results were qualified as estimated, J and UJ.

RESPONSE STANDARD RESULTS

Recovery of 13C-1234-TCDD fell below the lower quality control limit in OU4-FD-003-000A. Positive and nondetected results associated with this standard were qualified as estimated, J and UJ.

Recovery of 13C-1234-TCDD and 13C-123789-HXCDD fell below the lower quality control limit in OU4-SD-R03-200A. Positive and nondetected results were qualified as estimated, J and UJ.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Recovery of eight compounds exceeded the upper quality control limit in the MS and MSD. The relative percent difference (RPD) for 12378-PECDD exceeded the upper quality control limit. No qualifiers were assigned on this basis since the concentration of target compounds present in the unspiked sample, OU4-SD-R03-300A, exceeded 5X the spiked concentration.

FIELD DUPLICATE RESULTS

Several results exceeded the 50% quality control limit for RPD in the field duplicate pair OU4-SD-M08-100A and OU4-FD-003-000A. Positive and nondetected results were qualified as estimated, J and UJ.

Several results exceeded the 50% quality control limit for RPD in the field duplicate pair OU4-SD-M10-100A and OU4-FD-005-000A. Positive and nondetected results were qualified as estimated, J and UJ.

COMPOUND IDENTIFICATION

The compound 1234789-HPCDF was reported as a positive result in sample OU4-SD-M12-100A. However, this compound failed to meet the ion ratio acceptance criteria. Therefore, the result was rejected, R.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the DL were qualified as estimated, (J).

The laboratory did not provide the following documentation: recovery standard table, clean-up standard recovery table, toxicity equivalence summary forms, second column confirmation of TCDF results, and retention time windows.

The text of this report has been formulated to address only those problem areas affecting data quality.

The reviewer noted discrepancies in the identification of positive sample results. The laboratory was contacted and asked review the results.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses. Several surrogate, internal standards, response standards, and clean-up standard were noncompliant.

Other Factors Affecting Data Quality: Samples were qualified due to field duplicate imprecision.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

FIELD DUPLICATES

Compound	OU4-FD-003-000A DX0476	OU4-SD-M08-100A DX0475	RPD
1234678-HPCDD	114.3 U*	117	200
1234678-HPCDF	32.7 U*	32.8	200
1234789-HPCDF	1.9	2.12	-11
123478-HXCDD	1.4	1.2	15
123478-HXCDF	3.3	3.28	1
123678-HXCDD	6	5.17	15
123678-HXCDF	2.7	2.33	15
123789-HXCDD	0.97 U	3.64	200
123789-HXCDF	0.97 U	0.91 U	NA
12378-PECDD	0.97 U	1.1	200
12378-PECDF	2.3	1.71 U*	29
234678-HXCDF	3.9	3.2	20
23478-PECDF	0.97 U	2.24	200
2378-TCDD	0.19 U	0.5	200
2378-TCDF	3.4	2.53	29
OCDD	959.8	957	0
OCDF	50.4 U*	44.3	NC
TOTAL DIOXINS	1355.1	1380	-2
TOTAL FURANS	232.1 U*	217	NC
TOTAL HPCDD	321.1 U*	336	200
TOTAL HPDCF	79.1 U*	75.4	NC
TOTAL HXCDD	67.4	73	-8
TOTAL HXCDF	48.3	50.6	-5
TOTAL PECDD	0.97 U	1.1	-13
TOTAL PECDF	29.6	31.3	-6
TOTAL TCDD	6.8	11.5	-51
TOTAL TCDF	24.7	15.5	46

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

FIELD DUPLICATES

Compound	OU4-FD-005-000A DX0476	OU4-SD-M10-100A DX0475	RPD
1234678-HPCDD	35.3 U*	13	NC
1234678-HPCDF	8.9 U*	3.89	NC
1234789-HPCDF	1.56 U	1.17 U	NA
123478-HXCDD	1.56 U	0.16 J	NC
123478-HXCDF	1.56 U	0.39 J	NC
123678-HXCDD	1.9	1.3	38
123678-HXCDF	1.56 U	1.17 U	NA
123789-HXCDD	1.56 U	0.23 J	NC
123789-HXCDF	1.56 U	1.17 U	NA
12378-PECDD	1.56 U	0.08 J	NC
12378-PECDF	2.1	0.39 U*	200
234678-HXCDF	1.56 U	0.21 J	NC
23478-PECDF	1.56 U	0.34 U	NA
2378-TCDD	0.31 U	0.23 U	NA
2378-TCDF	1	0.72	33
OCDD	324.3 U*	97.5	NC
OCDF	12.8 U*	6.95	NC
TOTAL DIOXINS	426.8 U*	144	NC
TOTAL FURANS	61.6 U*	36.7	NC
TOTAL HPCDD	82.4 U*	31	NC
TOTAL HPDCF	19.3 U*	9.17	NC
TOTAL HXCDD	16.9	13.2	25
TOTAL HXCDF	2	9.64	-131
TOTAL PECDD	1.56 U	0.08 J	NC
TOTAL PECDF	19.7	8.84	76
TOTAL TCDD	3.2	2.05 U	200
TOTAL TCDF	7.7	2.13	113

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORSMOUTH
SOIL DATA
GERG
SDG: DX0476

SAMPLE NUMBER:	OU4-FD-003-000A			OU4-FD-005-000A			OU4-SD-M09-100A			OU4-SD-M10-200A		
SAMPLE DATE:	08/28/00			08/29/00			08/30/00			08/29/00		
LABORATORY ID:	C36784			C36789			C36802			C36704		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	68.7 %			66.5 %			89.8 %			59.9 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:	OU4-SD-M08-100A			OU4-SD-M10-100A								
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	114	U	AG	35.3	U	A	22.6	U	A	1.37	U	
1,2,3,4,6,7,8-HPCDF	32.7	U	AG	8.90	U	A	21.5	U	A	1.37	U	
1,2,3,4,7,8,9-HPCDF	1.90			1.56	UJ	H	1.50	J	N	1.37	U	
1,2,3,4,7,8-HXCDD	1.40			1.56	UJ	H	1.30	J	N	1.37	U	
1,2,3,4,7,8-HXCDF	3.30			1.56	UJ	H	6.90	J	N	1.37	U	
1,2,3,6,7,8-HXCDD	6.00			1.90	J	H	2.60	J	N	1.37	U	
1,2,3,6,7,8-HXCDF	2.70			1.56	UJ	H	5.30	J	N	1.37	U	
1,2,3,7,8,9-HXCDD	0.97	UJ	G	1.56	UJ	H	1.80	J	N	1.37	U	
1,2,3,7,8,9-HXCDF	0.97	U		1.56	UJ	H	0.66	UJ	N	1.37	U	
1,2,3,7,8-PECDD	0.97	UJ	GN	1.56	UJ	H	0.66	UJ	N	1.37	U	
1,2,3,7,8-PECDF	2.30	J	N	2.10	J	GH	2.70	J	N	1.37	U	
2,3,4,6,7,8-HXCDF	3.90			1.56	UJ	H	8.10	J	N	1.37	U	
2,3,4,7,8-PECDF	0.97	UJ	GN	1.56	UJ	H	6.30	J	N	1.37	U	
2,3,7,8-TCDD	0.19	UJ	GN	0.31	UJ	H	0.13	UJ	N	0.27	U	
2,3,7,8-TCDF	3.40	J	N	1.00	J	H	2.00	J	N	0.27	U	
OCDD	960			324	U	A	128	U	A	12.5	U	A
OCDF	50.4	U	A	12.8	U	A	11.4	U	A	8.10	U	A
TOTAL DIOXINS	1355			427	U	A	239	U	A	13.1	U	A
TOTAL FURANS	232	U	A	61.6	U	A	150	U	A	15.1	U	A
TOTAL HPCDD	321	U	AG	82.4	U	A	54.4	U	A	1.37	U	
TOTAL HPCDF	79.1	U	A	19.3	U	A	32.3	U	A	1.37	U	
TOTAL HXCDD	67.4			16.9	J	H	35.3	J	N	0.50	J	P
TOTAL HXCDF	48.3			2.00	J	GH	41.6	J	N	5.20		
TOTAL PECDD	0.97	UJ	N	1.56	UJ	H	20.0	J	N	1.37	U	
TOTAL PECDF	29.6	J	N	19.7	J	GH	24.8	J	N	1.30	J	P
TOTAL TCDD	6.80	J	GN	3.20	J	GH	1.70	J	N	0.27	U	
TOTAL TCDF	24.7	J	N	7.70	J	GH	39.6	J	N	0.50		

CTO2.. -PORSMOUTH
SOIL DATA
GERG
SDG: DX0476

SAMPLE NUMBER:	OU4-SD-M10-300A			OU4-SD-M11-300A			OU4-SD-M12-100A			OU4-SD-R02-100A		
SAMPLE DATE:	08/29/00			08/30/00			08/29/00			08/29/00		
LABORATORY ID:	C36709			C36807			C36812			C36744		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	41.4 %			87.6 %			54.7 %			75.2 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	1.76	U		56.7	U	A	366			29.0	U	A
1,2,3,4,6,7,8-HPCDF	10.3	U	A	130	U	A	86.9	U	A	7.30	U	A
1,2,3,4,7,8,9-HPCDF	1.76	U		6.90			5.90			0.91	UJ	N
1,2,3,4,7,8-HXCDD	1.76	U		4.30			1.76	U		0.91	UJ	N
1,2,3,4,7,8-HXCDF	1.76	U		1.13	U		6.20			0.91	UJ	N
1,2,3,6,7,8-HXCDD	1.76	U		7.80			14.4			0.91	UJ	N
1,2,3,6,7,8-HXCDF	1.76	U		33.2			4.80			0.91	UJ	N
1,2,3,7,8,9-HXCDD	1.76	U		7.40			8.30			0.91	UJ	N
1,2,3,7,8,9-HXCDF	1.76	U		1.13	U		1.76	U		0.91	UJ	N
1,2,3,7,8-PECDD	1.76	U		1.13	U		1.76	U		0.91	UJ	N
1,2,3,7,8-PECDF	1.76	U		17.8			1.76	U		1.20	J	N
2,3,4,6,7,8-HXCDF	1.76	U		39.4			1.76	U		0.91	UJ	N
2,3,4,7,8-PECDF	1.76	U		41.3			1.76	U		0.91	UJ	N
2,3,7,8-TCDD	0.35	U		0.23	U		0.35	U		0.18	UJ	N
2,3,7,8-TCDF	0.70			17.5			0.35	U		0.18	UJ	N
OCDD	345	U	A	262	U	A	3173			257	U	A
OCDF	21.9	U	A	40.3	U	A	187	U	A	1.82	UJ	N
TOTAL DIOXINS	428	U	A	444	U	A	4306			333	U	A
TOTAL FURANS	57.4	U	A	947			576			45.5	U	A
TOTAL HPCDD	61.0	U	A	121	U	A	1029			64.5	U	A
TOTAL HPCDF	23.5	U	A	159			227			14.4	U	A
TOTAL HXCDD	21.4			49.9			100			10.3	J	N
TOTAL HXCDF	9.40			166			108			8.70	J	N
TOTAL PECDD	1.76	U		1.13	U		1.76	U		0.91	UJ	N
TOTAL PECDF	2.00			296			39.3			6.10	J	N
TOTAL TCDD	1.00			10.6			3.80			1.20	J	N
TOTAL TCDF	0.70			286			15.0			3.40	J	N

CTO201-PORSMOUTH
SOIL DATA
GERG
SDG: DX0476

SAMPLE NUMBER:	OU4-SD-R02-400A			OU4-SD-R03-200A			OU4-SD-R03-300A			OU4-SD-R04-200A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36749			C36754			C36759			C36764		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	53.7 %			56.1 %			63.5 %			78.3 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	2.13	U		4.60	U	A	84.6	U	A	7.80	U	A
1,2,3,4,6,7,8-HPCDF	2.13	U		1.60	U	A	21.8	U	A	2.30	U	A
1,2,3,4,7,8,9-HPCDF	2.13	U		1.62	UJ	N	1.12	U		1.03	U	
1,2,3,4,7,8-HXCDD	2.13	U		1.62	UJ	N	1.12	U		1.03	U	
1,2,3,4,7,8-HXCDF	2.13	U		1.62	UJ	N	1.12	U		1.03	U	
1,2,3,6,7,8-HXCDD	2.13	U		1.62	UJ	N	1.12	U		1.03	U	
1,2,3,6,7,8-HXCDF	2.13	U		1.62	UJ	N	1.12	U		1.03	U	
1,2,3,7,8,9-HXCDD	2.13	U		1.62	UJ	N	1.12	U		1.03	U	
1,2,3,7,8,9-HXCDF	2.13	U		1.62	UJ	N	1.12	U		1.03	U	
1,2,3,7,8-PECDD	2.13	U		1.62	UJ	N	0.80	J	P	1.03	U	
1,2,3,7,8-PECDF	2.13	U		1.62	UJ	N	1.12	U		1.03	U	
2,3,4,6,7,8-HXCDF	2.13	U		1.62	UJ	N	1.12	U		1.03	U	
2,3,4,7,8-PECDF	2.13	U		1.62	UJ	N	1.12	U		1.03	U	
2,3,7,8-TCDD	0.43	U		0.32	UJ	N	0.22	U		0.21	U	
2,3,7,8-TCDF	0.43	U		0.32	UJ	N	1.20			0.21	U	
OCDD	52.0	U	A	47.5	U	A	945			78.8	U	A
OCDF	4.50	U	A	3.24	UJ	N	43.7	U	A	2.06	U	
TOTAL DIOXINS	62.1	U	A	59.0	U	A	1193			97.5	U	A
TOTAL FURANS	5.50	U	A	4.40	U	A	104	U	A	6.50	U	A
TOTAL HPCDD	8.20	U	A	10.3	U	A	203			17.9	U	A
TOTAL HPCDF	2.13	U		3.40	U	A	50.9	U	A	4.50	U	A
TOTAL HXCDD	1.90	J	P	1.10	J	NP	40.6			1.03	U	
TOTAL HXCDF	1.00	J	P	1.00	J	NP	1.12	U		1.80		
TOTAL PECDD	2.13	U		1.62	UJ	N	0.80	J	P	1.03	U	
TOTAL PECDF	2.13	U		1.62	UJ	N	3.50			0.30	J	P
TOTAL TCDD	0.43	U		0.32	UJ	N	4.50			0.80		
TOTAL TCDF	0.43	U		0.32	UJ	N	5.60			0.21	U	

CTO. PORSMOUTH
SOIL DATA
GERG
SDG: DX0476

SAMPLE NUMBER:	OU4-SD-R04-300A	OU4-SD-R04-400A		
SAMPLE DATE:	08/29/00	08/29/00	/ /	/ /
LABORATORY ID:	C36769	C36774		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	79.6 %	72.0 %	100.0 %	100.0 %
UNITS:	PG/G	PG/G		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	4.80	U	A	4.50	U	A						
1,2,3,4,6,7,8-HPCDF	1.08	U		0.98	U							
1,2,3,4,7,8,9-HPCDF	1.08	U		0.98	U							
1,2,3,4,7,8-HXCDD	1.08	U		0.98	U							
1,2,3,4,7,8-HXCDF	1.08	U		0.98	U							
1,2,3,6,7,8-HXCDD	1.08	U		0.98	U							
1,2,3,6,7,8-HXCDF	1.08	U		0.98	U							
1,2,3,7,8,9-HXCDD	1.08	U		0.98	U							
1,2,3,7,8,9-HXCDF	1.08	U		0.98	U							
1,2,3,7,8-PECDD	1.08	U		0.98	U							
1,2,3,7,8-PECDF	1.08	U		0.98	U							
2,3,4,6,7,8-HXCDF	1.08	U		0.98	U							
2,3,4,7,8-PECDF	1.08	U		0.98	U							
2,3,7,8-TCDD	0.22	U		0.20	U							
2,3,7,8-TCDF	0.20			0.20	U							
OCDD	42.1	U	A	34.0	U	A						
OCDF	2.20	U	A	1.96	U							
TOTAL DIOXINS	55.3	U	A	44.5	U	A						
TOTAL FURANS	4.70	U	A	1.50	U	A						
TOTAL HPCDD	10.8	U	A	10.3	U	A						
TOTAL HPCDF	1.50	U	A	1.50	U	A						
TOTAL HXCDD	1.70			0.98	U							
TOTAL HXCDF	1.08	U		0.98	U							
TOTAL PECDD	1.08	U		0.98	U							
TOTAL PECDF	0.60	J	P	0.98	U							
TOTAL TCDD	0.80			0.20	J	P						
TOTAL TCDF	0.50			0.20	U							

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 5, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – DIOXIN/FURAN**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – DX0477

SAMPLES: 8/Sediment/

OU4-FD-006-000A	OU4-SD-M12-200A	OU4-SD-M12-300A	OU4-SD-R01-200A
OU4-SD-R01-300A	OU4-SD-R02-200A	OU4-SD-R02-300A	OU4-SD-R03-400A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG DX0477 consisting of eight (8) sediment samples were included in this SDG. The samples were analyzed for dioxins and furans. One field duplicate pair was included in this SDG: OU4-SD-M12-200A and OU4-FD-006-000A.

The samples were collected by Tetra Tech NUS on August 29, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using EPA Method 1613B analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * Calibration
- Blank Results
- * Surrogate/Internal Standard Recoveries
- * Recovery Standards Performance
- Clean-up Standard Performance
- * Blank Spike/Blank Spike Duplicate Results
- Matrix Spike/Matrix Spike Duplicate Results
- * Instrument Performance
- Compound Identification
- * Compound Quantitation

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANK RESULTS

The following compounds were detected in the laboratory method blank.

Compound	Maximum Concentration	Blank Action Level
OCDD	2.43 pg/g	12.15 pg/g
Total Dioxins	2.43 pg/g	12.15 pg/g

Samples Affected: All

Sample aliquot, dilution factors, and percent solids were taken into consideration when applying the blank action level. No qualifiers were assigned on this basis. The method blank had a sample aliquot of 30 g (dry weight). Sample aliquots ranged from ~30 to 49 g (dry weight).

CLEAN-UP STANDARD RESULTS

Recovery of 37Cl-2378-TCDD fell below the lower quality control limit in sample OU4-SD-R01-200A. Positive and nondetected results were qualified as estimated, J and UJ.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Recovery of OCDD and 1234678-HPCDD exceeded the upper quality control limit in the MS and MSD. No qualifiers were assigned on this basis since the concentration of target compounds present in the unspiked sample, OU4-SD-R01-200A, exceeded 5X the spiked concentration.

FIELD DUPLICATE RESULTS

Several results exceeded the 50% quality control limit for RPD in the field duplicate pair OU4-SD-M12-200A and OU4-FD-006-000A. Positive and nondetected results were qualified as estimated, J and UJ.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the DL were qualified as estimated, (J).

The laboratory did not provide the following documentation: recovery standard table, clean-up standard recovery table, toxicity equivalence summary forms, second column confirmation of TCDF results, and retention time windows.

The text of this report has been formulated to address only those problem areas affecting data quality.

The reviewer noted discrepancies in the identification of positive sample results. The laboratory was contacted and asked review the results.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses. A clean-up standard recovery was noncompliant.

Other Factors Affecting Data Quality: Samples were qualified due to field duplicate imprecision.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

FIELD DUPLICATES

Compound	OU4-FD-006-000A DX0477	OU4-SD-M12-200A DX0477	RPD
1234678-HPCDD	207.05	13.04	176
1234678-HPCDF	53.27	3.31	177
1234789-HPCDF	2	1.65 U	200
123478-HXCDD	3.1	1.65 U	200
123478-HXCDF	4.38	1.65 U	200
123678-HXCDD	9.55	1.65 U	200
123678-HXCDF	1.42 U	1.65 U	NA
123789-HXCDD	6.98	1.65 U	200
123789-HXCDF	1.12 J	1.65 U	NC
12378-PECDD	1.42 U	1.65 U	NA
12378-PECDF	1.42 U	1.65 U	NA
234678-HXCDF	4.84	1.65 U	200
23478-PECDF	1.42 U	1.65 U	NA
2378-TCDD	0.28 U	0.33 U	NA
2378-TCDF	0.28 U	0.33 U	NA
OCDD	1540.38	138.04	167
OCDF	69.31	9.24	153
TOTAL DIOXINS	2319.81	217.31	166
TOTAL FURANS	281.5	21.32	172
TOTAL HPCDD	616.19	74.12	157
TOTAL HPDCF	110.04	9.2	169
TOTAL HXCDD	157.14	5.16	187
TOTAL HXCDF	67.41	1.52 J	191
TOTAL PECDD	1.42 U	1.65 U	NA
TOTAL PECDF	27.16	1.35 J	181
TOTAL TCDD	6.09	0.33 U	200
TOTAL TCDF	7.58	0.33 U	200

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: DX0477

SAMPLE NUMBER:	OU4-FD-006-000A	OU4-SD-M12-200A	OU4-SD-M12-300A	OU4-SD-R01-200A
SAMPLE DATE:	08/29/00	08/29/00	08/29/00	08/29/00
LABORATORY ID:	C36852	C36817	C36822	C36827
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	56.1 %	54.4 %	51.1 %	73.0 %
UNITS:	PG/G	PG/G	PG/G	PG/G
FIELD DUPLICATE OF:	OU4-SD-M12-200A-D			

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	207	J	G	13.0	J	G	11.9			6.88	J	N
1,2,3,4,6,7,8-HPCDF	53.3	J	G	3.31	J	G	1.69	U		2.21	J	N
1,2,3,4,7,8,9-HPCDF	2.00	J	G	1.65	UJ	G	1.69	U		0.43	J	NP
1,2,3,4,7,8-HXCDD	3.10	J	G	1.65	UJ	G	1.69	U		1.16	UJ	N
1,2,3,4,7,8-HXCDF	4.38	J	G	1.65	UJ	G	1.69	U		1.16	UJ	N
1,2,3,6,7,8-HXCDD	9.55	J	G	1.65	UJ	G	1.69	U		1.16	UJ	N
1,2,3,6,7,8-HXCDF	1.42	U		1.65	U		1.69	U		1.16	UJ	N
1,2,3,7,8,9-HXCDD	6.98	J	G	1.65	UJ	G	1.69	U		1.16	UJ	N
1,2,3,7,8,9-HXCDF	1.12	J	P	1.65	U		1.69	U		1.16	UJ	N
1,2,3,7,8-PECDD	1.42	U		1.65	U		1.69	U		1.16	UJ	N
1,2,3,7,8-PECDF	1.42	U		1.65	U		1.69	U		1.16	UJ	N
2,3,4,6,7,8-HXCDF	4.84	J	G	1.65	UJ	G	1.69	U		1.16	UJ	N
2,3,4,7,8-PECDF	1.42	U		1.65	U		1.69	U		1.16	UJ	N
2,3,7,8-TCDD	0.28	U		0.33	U		0.34	U		0.23	UJ	N
2,3,7,8-TCDF	0.28	U		0.33	U		0.34	U		0.23	UJ	N
OCDD	1540	J	G	138	J	G	92.1			48.8	J	N
OCDF	69.3	J	G	9.24	J	G	6.19			3.48	J	N
TOTAL DIOXINS	2320	J	G	217	J	G	137			69.4	J	N
TOTAL FURANS	282	J	G	21.3	J	G	13.9			6.11	J	N
TOTAL HPCDD	616	J	G	74.1	J	G	38.9			17.4	J	N
TOTAL HPCDF	110	J	G	9.20	J	G	4.49			2.63	J	N
TOTAL HXCDD	157	J	G	5.16	J	G	6.17			3.24	J	N
TOTAL HXCDF	67.4	J	G	1.52	J	P	2.95			1.16	UJ	N
TOTAL PECDD	1.42	U		1.65	U		1.69	U		1.16	UJ	N
TOTAL PECDF	27.2	J	G	1.35	J	GP	1.69	U		1.16	UJ	N
TOTAL TCDD	6.09	J	G	0.33	UJ	G	0.34	U		0.23	UJ	N
TOTAL TCDF	7.58	J	G	0.33	UJ	G	0.27	J	P	0.23	UJ	N

CTO2U.-PORTSMOUTH
SOIL DATA
GERG
SDG: DX0477

SAMPLE NUMBER:	OU4-SD-R01-300A			OU4-SD-R02-200A			OU4-SD-R02-300A			OU4-SD-R03-400A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36832			C36837			C36842			C36847		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	75.5 %			74.4 %			57.2 %			67.6 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	4.00			7.67			22.6			147		
1,2,3,4,6,7,8-HPCDF	1.28			1.85			6.31			37.1		
1,2,3,4,7,8,9-HPCDF	1.07	U		1.00	U		1.29	U		1.44	U	
1,2,3,4,7,8-HXCDD	1.07	U		1.00	U		0.45	J	P	1.44	U	
1,2,3,4,7,8-HXCDF	1.07	U		1.00	U		1.29	U		1.44	U	
1,2,3,6,7,8-HXCDD	1.07	U		1.00	U		0.68	J	P	6.64		
1,2,3,6,7,8-HXCDF	1.07	U		1.00	U		1.29	U		1.66		
1,2,3,7,8,9-HXCDD	1.07	U		1.00	U		0.83	J	P	1.44	U	
1,2,3,7,8,9-HXCDF	1.07	U		1.00	U		1.29	U		1.44	U	
1,2,3,7,8-PECDD	1.07	U		1.00	U		1.29	U		1.44	U	
1,2,3,7,8-PECDF	1.07	U		1.00	U		0.94	J	P	1.07	J	P
2,3,4,6,7,8-HXCDF	1.07	U		1.00	U		1.29	U		1.44	U	
2,3,4,7,8-PECDF	1.07	U		1.00	U		1.23	J	P	1.44	U	
2,3,7,8-TCDD	0.21	U		0.20	U		0.26	U		0.29	U	
2,3,7,8-TCDF	0.21	U		0.24			0.26	U		1.43		
OCDD	27.2			53.1			524			1437		
OCDF	2.14			3.22			7.68			63.5		
TOTAL DIOXINS	36.0			74.1			601			1882		
TOTAL FURANS	4.10			11.8			26.9			205		
TOTAL HPCDD	8.79			17.8			57.8			345		
TOTAL HPCDF	1.28			4.83			6.31			83.6		
TOTAL HXCDD	1.07	U		3.14			16.6			93.0		
TOTAL HXCDF	0.68	J	P	1.63			5.65			35.8		
TOTAL PECDD	1.07	U		1.00	U		1.29	U		3.41		
TOTAL PECDF	1.07	U		1.88			3.18			17.2		
TOTAL TCDD	0.21	U		0.20	U		1.72			3.38		
TOTAL TCDF	0.21	U		0.24			4.11			5.43		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 5, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – DIOXIN/FURAN**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – DX0478

SAMPLES: 16/Tissues/

OU4-MU-M07-100A	OU4-MU-M07-300A	OU4-MU-M08-100A	OU4-MU-M08-200A
OU4-MU-M08-300A	OU4-MU-M11-100A	OU4-MU-M11-200A	OU4-MU-M11-300A
U4-MU-M12-100A	OU4-MU-M12-200A	OU4-MU-R01-300A	OU4-MU-R01-400A
U4-MU-R02-300A	OU4-MU-R03-300A	OU4-MU-R03-400A	OU4-MU-R04-300A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG DX0478 consisting of sixteen (16) tissue samples were included in this SDG. The samples were analyzed for dioxins and furans. Two lab duplicates were included in this SDG: OU4-MU-M11-200A and OU4-MU-M11-200A-LD (in SDG DX0480); and OU4-MU-M12-100A and OU4-MU-M12-100A-LD (in SDG DX0480).

The samples were collected by Tetra Tech NUS on August 27-30, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using EPA Method 1613B analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- Calibration
- * Blank Results
- Surrogate/Internal Standard Recoveries
- * Recovery Standards Performance
- Clean-up Standard Performance
- Blank Spike/Blank Spike Duplicate Results
- Matrix Spike/Matrix Spike Duplicate Results
- * Instrument Performance
- Compound Identification
- * Compound Quantitation

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

CALIBRATION

The continuing calibration verification standard analyzed on 10/11/00 at 3:57 failed to meet the ion ratio criteria for 2378-TCDD, 13C-1234678-HPCDD, and 1234678-HPCDD. The compounds 13C-1234678-HPCDD and 1234678-HPCDD also failed to meet the recovery acceptance limits. Nondetected results for 2378-TCDD and 1234678-HPCDD were rejected, UR, in all samples. Positive results for 2378-TCDD and 1234678-HPCDD were qualified as estimated, J, in all samples.

The continuing calibration verification standard analyzed on 10/11/00 at 17:29 failed to meet recovery acceptance limits for 13C-1234678-HPCDF and 1234678-HPCDF. Nondetected and positive results for 1234678-HPCDF were qualified as estimated, UJ and J, in all samples except OU4-MU-M11-200A, OU4-MU-M07-300A, OU4-MU-M110-100A, and OU4-MU-R01-400A. The compound 13C-123678-HXCDD failed to meet the ion ratio criteria. NO qualifiers were assigned on this basis since the associated analyte met the ion ratio and recovery acceptance criteria.

CLEAN-UP STANDARD RESULTS

Recovery of 37Cl-2378-TCDD exceeded the upper quality control limit in all samples. Positive results were qualified as estimated, J. Nondetected results were not qualified on this basis.

SURROGATE/INTERNAL STANDARD RECOVERY

Recovery of 13C-123678-HXCDF exceeded the upper quality control limit in sample OU4-MU-M08-300A. No positive results were associated with this standard. No qualifiers were assigned on this basis.

BLANK SPIKE RESULTS

Recovery of 12378-PECDF exceeded the upper quality control limit. No qualifiers were assigned on this basis.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Recovery of 2378-TCDD exceeded the upper quality control limit in the MSD. No qualifiers were assigned on this basis since the concentration of target compounds present in the unspiked sample, OU4-MU-M11-200A, exceeded 5X the spiked concentration.

LAB DUPLICATE RESULTS

Several results exceeded the 50% quality control limit for RPD in the lab duplicate pair OU4-MU-M12-100A and OU4-MU-M12-100A-LD. Positive and nondetected results were qualified as estimated, J and UJ.

Several results exceeded the 50% quality control limit for RPD in the lab duplicate pair OU4-MU-M11-200A and OU4-MU-M11-200A-LD. Positive and nondetected results were qualified as estimated, J and UJ.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the DL were qualified as estimated, (J).

The laboratory did not provide the following documentation: recovery standard table, clean-up standard recovery table, toxicity equivalence summary forms, second column confirmation of TCDF results, and retention time windows.

The text of this report has been formulated to address only those problem areas affecting data quality.

The reviewer noted discrepancies in the identification of positive sample results. The laboratory was contacted and asked review the results.

OVERALL ASSESSMENT

Laboratory Performance: Clean-up standard recoveries were noncompliant. Calibration verification standards failed to meet ion ratio and/or percent recovery acceptance limits.

Other Factors Affecting Data Quality: Samples were qualified due to field duplicate imprecision.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

Compound	FIELD DUPLICATES OU4-MU-M11-200A DX0478	OU4-MU-M11-200A-LD DX0480	RPD
1234678-HPCDD	28.38 U	42.74 U	NA
1234678-HPCDF	28.38 U	42.74 U	NA
1234789-HPCDF	28.38 U	42.74 U	NA
123478-HXCDD	28.38 U	42.74 U	NA
123478-HXCDF	28.38 U	42.74 U	NA
123678-HXCDD	28.38 U	42.74 U	NA
123678-HXCDF	28.38 U	42.74 U	NA
123789-HXCDD	28.38 U	42.74 U	NA
123789-HXCDF	28.38 U	42.74 U	NA
12378-PECDD	28.38 U	42.74 U	NA
12378-PECDF	28.38 U	42.74 U	NA
234678-HXCDF	28.38 U	42.74 U	NA
23478-PECDF	28.38 U	42.74 U	NA
2378-TCDD	5.68 U	8.55 U	NA
2378-TCDF	5.68 U	9.93	200
OCDD	134.5	87.48	42
OCDF	56.75 U	85.47 U	NA
TOTAL DIOXINS	171.1	120.15 U*	200
TOTAL FURANS	40.6 J	9.93 U*	200
TOTAL HPCDD	28.38 U	42.74 U	NA
TOTAL HPDCF	28.38 U	42.74 U	NA
TOTAL HXCDD	13.3 J	42.74 U	NC
TOTAL HXCDF	20.1 J	42.74 U	NC
TOTAL PECDD	28.38 U	42.74 U	NA
TOTAL PECDF	28.38 U	42.74 U	NA
TOTAL TCDD	23.3	32.67	-33
TOTAL TCDF	20.6	9.93	70

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

Compound	FIELD DUPLICATES OU4-MU-M12-100A DX0478	OU4-MU-M12-100A-LD DX0480	RPD
1234678-HPCDD	12.6 J	38.91 U	NC
1234678-HPCDF	31 U	38.91 U	NA
1234789-HPCDF	31 U	38.91 U	NA
123478-HXCDD	31 U	38.91 U	NA
123478-HXCDF	31 U	38.91 U	NA
123678-HXCDD	31 U	38.91 U	NA
123678-HXCDF	31 U	38.91 U	NA
123789-HXCDD	31 U	38.91 U	NA
123789-HXCDF	31 U	38.91 U	NA
12378-PECDD	31 U	38.91 U	NA
12378-PECDF	31 U	38.91 U	NA
234678-HXCDF	31 U	38.91 U	NA
23478-PECDF	31 U	38.91 U	NA
2378-TCDD	6.2 U	7.78 U	NA
2378-TCDF	8.3	7.78 U	200
OCDD	97.5	106.65	-9
OCDF	9.9 J	77.82 U	NC
TOTAL DIOXINS	142.6	185.17 U*	NC
TOTAL FURANS	53.9 J	77.82 U	NC
TOTAL HPCDD	45.1	38.91 U	200
TOTAL HPDCF	31 U	38.91 U	NA
TOTAL HXCDD	31 U	38.91 U	NA
TOTAL HXCDF	31 U	38.91 U	NA
TOTAL PECDD	31 U	38.91 U	NA
TOTAL PECDF	17.1 J	38.91 U	NC
TOTAL TCDD	6.2 U	78.52	200
TOTAL TCDF	26.9	7.78 U	200

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: DX0478

SAMPLE NUMBER:	OU4-MU-M07-100A			OU4-MU-M07-300A			OU4-MU-M08-100A			OU4-MU-M08-200A		
SAMPLE DATE:	08/28/00			08/27/00			08/28/00			08/29/00		
LABORATORY ID:	C36631			C36421			C36632			C36633		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	11.5 %			12.0 %			13.9 %			9.9 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	18.0	J	CNP	9.10	J	CNP	20.9	J	CN	17.3	J	CNP
1,2,3,4,6,7,8-HPCDF	24.4	U		26.9	U		20.7	U		26.2	U	
1,2,3,4,7,8,9-HPCDF	24.4	UJ	C	26.9	U		20.7	UJ	C	26.2	UJ	C
1,2,3,4,7,8-HXCDD	24.4	U		26.9	U		20.7	U		26.2	U	
1,2,3,4,7,8-HXCDF	24.4	U		26.9	U		20.7	U		26.2	U	
1,2,3,6,7,8-HXCDD	24.4	U		26.9	U		20.7	U		26.2	U	
1,2,3,6,7,8-HXCDF	24.4	U		26.9	U		20.7	U		26.2	U	
1,2,3,7,8,9-HXCDD	24.4	U		26.9	U		20.7	U		26.2	U	
1,2,3,7,8,9-HXCDF	24.4	U		26.9	U		20.7	U		26.2	U	
1,2,3,7,8-PECDD	24.4	U		26.9	U		20.7	U		26.2	U	
1,2,3,7,8-PECDF	24.4	U		10.2	J	NP	20.7	U		26.2	U	
2,3,4,6,7,8-HXCDF	24.4	U		26.9	U		20.7	U		26.2	U	
2,3,4,7,8-PECDF	24.4	U		26.9	U		20.7	U		26.2	U	
2,3,7,8-TCDD	4.88	UR	C	5.38	UR	C	4.13	UR	C	5.24	UR	C
2,3,7,8-TCDF	6.20	J	N	5.38	U		4.13	U		5.24	U	
OCDD	48.8	U		53.8	U		41.3	U		52.4	U	
OCDF	48.8	U		53.8	U		41.3	U		52.4	U	
TOTAL DIOXINS	79.7	J	N	32.7	J	NP	91.4	J	N	74.7	J	N
TOTAL FURANS	19.3	J	NP	53.0	J	NP	17.0	J	NP	37.8	J	NP
TOTAL HPCDD	31.1	J	N	9.10	J	NP	33.5	J	N	19.7	J	NP
TOTAL HPCDF	24.4	U		26.9	U		20.7	U		26.2	U	
TOTAL HXCDD	24.4	U		6.20	J	NP	20.9	J	N	17.3	J	NP
TOTAL HXCDF	24.4	U		26.9	U		17.0	J	NP	37.8	J	N
TOTAL PECDD	24.4	U		26.9	U		20.7	U		26.2	U	
TOTAL PECDF	24.4	U		10.2	J	NP	20.7	U		26.2	U	
TOTAL TCDD	48.6	J	N	17.5	J	N	37.1	J	N	37.7	J	N
TOTAL TCDF	19.3	J	N	42.8	J	N	4.13	U		5.24	U	

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: DX0478

SAMPLE NUMBER:	OU4-MU-M08-300A			OU4-MU-M11-100A			OU4-MU-M11-200A			OU4-MU-M11-300A		
SAMPLE DATE:	08/28/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36634			C36505			C36506			C36507		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	9.7 %			14.3 %			10.4 %			11.2 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	27.3	UR	C	43.9	UR	C	28.4	UR	C	27.6	UR	C
1,2,3,4,6,7,8-HPCDF	27.3	U		43.9	U		28.4	U		27.6	U	
1,2,3,4,7,8,9-HPCDF	27.3	UJ	C	43.9	U		28.4	U		27.6	UJ	C
1,2,3,4,7,8-HXCDD	27.3	U		43.9	U		28.4	U		27.6	U	
1,2,3,4,7,8-HXCDF	27.3	U		43.9	U		28.4	U		27.6	U	
1,2,3,6,7,8-HXCDD	27.3	U		43.9	U		28.4	U		27.6	U	
1,2,3,6,7,8-HXCDF	27.3	U		43.9	U		28.4	U		27.6	U	
1,2,3,7,8,9-HXCDD	27.3	U		43.9	U		28.4	U		27.6	U	
1,2,3,7,8,9-HXCDF	27.3	U		43.9	U		28.4	U		27.6	U	
1,2,3,7,8-PECDD	27.3	U		43.9	U		28.4	U		27.6	U	
1,2,3,7,8-PECDF	27.3	U		43.9	U		28.4	U		27.6	U	
2,3,4,6,7,8-HXCDF	27.3	U		43.9	U		28.4	U		27.6	U	
2,3,4,7,8-PECDF	27.3	U		43.9	U		28.4	U		27.6	U	
2,3,7,8-TCDD	5.46	UR	C	8.77	UR	C	5.68	UR	C	5.52	UR	C
2,3,7,8-TCDF	5.46	U		8.77	U		5.68	UJ	G	5.52	U	
OCDD	95.3	J	N	87.7	U		135	J	N	55.2	U	
OCDF	54.6	U		87.7	U		56.8	U		55.2	U	
TOTAL DIOXINS	146	J	N	23.9	J	NP	171	J	GN	23.4	J	NP
TOTAL FURANS	54.6	U		107	J	N	40.6	J	GNP	12.7	J	NP
TOTAL HPCDD	27.3	U		43.9	U		28.4	U		27.6	U	
TOTAL HPCDF	27.3	U		43.9	U		28.4	U		27.6	U	
TOTAL HXCDD	27.3	U		43.9	U		13.3	J	NP	27.6	U	
TOTAL HXCDF	27.3	U		42.7	J	NP	20.1	J	NP	27.6	U	
TOTAL PECDD	27.3	U		43.9	U		28.4	U		27.6	U	
TOTAL PECDF	27.3	U		39.7	J	NP	28.4	U		27.6	U	
TOTAL TCDD	51.1	J	N	23.9	J	N	23.3	J	N	23.4	J	N
TOTAL TCDF	5.46	U		24.1	J	N	20.6	J	GN	12.7	J	N

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: DX0478

SAMPLE NUMBER:	OU4-MU-M12-100A			OU4-MU-M12-200A			OU4-MU-R01-300A			OU4-MU-R01-400A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/27/00		
LABORATORY ID:	C36508			C36509			C36510			C36426		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.1 %			10.9 %			11.7 %			12.1 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	12.6	J	CNP	27.6	UR	C	25.9	UR	C	20.1	J	CNP
1,2,3,4,6,7,8-HPCDF	31.1	U		27.6	U		25.9	U		25.1	U	
1,2,3,4,7,8,9-HPCDF	31.1	UJ	C	27.6	UJ	C	25.9	UJ	C	25.1	U	
1,2,3,4,7,8-HXCDD	31.1	U		27.6	U		25.9	U		25.1	U	
1,2,3,4,7,8-HXCDF	31.1	U		27.6	U		25.9	U		25.1	U	
1,2,3,6,7,8-HXCDD	31.1	U		27.6	U		25.9	U		25.1	U	
1,2,3,6,7,8-HXCDF	31.1	U		27.6	U		25.9	U		25.1	U	
1,2,3,7,8,9-HXCDD	31.1	U		27.6	U		25.9	U		25.1	U	
1,2,3,7,8,9-HXCDF	31.1	U		27.6	U		25.9	U		25.1	U	
1,2,3,7,8-PECDD	31.1	U		27.6	U		25.9	U		25.1	U	
1,2,3,7,8-PECDF	31.1	U		27.6	U		25.9	U		25.1	U	
2,3,4,6,7,8-HXCDF	31.1	U		27.6	U		25.9	U		25.1	U	
2,3,4,7,8-PECDF	31.1	U		27.6	U		25.9	U		25.1	U	
2,3,7,8-TCDD	6.21	UR	C	5.52	UR	C	5.18	UR	C	5.03	UR	C
2,3,7,8-TCDF	8.30	J	GN	5.52	U		9.20	J	N	5.03	U	
OCDD	97.5	J	N	148	J	N	89.8	J	N	96.2	J	N
OCDF	62.1	J	NP	55.2	U		51.8	U		50.3	U	
TOTAL DIOXINS	143	J	N	234	J	N	89.8	J	N	184	J	N
TOTAL FURANS	53.9	J	NP	55.2	U		54.9	J	N	71.0	J	N
TOTAL HPCDD	45.1	J	GN	86.2	J	N	25.9	U		65.9	J	N
TOTAL HPCDF	31.1	U		27.6	U		25.9	U		25.1	U	
TOTAL HXCDD	31.1	U		27.6	U		25.9	U		25.1	U	
TOTAL HXCDF	31.1	U		27.6	U		25.9	U		25.1	U	
TOTAL PECDD	31.1	U		27.6	U		25.9	U		25.1	U	
TOTAL PECDF	17.1	J	NP	27.6	U		27.6	J	N	42.3	J	N
TOTAL TCDD	6.21	UJ	NG	5.52	U		5.18	U		21.6	J	N
TOTAL TCDF	26.9	J	NG	5.52	UJ	N	27.3	J	N	28.7	J	N

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: DX0478

SAMPLE NUMBER:	OU4-MU-R02-300A			OU4-MU-R03-300A			OU4-MU-R03-400A			OU4-MU-R04-300A		
SAMPLE DATE:	08/29/00			08/30/00			08/30/00			08/30/00		
LABORATORY ID:	C36511			C36512			C36513			C36514		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	12.9 %			12.0 %			11.9 %			11.8 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	22.9	UR	C	13.7	J	CNP	22.5	UR	C	22.1	UR	C
1,2,3,4,6,7,8-HPCDF	22.9	U		24.9	U		22.5	U		22.1	U	
1,2,3,4,7,8,9-HPCDF	22.9	UJ	C	24.9	UJ	C	22.5	UJ	C	22.1	UJ	C
1,2,3,4,7,8-HXCDD	22.9	U		24.9	U		22.5	U		22.1	U	
1,2,3,4,7,8-HXCDF	22.9	U		24.9	U		22.5	U		22.1	U	
1,2,3,6,7,8-HXCDD	22.9	U		24.9	U		22.5	U		22.1	U	
1,2,3,6,7,8-HXCDF	22.9	U		24.9	U		22.5	U		22.1	U	
1,2,3,7,8,9-HXCDD	22.9	U		24.9	U		22.5	U		22.1	U	
1,2,3,7,8,9-HXCDF	22.9	U		24.9	U		22.5	U		22.1	U	
1,2,3,7,8-PECDD	22.9	U		24.9	U		22.5	U		22.1	U	
1,2,3,7,8-PECDF	22.9	U		24.9	U		22.5	U		22.1	U	
2,3,4,6,7,8-HXCDF	22.9	U		24.9	U		22.5	U		22.1	U	
2,3,4,7,8-PECDF	22.9	U		24.9	U		22.5	U		22.1	U	
2,3,7,8-TCDD	4.59	UR	C	4.98	UR	C	4.50	UR	C	4.42	UR	C
2,3,7,8-TCDF	4.59	U		7.50	J	N	4.50	U		4.42	U	
OCDD	45.9	U		89.9	J	N	45.0	U		79.4	J	N
OCDF	45.9	U		49.8	U		45.0	U		44.2	U	
TOTAL DIOXINS	71.8	J	N	104	J	N	68.2	J	N	137	J	N
TOTAL FURANS	23.2	J	NP	7.50	J	NP	39.4	J	NP	44.5	J	N
TOTAL HPCDD	33.2	J	N	13.7	J	NP	22.5	U		22.1	U	
TOTAL HPCDF	22.9	U		24.9	U		22.5	U		22.1	U	
TOTAL HXCDD	22.9	U		24.9	U		22.5	U		22.1	U	
TOTAL HXCDF	23.2	J	N	24.9	U		21.9	J	NP	13.7	J	NP
TOTAL PECDD	22.9	U		24.9	U		22.5	U		22.1	U	
TOTAL PECDF	22.9	U		24.9	U		22.5	U		15.2	J	NP
TOTAL TCDD	38.6	J	N	4.98	U		68.2	J	N	57.5	J	N
TOTAL TCDF	4.59	U		7.50	J	N	17.5	J	N	15.6	J	N

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 5, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – DIOXIN/FURAN**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – DX0479

SAMPLES: 16/Tissues/

OU4-LJ-M07-100A	OU4-LJ-M08-100A	OU4-LJ-M09-100A	OU4-LJ-M10-100A
OU4-LJ-M11-100A	OU4-LJ-M12-100A	OU4-LJ-R01-100A	OU4-LJ-R02-100A
U4-LJ-R03-100A	OU4-MU-M09-100A	OU4-MU-M09-200A	OU4-MU-M10-100A
U4-MU-M10-200A	OU4-MU-M10-300A	OU4-MU-R02-400A	OU4-MU-R04-400A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG DX0479consisting of sixteen (16) tissue samples were included in this SDG. The samples were analyzed for dioxins and furans. Two lab duplicates were included in this SDG: OU4-LJ-M11-100A and OU4-LJ-M11-100A-LD (in SDG DX0480); and OU4-MU-M10-100A and OU4-MU-M10-100A-LD (in SDG DX0480).

The samples were collected by Tetra Tech NUS on August 29, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using EPA Method 1613B analytical and reporting protocols.

The data were evaluated based on the following parameters:

- Data Completeness
- Holding Times
- Calibration
- Blank Results
- Surrogate/Internal Standard Recoveries
- * Recovery Standards Performance
- Clean-up Standard Performance
- Blank Spike/Blank Spike Duplicate Results
- Matrix Spike/Matrix Spike Duplicate Results
- Instrument Performance
- Compound Identification
- * Compound Quantitation

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANK RESULTS

The following compounds were detected in the laboratory method blank.

Compound	Maximum Concentration	Blank Action Level
234678-HXCDF	3.6 pg/g	18 pg/g
OCDF	10.55 pg/g	52.75 pg/g
Total Furans	14.15 pg/g	70.75 pg/g
Total HXCDF	3.6 pg/g	18 pg/g

Samples Affected: All

Sample aliquot, dilution factors, and percent solids were taken into consideration when applying the blank action level. Positive results for OCDF, Total HXCDF, and Total Furans below the blank action level were qualified as nondetected, U. The method blank had a sample aliquot of 2.69 g (dry weight). Sample aliquots ranged from ~ 1.5 to 4.2 g (dry weight).

CLEAN-UP STANDARD RESULTS

Recovery of 37Cl-2378-TCDD exceeded the upper quality control limit in all samples. Positive results were qualified as estimated, J. Nondetected results were not qualified on this basis.

SURROGATE/INTERNAL STANDARD RECOVERY

Recoveries of 13C-123678-HXCDF, 13C-123478-HXCDD, and 13C-123678-HXCDD exceeded the upper quality control limit in sample OU4-LJ-R02-100A. No positive results were associated with these standards. No qualifiers were assigned on this basis.

BLANK SPIKE RESULTS

Recovery of 12378-PECDF exceeded the upper quality control limit. No qualifiers were assigned on this basis. The compounds 12378-PECDD, 123478-HXCDD, 123678-HXCDD, and 123789-HXCDD were not detected. Since matrix spike recoveries were acceptable for all compounds, the reviewer elected not to reject nondetected results for these compound. Nondetected and positive results for these compounds were qualified as estimated, UJ and J, in all samples except OU4-LJ-M07-100A which was used for the MS/MSD.

LAB DUPLICATE RESULTS

The result for Total TCDD exceeded the 50% quality control limit for RPD in the lab duplicate pair OU4-MU-M10-100A and OU4-MU-M10-100A-LD. Positive and nondetected results were qualified as estimated, J and UJ.

COMPOUND QUANTITATION

The compound 2378-TCDF was reported as a positive result in sample OU4-LJ-R03-100A. The compound failed to meet the acceptance criteria for the ion ratio. Therefore, the reviewer rejected the reported result, R.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

Totals were not reported for sample OU4-LJ-M12-100A. After examining the chromatogram, the reviewer determined that the positive results reported for OCDF and 1234678-HPCDD were below the method detection limits. Therefore, the reviewer raised the reported results to the reporting limits and qualified the results as nondetected, U.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the DL were qualified as estimated, (J).

The laboratory did not provide the following documentation: recovery standard table, clean-up standard recovery table, toxicity equivalence summary forms, second column confirmation of TCDF results, and retention time windows.

The text of this report has been formulated to address only those problem areas affecting data quality.

The reviewer noted discrepancies in the identification of positive sample results. The laboratory was contacted and asked review the results.

OVERALL ASSESSMENT

Laboratory Performance: Clean-up standard recoveries were noncompliant. Blank spike recoveries were noncompliant.

Other Factors Affecting Data Quality: Samples were qualified due to field duplicate imprecision.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

FIELD DUPLICATES

Compound	OU4-MU-M10-100A DX0479	OU4-MU-M10-100A-LD DX0480	RPD
1234678-HPCDD	24.79 U	13.12 J	NC
1234678-HPCDF	2.55 J	39.87 U	NC
1234789-HPCDF	24.79 U	39.87 U	NA
123478-HXCDD	24.79 U	39.87 U	NA
123478-HXCDF	24.79 U	39.87 U	NA
123678-HXCDD	0.99 J	39.87 U	NC
123678-HXCDF	24.79 U	39.87 U	NA
123789-HXCDD	24.79 U	39.87 U	NA
123789-HXCDF	24.79 U	39.87 U	NA
12378-PECDD	24.79 U	39.87 U	NA
12378-PECDF	24.79 U	39.87 U	NA
234678-HXCDF	24.79 U	2.88 J	NC
23478-PECDF	24.79 U	39.87 U	NA
2378-TCDD	4.96 U	7.97 U	NA
2378-TCDF	4.96 U	4.95 J	NC
OCDD	80.99	112.05	-32
OCDF	49.58 U	79.74 U	NA
TOTAL DIOXINS	104.46	131.33 U*	-23
TOTAL FURANS	2.55 U*	7.83 U*	NA
TOTAL HPCDD	24.79 U	13.12 J	NA
TOTAL HPDCF	2.55 J	39.87 U	NC
TOTAL HXCDD	0.99 J	6.17 U*	NC
TOTAL HXCDF	24.79 U	2.88 J	NA
TOTAL PECDD	24.79 U	39.87 U	NA
TOTAL PECDF	24.79 U	39.87 U	NA
TOTAL TCDD	22.48	7.97 U	200
TOTAL TCDF	4.96 U	4.95 J	NC

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

FIELD DUPLICATES

Compound	OU4-LJ-M11-100A DX0479	OU4-LJ-M11-100A-LD DX0480	RPD
1234678-HPCDD	15.63 U	21.73 U	NA
1234678-HPCDF	15.63 U	21.73 U	NA
1234789-HPCDF	15.63 U	21.73 U	NA
123478-HXCDD	15.63 U	21.73 U	NA
123478-HXCDF	15.63 U	21.73 U	NA
123678-HXCDD	15.63 U	21.73 U	NA
123678-HXCDF	15.63 U	21.73 U	NA
123789-HXCDD	15.63 U	21.73 U	NA
123789-HXCDF	15.63 U	21.73 U	NA
12378-PECDD	15.63 U	21.73 U	NA
12378-PECDF	15.63 U	21.73 U	NA
234678-HXCDF	15.63 U	21.73 U	NA
23478-PECDF	15.63 U	21.73 U	NA
2378-TCDD	3.13 U	4.35 U	NA
2378-TCDF	3.13 U	4.35 U	NA
OCDD	31.25 U	5.16 J	NC
OCDF	31.25 U	43.46 U	NA
TOTAL DIOXINS	31.25 U	5.16 U*	NC
TOTAL FURANS	31.25 U	43.46 U	NA
TOTAL HPCDD	15.63 U	21.73 U	NA
TOTAL HPDCF	15.63 U	21.73 U	NA
TOTAL HXCDD	15.63 U	21.73 U	NA
TOTAL HXCDF	15.63 U	21.73 U	NA
TOTAL PECDD	15.63 U	21.73 U	NA
TOTAL PECDF	15.63 U	21.73 U	NA
TOTAL TCDD	3.13 U	4.35 U	NA
TOTAL TCDF	3.13 U	4.35 U	NA

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: DX0479

SAMPLE NUMBER:	OU4-LJ-M07-100A			OU4-LJ-M08-100A			OU4-LJ-M09-100A			OU4-LJ-M10-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36926			C36927			C36928			C36929		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.2 %			23.1 %			21.5 %			20.7 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	5.50	J	NP	1.59	J	NP	4.22	J	NP	14.3	U	
1,2,3,4,6,7,8-HPCDF	22.3	U		13.5	U		13.7	U		14.3	U	
1,2,3,4,7,8,9-HPCDF	22.3	U		13.5	U		13.7	U		14.3	U	
1,2,3,4,7,8-HXCDD	22.3	U		13.5	UJ	D	13.7	UJ	D	14.3	UJ	D
1,2,3,4,7,8-HXCDF	22.3	U		13.5	U		13.7	U		14.3	U	
1,2,3,6,7,8-HXCDD	22.3	U		13.5	UJ	D	13.7	UJ	D	14.3	UJ	D
1,2,3,6,7,8-HXCDF	22.3	U		13.5	U		13.7	U		14.3	U	
1,2,3,7,8,9-HXCDD	22.3	U		13.5	UJ	D	13.7	UJ	D	14.3	UJ	D
1,2,3,7,8,9-HXCDF	22.3	U		13.5	U		13.7	U		14.3	U	
1,2,3,7,8-PECDD	22.3	U		13.5	UJ	D	13.7	UJ	D	14.3	UJ	D
1,2,3,7,8-PECDF	22.3	U		13.5	U		13.7	U		14.3	U	
2,3,4,6,7,8-HXCDF	22.3	U		13.5	U		13.7	U		14.3	U	
2,3,4,7,8-PECDF	22.3	U		13.5	U		13.7	U		14.3	U	
2,3,7,8-TCDD	4.46	U		2.70	U		2.74	U		2.87	U	
2,3,7,8-TCDF	1.84	J	NP	3.02	J	N	2.74	U		2.87	U	
OCDD	28.6	J	NP	27.0	U		4.53	J	NP	7.64	J	NP
OCDF	44.6	U		1.44	U	A	27.4	U		28.7	U	
TOTAL DIOXINS	34.0	J	NP	1.59	J	NP	8.75	J	NP	7.64	J	NP
TOTAL FURANS	1.84	U	A	4.46	U	A	27.4	U		28.7	U	
TOTAL HPCDD	5.50	J	NP	1.59	J	NP	4.22	J	NP	14.3	U	
TOTAL HPCDF	22.3	U		13.5	U		13.7	U		14.3	U	
TOTAL HXCDD	22.3	U		13.5	U		13.7	U		14.3	U	
TOTAL HXCDF	22.3	U		13.5	U		13.7	U		14.3	U	
TOTAL PECDD	22.3	U		13.5	U		13.7	U		14.3	U	
TOTAL PECDF	22.3	U		13.5	U		13.7	U		14.3	U	
TOTAL TCDD	4.46	U		2.70	U		2.74	U		2.87	UJ	G
TOTAL TCDF	1.84	J	NP	3.02	J	N	2.74	U		2.87	U	

CTO2. PORTSMOUTH
SOIL DATA
GERG
SDG: DX0479

SAMPLE NUMBER:	OU4-LJ-M11-100A			OU4-LJ-M12-100A			OU4-LJ-R01-100A			OU4-LJ-R02-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36930			C36931			C36934			C36935		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.9 %			20.5 %			22.4 %			21.5 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	15.6	U		1.26	U		13.2	U		13.3	U	
1,2,3,4,6,7,8-HPCDF	15.6	U		15.2	U		13.2	U		13.3	U	
1,2,3,4,7,8,9-HPCDF	15.6	U		15.2	U		13.2	U		13.3	U	
1,2,3,4,7,8-HXCDD	15.6	UJ	D	15.2	UJ	D	13.2	UJ	D	13.3	UJ	D
1,2,3,4,7,8-HXCDF	15.6	U		15.2	U		13.2	U		13.3	U	
1,2,3,6,7,8-HXCDD	15.6	UJ	D	15.2	UJ	D	13.2	UJ	D	13.3	UJ	D
1,2,3,6,7,8-HXCDF	15.6	U		15.2	U		13.2	U		13.3	U	
1,2,3,7,8,9-HXCDD	15.6	UJ	D	15.2	UJ	D	13.2	UJ	D	13.3	UJ	D
1,2,3,7,8,9-HXCDF	15.6	U		15.2	U		13.2	U		13.3	U	
1,2,3,7,8-PECDD	15.6	UJ	D	15.2	UJ	D	13.2	UJ	D	13.3	UJ	D
1,2,3,7,8-PECDF	15.6	U		15.2	U		13.2	U		13.3	U	
2,3,4,6,7,8-HXCDF	15.6	U		15.2	U		13.2	U		13.3	U	
2,3,4,7,8-PECDF	15.6	U		15.2	U		13.2	U		13.3	U	
2,3,7,8-TCDD	3.13	U		3.05	U		2.63	U		2.66	U	
2,3,7,8-TCDF	3.13	U		3.05	U		1.77	J	NP	2.87	J	N
OCDD	31.3	U		30.5	U		6.41	J	NP	26.6	U	
OCDF	31.3	U		0.12	U		26.3	U		26.6	U	
TOTAL DIOXINS	31.3	U		30.5	U		15.2	J	NP	4.11	J	NP
TOTAL FURANS	31.3	U		30.5	U		1.77	U	A	2.87	U	A
TOTAL HPCDD	15.6	U		15.2	U		8.78	J	NP	13.3	U	
TOTAL HPCDF	15.6	U		15.2	U		13.2	U		13.3	U	
TOTAL HXCDD	15.6	U		15.2	U		13.2	U		13.3	U	
TOTAL HXCDF	15.6	U		15.2	U		13.2	U		13.3	U	
TOTAL PECDD	15.6	U		15.2	U		13.2	U		13.3	U	
TOTAL PECDF	15.6	U		15.2	U		13.2	U		13.3	U	
TOTAL TCDD	3.13	U		3.05	U		2.63	U		4.11	J	N
TOTAL TCDF	3.13	U		3.05	U		1.77	J	NP	2.87	J	N

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: DX0479

SAMPLE NUMBER:	OU4-LJ-R03-100A			OU4-MU-M09-100A			OU4-MU-M09-200A			OU4-MU-M10-100A		
SAMPLE DATE:	09/07/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36936			C36635			C36636			C36637		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.3 %			14.0 %			9.8 %			12.5 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	11.9	U		31.3	J	N	32.2	J	NP	24.8	U	
1,2,3,4,6,7,8-HPCDF	11.9	U		7.13	J	NP	10.1	J	NP	2.55	J	NP
1,2,3,4,7,8,9-HPCDF	11.9	U		22.8	U		32.5	U		24.8	U	
1,2,3,4,7,8-HXCDD	11.9	UJ	D	1.84	J	DNP	32.5	UJ	D	24.8	UJ	D
1,2,3,4,7,8-HXCDF	11.9	U		22.8	U		32.5	U		24.8	U	
1,2,3,6,7,8-HXCDD	11.9	UJ	D	2.48	J	DNP	32.5	UJ	D	0.99	J	DNP
1,2,3,6,7,8-HXCDF	11.9	U		22.8	U		32.5	U		24.8	U	
1,2,3,7,8,9-HXCDD	11.9	UJ	D	22.8	UJ	D	32.5	UJ	D	24.8	UJ	D
1,2,3,7,8,9-HXCDF	11.9	U		22.8	U		32.5	U		24.8	U	
1,2,3,7,8-PECDD	11.9	UJ	D	22.8	UJ	D	32.5	UJ	D	24.8	UJ	D
1,2,3,7,8-PECDF	11.9	U		5.84	J	NP	2.06	J	NP	24.8	U	
2,3,4,6,7,8-HXCDF	11.9	U		22.8	U		32.5	U		24.8	U	
2,3,4,7,8-PECDF	11.9	U		22.8	U		2.05	J	NP	24.8	U	
2,3,7,8-TCDD	0.37	J	NP	4.57	U		6.49	U		4.95	U	
2,3,7,8-TCDF	1.33	R	Q	4.57	U		8.14	J	N	4.95	U	
OCDD	23.8	U		165	J	N	168	J	N	81.0	J	N
OCDF	0.19	U	A	11.7	U	A	64.9	U		49.5	U	
TOTAL DIOXINS	0.37	J	NP	316	J	N	271	J	N	104	J	N
TOTAL FURANS	1.52	U	A	36.4	U	A	12.3	U	A	2.55	U	A
TOTAL HPCDD	11.9	U		74.5	J	N	88.1	J	N	24.8	U	
TOTAL HPCDF	11.9	U		7.13	J	NP	32.5	U		2.55	J	NP
TOTAL HXCDD	11.9	U		4.31	J	NP	15.0	J	NP	0.99	J	NP
TOTAL HXCDF	11.9	U		11.7	U	A	32.5	U		24.8	U	
TOTAL PECDD	11.9	U		22.8	U		32.5	U		24.8	U	
TOTAL PECDF	11.9	U		5.84	J	NP	4.11	J	NP	24.8	U	
TOTAL TCDD	0.37	J	NP	72.2	J	N	6.49	U		22.5	J	GN
TOTAL TCDF	1.33	J	NP	4.57	U		8.14	J	N	4.95	U	

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: DX0479

SAMPLE NUMBER:	OU4-MU-M10-200A			OU4-MU-M10-300A			OU4-MU-R02-400A			OU4-MU-R04-400A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36638			C36639			C36642			C36643		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.1 %			13.1 %			11.0 %			14.4 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	32.5	U		23.9	U		27.0	U		21.9	U	
1,2,3,4,6,7,8-HPCDF	32.5	U		23.9	U		27.0	U		21.9	U	
1,2,3,4,7,8,9-HPCDF	32.5	U		23.9	U		27.0	U		21.9	U	
1,2,3,4,7,8-HXCDD	32.5	UJ	D	23.9	UJ	D	27.0	UJ	D	21.9	UJ	D
1,2,3,4,7,8-HXCDF	32.5	U		23.9	U		27.0	U		21.9	U	
1,2,3,6,7,8-HXCDD	32.5	UJ	D	23.9	UJ	D	27.0	UJ	D	21.9	UJ	D
1,2,3,6,7,8-HXCDF	32.5	U		23.9	U		27.0	U		21.9	U	
1,2,3,7,8,9-HXCDD	32.5	UJ	D	23.9	UJ	D	27.0	UJ	D	21.9	UJ	D
1,2,3,7,8,9-HXCDF	32.5	U		23.9	U		27.0	U		21.9	U	
1,2,3,7,8-PECDD	32.5	UJ	D	23.9	UJ	D	27.0	UJ	D	21.9	UJ	D
1,2,3,7,8-PECDF	32.5	U		23.9	U		27.0	U		8.25	J	NP
2,3,4,6,7,8-HXCDF	32.5	U		23.9	U		27.0	U		21.9	U	
2,3,4,7,8-PECDF	32.5	U		23.9	U		27.0	U		21.9	U	
2,3,7,8-TCDD	6.49	U		4.78	U		5.41	U		4.39	U	
2,3,7,8-TCDF	6.49	U		4.78	U		10.3	J	N	4.39	U	
OCDD	128	J	N	102	J	N	54.1	U		43.9	U	
OCDF	64.9	U		47.8	U		54.1	U		43.9	U	
TOTAL DIOXINS	128	J	N	102	J	N	54.1	U		29.0	J	NP
TOTAL FURANS	64.9	U		47.8	U		10.3	U	A	8.25	U	A
TOTAL HPCDD	32.5	U		23.9	U		27.0	U		21.9	U	
TOTAL HPCDF	32.5	U		23.9	U		27.0	U		21.9	U	
TOTAL HXCDD	32.5	U		23.9	U		27.0	U		21.9	U	
TOTAL HXCDF	32.5	U		23.9	U		27.0	U		21.9	U	
TOTAL PECDD	32.5	U		23.9	U		27.0	U		21.9	U	
TOTAL PECDF	32.5	U		23.9	U		27.0	U		8.25	J	NP
TOTAL TCDD	6.49	U		4.78	U		5.41	U		29.0	J	N
TOTAL TCDF	6.49	U		4.78	U		10.3	J	N	4.39	U	

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 5, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – DIOXIN/FURAN**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – DX0480

SAMPLES: 4/Tissues/

OU4-LJ-M11-100A-LD OU4-MU-M10-100A-LD OU4-MU-M11-200A-LD
OU4-MU-M12-100A-LD

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG DX0480 consisting of four (4) tissue samples were included in this SDG. The samples were analyzed for dioxins and furans. Four lab duplicates were included in this SDG: OU4-LJ-M11-100A-LD and OU4-LJ-M11-100A (in SDG DX0479); OU4-MU-M10-100A-LD and OU4-MU-M10-100A (in SDG DX0479); OU4-MU-M11-200A-LD and OU4-MU-M11-200A (in SDG DX0478); and OU4-MU-M12-100A-LD and OU4-MU-M12-100A (in SDG DX0478).

The samples were collected by Tetra Tech NUS on August 29, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using EPA Method 1613B analytical and reporting protocols.

The data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
• Calibration
• Blank Results
• Surrogate/Internal Standard Recoveries
• Recovery Standards Performance
• Clean-up Standard Performance
• Blank Spike/Blank Spike Duplicate Results
• Matrix Spike/Matrix Spike Duplicate Results
* • Instrument Performance
• Compound Identification
* • Compound Quantitation

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

CALIBRATION

The compounds 1234678-HPCDF and 1234789-HPCDF fell below the acceptance range for continuing calibration verifications. Nondetected results were qualified as estimated, UJ, in all samples. Five internal standard results exceeded the upper acceptance range. No qualifiers were assigned on this basis since the associated analytes were compliant.

BLANK RESULTS

The following compounds were detected in the laboratory method blank.

Compound	Maximum Concentration	Blank Action Level
12378-PECDF	13.05 pg/g	65.25 pg/g
23478-PECDF	5.16 pg/g	25.8 pg/g
OCDF	36.06 pg/g	180.3 pg/g
123478-HXCDD	3.67 pg/g	18.35 pg/g
123789-HXCDD	1.53 pg/g	7.65 pg/g
Total PECDF	18.21 pg/g	91.05 pg/g
Total Furans	54.27 pg/g	271.35 pg/g
Total HXCDD	5.21 pg/g	26.05 pg/g
Total Dioxins	5.21 pg/g	26.05 pg/g

Samples Affected: All

Sample aliquot, dilution factors, and percent solids were taken into consideration when applying the blank action level. Positive results for Total Dioxins, Total HXCDD, and Total Furans below the blank action level were qualified as nondetected, U. The method blank had a sample aliquot of 1.0 g (dry weight). Sample aliquots ranged from ~ 1.17 to 2.3 g (dry weight).

CLEAN-UP STANDARD RESULTS

Recovery of 37Cl-2378-TCDD exceeded the upper quality control limit in all samples. Positive results were qualified as estimated, J. Nondetected results were not qualified on this basis.

SURROGATE/INTERNAL STANDARD RECOVERY

Recoveries of 13C-2378-TCDF, 13C-12378-PECDF, 13C-23478-PECDF, and 13C-12378-PECDD exceeded the upper quality control limit in sample OU4-MU-M10-100A-LD. Positive results for 2378-TCDF and Total TCDF were qualified as estimated, J. No other positive results were associated with these standards. No other qualifiers were assigned on this basis.

Recovery of 13C-12378-PECDF exceeded the upper quality control limit in samples OU4-MU-M12-100A-LD and OU4-MU-M11-200A-LD. No positive results were associated with these standards. No qualifiers were assigned on this basis.

RECOVERY STANDARD RESULTS

Recovery 13C-1234-TCDD fell below 25% in all samples. Positive and nondetected results associated with this standard were qualified as estimated, J and UJ.

BLANK SPIKE RESULTS

Recovery of 12378-PECDF exceeded the upper quality control limit. No qualifiers were assigned on this basis. The compounds 2378-TCDD, 12378-PECDD, 123478-HXCDD, 123678-HXCDD, and 123789-HXCDD were not detected. Since matrix spike recoveries were acceptable for all compounds except 2378-TCDD which exceeded the upper quality control limit, the reviewer elected not to reject nondetected results for these compound. Nondetected and positive results for these compounds were qualified as estimated, UJ and J, in all samples except OU4-MU-M10-100A which was used for the MS/MSD.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Recovery of 2378-TCDD exceeded the upper quality control limit in the MS and MSD. No qualifiers were assigned on this basis since the compound was not detected in the unspiked sample OU4-MU-M10-100A.

LAB DUPLICATE RESULTS

The result for Total TCDD exceeded the 50% quality control limit for RPD in the lab duplicate pair OU4-MU-M10-100A and OU4-MU-M10-100A-LD. Positive and nondetected results were qualified as estimated, J and UJ.

Several results exceeded the 50% quality control limit for RPD in the lab duplicate pair OU4-MU-M11-200A and OU4-MU-M11-200A-LD. Positive and nondetected results were qualified as estimated, J and UJ.

Several results exceeded the 50% quality control limit for RPD in the lab duplicate pair OU4-MU-M12-100A and OU4-MU-M12-100A-LD. Positive and nondetected results were qualified as estimated, J and UJ.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the DL were qualified as estimated, (J).

The laboratory did not provide the following documentation: recovery standard table, clean-up standard recovery table, toxicity equivalence summary forms, second column confirmation of TCDF results, and retention time windows.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: Clean-up standard, internal standard, and response standard recoveries were noncompliant. Blank spike recoveries were noncompliant. Several compounds were detected in the laboratory method blank. Several compounds failed the calibration verification criteria.

Other Factors Affecting Data Quality: Samples were qualified due to field duplicate imprecision.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

Compound	FIELD DUPLICATES OU4-LJ-M11-100A DX0479	OU4-LJ-M11-100A-LD DX0480	RPD
1234678-HPCDD	15.63 U	21.73 U	NA
1234678-HPCDF	15.63 U	21.73 U	NA
1234789-HPCDF	15.63 U	21.73 U	NA
123478-HXCDD	15.63 U	21.73 U	NA
123478-HXCDF	15.63 U	21.73 U	NA
123678-HXCDD	15.63 U	21.73 U	NA
123678-HXCDF	15.63 U	21.73 U	NA
123789-HXCDD	15.63 U	21.73 U	NA
123789-HXCDF	15.63 U	21.73 U	NA
12378-PECDD	15.63 U	21.73 U	NA
12378-PECDF	15.63 U	21.73 U	NA
234678-HXCDF	15.63 U	21.73 U	NA
23478-PECDF	15.63 U	21.73 U	NA
2378-TCDD	3.13 U	4.35 U	NA
2378-TCDF	3.13 U	4.35 U	NA
OCDD	31.25 U	5.16 J	NC
OCDF	31.25 U	43.46 U	NA
TOTAL DIOXINS	31.25 U	5.16 U*	NC
TOTAL FURANS	31.25 U	43.46 U	NA
TOTAL HPCDD	15.63 U	21.73 U	NA
TOTAL HPDCF	15.63 U	21.73 U	NA
TOTAL HXCDD	15.63 U	21.73 U	NA
TOTAL HXCDF	15.63 U	21.73 U	NA
TOTAL PECDD	15.63 U	21.73 U	NA
TOTAL PECDF	15.63 U	21.73 U	NA
TOTAL TCDD	3.13 U	4.35 U	NA
TOTAL TCDF	3.13 U	4.35 U	NA

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

FIELD DUPLICATES

Compound	OU4-MU-M10-100A DX0479	OU4-MU-M10-100A-LD DX0480	RPD
1234678-HPCDD	24.79 U	13.12 J	NC
1234678-HPCDF	2.55 J	39.87 U	NC
1234789-HPCDF	24.79 U	39.87 U	NA
123478-HXCDD	24.79 U	39.87 U	NA
123478-HXCDF	24.79 U	39.87 U	NA
123678-HXCDD	0.99 J	39.87 U	NC
123678-HXCDF	24.79 U	39.87 U	NA
123789-HXCDD	24.79 U	39.87 U	NA
123789-HXCDF	24.79 U	39.87 U	NA
12378-PECDD	24.79 U	39.87 U	NA
12378-PECDF	24.79 U	39.87 U	NA
234678-HXCDF	24.79 U	2.88 J	NC
23478-PECDF	24.79 U	39.87 U	NA
2378-TCDD	4.96 U	7.97 U	NA
2378-TCDF	4.96 U	4.95 J	NC
OCDD	80.99	112.05	-32
OCDF	49.58 U	79.74 U	NA
TOTAL DIOXINS	104.46	131.33 U*	-23
TOTAL FURANS	2.55 U*	7.83 U*	NA
TOTAL HPCDD	24.79 U	13.12 J	NA
TOTAL HPDCF	2.55 J	39.87 U	NC
TOTAL HXCDD	0.99 J	6.17 U*	NC
TOTAL HXCDF	24.79 U	2.88 J	NA
TOTAL PECDD	24.79 U	39.87 U	NA
TOTAL PECDF	24.79 U	39.87 U	NA
TOTAL TCDD	22.48	7.97 U	200
TOTAL TCDF	4.96 U	4.95 J	NC

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

FIELD DUPLICATES

Compound	OU4-MU-M11-200A DX0478	OU4-MU-M11-200A-LD DX0480	RPD
1234678-HPCDD	28.38 U	42.74 U	NA
1234678-HPCDF	28.38 U	42.74 U	NA
1234789-HPCDF	28.38 U	42.74 U	NA
123478-HXCDD	28.38 U	42.74 U	NA
123478-HXCDF	28.38 U	42.74 U	NA
123678-HXCDD	28.38 U	42.74 U	NA
123678-HXCDF	28.38 U	42.74 U	NA
123789-HXCDD	28.38 U	42.74 U	NA
123789-HXCDF	28.38 U	42.74 U	NA
12378-PECDD	28.38 U	42.74 U	NA
12378-PECDF	28.38 U	42.74 U	NA
234678-HXCDF	28.38 U	42.74 U	NA
23478-PECDF	28.38 U	42.74 U	NA
2378-TCDD	5.68 U	8.55 U	NA
2378-TCDF	5.68 U	9.93	200
OCDD	134.5	87.48	42
OCDF	56.75 U	85.47 U	NA
TOTAL DIOXINS	171.1	120.15 U*	200
TOTAL FURANS	40.6 J	9.93 U*	200
TOTAL HPCDD	28.38 U	42.74 U	NA
TOTAL HPDCF	28.38 U	42.74 U	NA
TOTAL HXCDD	13.3 J	42.74 U	NC
TOTAL HXCDF	20.1 J	42.74 U	NC
TOTAL PECDD	28.38 U	42.74 U	NA
TOTAL PECDF	28.38 U	42.74 U	NA
TOTAL TCDD	23.3	32.67	-33
TOTAL TCDF	20.6	9.93	70

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

Compound	FIELD DUPLICATES OU4-MU-M12-100A DX0478	OU4-MU-M12-100A-LD DX0480	RPD
1234678-HPCDD	12.6 J	38.91 U	NC
1234678-HPCDF	31 U	38.91 U	NA
1234789-HPCDF	31 U	38.91 U	NA
123478-HXCDD	31 U	38.91 U	NA
123478-HXCDF	31 U	38.91 U	NA
123678-HXCDD	31 U	38.91 U	NA
123678-HXCDF	31 U	38.91 U	NA
123789-HXCDD	31 U	38.91 U	NA
123789-HXCDF	31 U	38.91 U	NA
12378-PECDD	31 U	38.91 U	NA
12378-PECDF	31 U	38.91 U	NA
234678-HXCDF	31 U	38.91 U	NA
23478-PECDF	31 U	38.91 U	NA
2378-TCDD	6.2 U	7.78 U	NA
2378-TCDF	8.3	7.78 U	200
OCDD	97.5	106.65	-9
OCDF	9.9 J	77.82 U	NC
TOTAL DIOXINS	142.6	185.17 U*	NC
TOTAL FURANS	53.9 J	77.82 U	NC
TOTAL HPCDD	45.1	38.91 U	200
TOTAL HPDCF	31 U	38.91 U	NA
TOTAL HXCDD	31 U	38.91 U	NA
TOTAL HXCDF	31 U	38.91 U	NA
TOTAL PECDD	31 U	38.91 U	NA
TOTAL PECDF	17.1 J	38.91 U	NC
TOTAL TCDD	6.2 U	78.52	200
TOTAL TCDF	26.9	7.78 U	200

NA - Not Applicable, Nondetected Results
NC - Not Calculated; Positive result less than reporting limit.
200 - Positive result greater than reporting limit.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: DX0480

SAMPLE NUMBER:	OU4-LJ-M11-100A-LD			OU4-MU-M10-100A-LD			OU4-MU-M11-200A-LD			OU4-MU-M12-100A-LD		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36939			C36940			C36943			C36941		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	20.1 %			11.6 %			11.5 %			11.5 %		
UNITS:	PG/G			PG/G			PG/G			PG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	21.7	U		13.1	J	NP	42.7	U		38.8	U	
1,2,3,4,6,7,8-HPCDF	21.7	UJ	C	40.0	UJ	C	42.7	UJ	C	38.8	UJ	C
1,2,3,4,7,8,9-HPCDF	21.7	UJ	C	40.0	UJ	C	42.7	UJ	C	38.8	UJ	C
1,2,3,4,7,8-HXCDD	21.7	UJ	D	40.0	UJ	D	42.7	UJ	D	38.8	UJ	D
1,2,3,4,7,8-HXCDF	21.7	U		40.0	U		42.7	U		38.8	U	
1,2,3,6,7,8-HXCDD	21.7	UJ	D	40.0	UJ	D	42.7	UJ	D	38.8	UJ	D
1,2,3,6,7,8-HXCDF	21.7	U		40.0	U		42.7	U		38.8	U	
1,2,3,7,8,9-HXCDD	21.7	UJ	D	40.0	UJ	D	42.7	UJ	D	38.8	UJ	D
1,2,3,7,8,9-HXCDF	21.7	U		40.0	U		42.7	U		38.8	U	
1,2,3,7,8-PECDD	21.7	UJ	DN	40.0	UJ	DN	42.7	UJ	DN	38.8	UJ	DN
1,2,3,7,8-PECDF	21.7	UJ	N	40.0	UJ	N	42.7	UJ	N	38.8	UJ	N
2,3,4,6,7,8-HXCDF	21.7	U		2.88	J	NP	42.7	U		38.8	U	
2,3,4,7,8-PECDF	21.7	UJ	N	40.0	UJ	N	42.7	UJ	N	38.8	UJ	N
2,3,7,8-TCDD	4.35	UJ	DN	8.00	UJ	DN	8.55	UJ	DN	7.75	UJ	DN
2,3,7,8-TCDF	4.35	UJ	N	4.95	J	NP	9.93	J	GN	7.75	UJ	GN
OCDD	5.16	J	NP	112	J	N	87.5	J	N	107	J	N
OCDF	43.5	U		80.0	U		85.5	U		77.5	U	
TOTAL DIOXINS	5.16	U	A	131	U	A	120	U	AG	185	U	A
TOTAL FURANS	43.5	U		7.83	U	A	9.93	U	AG	77.5	U	
TOTAL HPCDD	21.7	U		13.1	J	NP	42.7	U		38.8	U	
TOTAL HPCDF	21.7	U		40.0	U		42.7	U		38.8	U	
TOTAL HXCDD	21.7	U		6.17	U	A	42.7	U		38.8	U	
TOTAL HXCDF	21.7	U		2.88	J	NP	42.7	U		38.8	U	
TOTAL PECDD	21.7	UJ	N	40.0	UJ	N	42.7	UJ	N	38.8	UJ	N
TOTAL PECDF	21.7	UJ	N	40.0	UJ	N	42.7	UJ	N	38.8	UJ	N
TOTAL TCDD	4.35	UJ	N	8.00	UJ	NG	32.7	J	N	78.5	J	GN
TOTAL TCDF	4.35	UJ	N	4.95	J	NP	9.93	J	GN	7.75	UJ	GN

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: NOVEMBER 22, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – DIOXIN/FURAN**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – DX0481

SAMPLES: 3/Aqueous/

OU4-FB-001-000A OU4-RB-001-000A OU4-RB-003-000A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG DX0481 consisting of three (3) field quality control blanks were included in this SDG. The samples were analyzed for dioxins and furans. No field duplicate pairs were included in this SDG.

The sample was collected by Tetra Tech NUS on August 27 and 29, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using EPA Method 1613B analytical and reporting protocols.

The data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Calibration
* • Blank Results
  • Surrogate/Internal Standard Recoveries
* • Recovery Standards Performance
  • Clean-up Standard Performance
* • Blank Spike/Blank Spike Duplicate Results
* • Instrument Performance
* • Compound Identification
* • Compound Quantitation

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

INTERNAL STANDARD RESULTS

Recoveries for 13C-123678-HXCDF exceeded the upper quality control limit in OU4-FB-001-000A. No qualifiers were assigned on this basis since no positive results were associated with this standard.

CLEAN-UP STANDARD RESULTS

Recoveries for 37Cl-2378-TCDD exceeded the upper quality control limit in all three samples. No qualifiers were assigned on this basis since no positive results were associated with this standard.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the DL were qualified as estimated, (J).

The laboratory did not provide the following documentation: recovery standard table, clean-up standard recovery table, toxicity equivalence summary forms, second column confirmation of TCDF results, and retention time windows.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: No qualifiers were assigned to the data for technical noncompliance.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO. ·PORTSMOUTH
WATER DATA
GERG
SDG: DX0481

SAMPLE NUMBER:	OU4-FB-001-000A	OU4-RB-001-000A	OU4-RB-003-000A	
SAMPLE DATE:	08/27/00	08/27/00	08/29/00	/ /
LABORATORY ID:	C36626	C36622	C36796	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	100.0 %	100.0 %	100.0 %	100.0 %
UNITS:	PG/L	PG/L	PG/L	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	48.1	U		48.1	U		48.1	U				
1,2,3,4,6,7,8-HPCDF	48.1	U		48.1	U		48.1	U				
1,2,3,4,7,8,9-HPCDF	48.1	U		48.1	U		48.1	U				
1,2,3,4,7,8-HXCDD	48.1	U		48.1	U		48.1	U				
1,2,3,4,7,8-HXCDF	48.1	U		48.1	U		48.1	U				
1,2,3,6,7,8-HXCDD	48.1	U		48.1	U		48.1	U				
1,2,3,6,7,8-HXCDF	48.1	U		48.1	U		48.1	U				
1,2,3,7,8,9-HXCDD	48.1	U		48.1	U		48.1	U				
1,2,3,7,8,9-HXCDF	48.1	U		48.1	U		48.1	U				
1,2,3,7,8-PECDD	48.1	U		48.1	U		48.1	U				
1,2,3,7,8-PECDF	48.1	U		48.1	U		48.1	U				
2,3,4,6,7,8-HXCDF	48.1	U		48.1	U		48.1	U				
2,3,4,7,8-PECDF	48.1	U		48.1	U		48.1	U				
2,3,7,8-TCDD	9.62	U		9.62	U		9.62	U				
2,3,7,8-TCDF	9.62	U		9.62	U		9.62	U				
OCDD	96.2	U		96.2	U		96.2	U				
OCDF	96.2	U		96.2	U		96.2	U				
TOTAL DIOXINS	96.2	U		96.2	U		96.2	U				
TOTAL FURANS	96.2	U		96.2	U		96.2	U				
TOTAL HPCDD	48.1	U		48.1	U		48.1	U				
TOTAL HPCDF	48.1	U		48.1	U		48.1	U				
TOTAL HXCDD	48.1	U		48.1	U		48.1	U				
TOTAL HXCDF	48.1	U		48.1	U		48.1	U				
TOTAL PECDD	48.1	U		48.1	U		48.1	U				
TOTAL PECDF	48.1	U		48.1	U		48.1	U				
TOTAL TCDD	9.62	U		9.62	U		9.62	U				
TOTAL TCDF	9.62	U		9.62	U		9.62	U				

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: JANUARY 2, 2001**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – DIOXIN/FURAN**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – DX0488

SAMPLES: 1/Tissue/

OU4-LJ-R04-100A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG DX0488 consisting of one (1) tissue sample was included in this SDG. The sample was analyzed for dioxins and furans. No field duplicate pairs were included in this SDG.

The sample was collected by Tetra Tech NUS on September 6, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using EPA Method 1613B analytical and reporting protocols.

The data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Calibration
  • Blank Results
  • Surrogate/Internal Standard Recoveries
  • Recovery Standards Performance
  • Clean-up Standard Performance
* • Instrument Performance
* • Compound Identification
* • Compound Quantitation

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

The sample data was received late from the laboratory. Due to time constraints, only qualifiers due to method blank contamination were applied to the sample data. The other issues were noted for completeness but did not result in the rejection of sample data.

INTERNAL STANDARD RESULTS

Recoveries for 13C-12378-PECDF and 13C-23478-PECDF exceeded the upper quality control limit in OU4-LJ-R04-100A MSD. No qualifiers were assigned on this basis.

CLEAN-UP STANDARD RESULTS

Recovery of 37Cl-2378-TCDD exceeded the upper quality control limit. No qualifiers were assigned on this basis.

RECOVERY STANDARD RESULTS

Recovery of 13C-1234-TCDD fell below the 25% quality control limit. No qualifiers were assigned on this basis.

BLANK RESULTS

The following compounds were detected in the laboratory method blank.

Compound	Maximum Concentration		Blank Action Level	
12378-PECDF	5.24	pg/g	26.2	pg/g
23478-PECDF	5.57	pg/g	27.85	pg/g
123478-HXCDF	2.53	pg/g	12.65	pg/g
234678-HXCDF	4.31	pg/g	21.55	pg/g
123789-HXCDF	5.76	pg/g	28.8	pg/g
1234678-HPCDF	5.46	pg/g	27.3	pg/g
1234789-HPCDF	6.51	pg/g	32.55	pg/g
OCDF	24.05	pg/g	120.25	pg/g
2378-TCDD	1.45	pg/g	7.25	pg/g
12378-PECDD	2.31	pg/g	11.55	pg/g
1234678-HPCDD	7.93	pg/g	39.65	pg/g
OCDD	29.77	pg/g	148.85	pg/g
Total PECDF	10.81	pg/g	54.05	pg/g
Total HXCDF	12.6	pg/g	63	pg/g
Total HPCDF	11.97	pg/g	59.85	pg/g
Total Furans	59.43	pg/g	297.15	pg/g
Total TCDD	2.21	pg/g	11.05	pg/g
Total PECDD	2.31	pg/g	11.55	pg/g
Total HPCDD	7.93	pg/g	39.65	pg/g
Total Dioxin	42.21	pg/g	211.05	pg/g

Samples Affected: All

Sample aliquot, dilution factors, and percent solids were taken into consideration when applying the blank action level. Positive results for 1234678-HPCDD, 1234678-HPCDF, 12378-PECDF, OCDD, OCDF, Total HPCDD, Total HPCDF, Total HXCDF, and Total PECDF below the blank action level were qualified as nondetected, U.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the DL were qualified as estimated, (J).

The laboratory did not provide the following documentation: recovery standard table, clean-up standard recovery table, toxicity equivalence summary forms, second column confirmation of TCDF results, and retention time windows.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: No qualifiers were assigned to the data for technical noncompliance.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO. .-PORTSMOUTH
SOIL DATA
GERG
SDG: DX0488

SAMPLE NUMBER:	OU4-LJ-R04-100A											
SAMPLE DATE:	09/06/00			/ /			/ /			/ /		
LABORATORY ID:	C36937											
QC_TYPE:	NORMAL											
% SOLIDS:	21.3 %			100.0 %			100.0 %			100.0 %		
UNITS:	PG/G											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DIOXINS/FURANS												
1,2,3,4,6,7,8-HPCDD	4.35	U	A									
1,2,3,4,6,7,8-HPCDF	2.85	U	A									
1,2,3,4,7,8,9-HPCDF	18.72659	U										
1,2,3,4,7,8-HXCDD	18.72659	U										
1,2,3,4,7,8-HXCDF	18.72659	U										
1,2,3,6,7,8-HXCDD	18.72659	U										
1,2,3,6,7,8-HXCDF	18.72659	U										
1,2,3,7,8,9-HXCDD	18.72659	U										
1,2,3,7,8,9-HXCDF	18.72659	U										
1,2,3,7,8-PECDD	18.72659	U										
1,2,3,7,8-PECDF	1.78	U	A									
2,3,4,6,7,8-HXCDF	18.72659	U										
2,3,4,7,8-PECDF	18.72659	U										
2,3,7,8-TCDD	3.74532	U										
2,3,7,8-TCDF	3.74532	U										
OCDD	16.11	U	A									
OCDF	6.51	U	A									
TOTAL DIOXINS	26.09	J	P									
TOTAL FURANS	17.77	J	P									
TOTAL HPCDD	9.98	U	A									
TOTAL HPCDF	2.85	U	A									
TOTAL HXCDD	18.72659	U										
TOTAL HXCDF	5.38	U	A									
TOTAL PECDD	18.72659	U										
TOTAL PECDF	1.78	U	A									
TOTAL TCDD	3.74532	U										
TOTAL TCDF	1.24	J	P									

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 8, 2000**

FROM: **DOUGLAS S. SCHLOER** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYNUCLEAR AROMATIC HYDROCARBONS**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – T1170

SAMPLES: 14 / Tissue / PAH

OU4-MU-M01-300A	OU4-MU-M02-100A	OU4-MU-M03-100A	OU4-MU-M03-200A
OU4-MU-M04-100A	OU4-MU-M05-100A	OU4-MU-M05-300A	OU4-MU-M06-100A
OU4-MU-M06-200A	OU4-MU-M06-300A	OU4-MU-M07-300A	OU4-MU-M13-300A
OU4-MU-M14-200A	OU4-MU-R01-400A		

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine; SDG T1170 consists of fourteen (14) tissue samples. The samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). No lab duplicate pairs were included in this SDG.

The samples were collected by Tetra Tech NUS on August 27th and 28th, 2000 and were analyzed by Texas A&M University under NOAA Technical Memorandum NOS ORCA 130 Quality Assurance/Quality Control (QA/QC) criteria. All analyses and preparations were conducted using NOAA Technical Memorandum NOS ORCQ 130 (Program Mussel Watch) Methods.

The data were evaluated based on the following parameters:

- Data Completeness
- Holding Times
- GC/MS Tuning and System Performance
- Initial / Continuing Calibration
- Blank Contamination
- Surrogate / Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate Results
- Blank Spike Results
- Lab Duplicate Results
- Field Duplicate Results
- Instrument Performance
- Compound Identification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

CALIBRATION

The following table summarizes calibration noncompliances and corresponding validation actions. The key associated with this table is presented after the table.

Compound	CCV 10/24/00;(17:55)	CCV 10/25/00;(02:50)	CCV 10/25/00;(10:20)
Acenaphthene		X	
Acenaphthylene	X	X	X
Anthracene	X	X	
Benzo(A)pyrene		X	
Benzo(G,H,I)perylene	X		
Dibenzo(A,H)anthracene	X		
Fluorene	X	X	X
Indeno(1,2,3-CD)perylene	X		
Perylene			X
Samples Affected:	OU4-MU-M03-100A OU4-MU-M03-200A OU4-MU-M04-100A OU4-MU-M05-100A OU4-MU-M05-300A	OU4-MU-M01-300A OU4-MU-M02-100A OU4-MU-M03-100A OU4-MU-M03-200A OU4-MU-M04-100A OU4-MU-M05-100A OU4-MU-M05-300A OU4-MU-M06-100A OU4-MU-M06-200A OU4-MU-M06-300A OU4-MU-M07-300A OU4-MU-M13-300A OU4-MU-M14-200A OU4-MU-R01-400A	OU4-MU-M01-300A OU4-MU-M02-100A OU4-MU-M06-100A OU4-MU-M06-200A OU4-MU-M06-300A OU4-MU-M07-300A OU4-MU-M13-300A OU4-MU-M14-200A OU4-MU-R01-400A

Calibration Actions

X - Percent Difference (%D) greater than 15%. Qualify positive and nondetected results for the affected compounds as estimated (J) and (UJ) respectively.

SURROGATE/INTERNAL STANDARD RECOVERY

Recovery of the surrogate d12-perylene fell below the 40-120% quality control limit in the laboratory method blank on 10/24/00. Since this surrogate has advisory quality control limits, no action was taken.

SANDARD REFERENCE MATERIAL

Standard Reference Material (SRM) % recoveries of acenaphthylene, acenaphthene, anthracene and naphthalene failed to meet the quality control limit of ± 35% deviation from manufacturer certified concentrations. Only positive results were reported for the aforementioned compounds, and these were qualified as estimated (J) in all samples.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike and/or Matrix Spike Duplicate (MS / MSD) % recovery of dibenzo(A,H)anthracene and benzo(G,H,I)perylene exceeded quality control limits. The positive results reported for the aforementioned compounds were qualified as estimated (J) in the unspiked sample (OU4-MU-M03-100A).

COMPOUND QUANTITATION

Several positive sample results less than 0.05 were not reported on the electronic deliverable (EDD) or Form 1s because of rounding. The EDD and Form 1s were modified by TtNUS to match raw data results; however, these discrepancies were not considered significant.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the reporting limit, RL, were qualified as estimated (J).

Samples were frozen from time of receipt at the laboratory to sample extraction. Therefore, holding time from sample collection to sample extraction is not an issue. No qualifiers were assigned on this basis.

Samples were reported on a dry weight basis. This is consistent with historical data from this site.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: The laboratory was not able to meet quality control criteria for continuing calibration of several PAH compounds.

SRM % recoveries of several compounds failed to meet quality control limits.

Other Factors Affecting Data Quality: % Recovery of several MS / MSD compounds exceeded quality control limits.

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Douglas S. Schloer
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED LABORATORY RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO20 . PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M01-300A			OU4-MU-M02-100A			OU4-MU-M03-100A			OU4-MU-M03-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/27/00			08/27/00		
LABORATORY ID:	C36424			C36423			C36413			C36414		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	9.1 %			9.9 %			11.7 %			14.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	3.46	J	P	2.04	J	P	1.59	J	P	2.25	J	P
1-METHYLNAPHTHALENE	5.76			2.87	J	P	2.59	J	P	2.96	J	P
1-METHYLPHENANTHRENE	3.46	J	P	1.46	J	P	1.99	J	P	2.05	J	P
2,6-DIMETHYLNAPHTHALENE	4.53	J	P	2.23	J	P	2.24	J	P	3.23	J	P
2-METHYLNAPHTHALENE	8.71			4.81	J	P	5.03			5.53		
ACENAPHTHENE	8.33	J	CEP	1.67	J	CEP	3.48	J	CDEP	4.51	J	CEP
ACENAPHTHYLENE	19.7	J	CEP	7.87	J	CEP	8.54	J	CDE	10.4	J	EC
ANTHRACENE	27.0	J	CEP	15.6	J	CEP	16.8	J	CDE	21.0	J	EC
BENZO(A)ANTHRACENE	27.5			10.2			12.8			15.6		
BENZO(A)PYRENE	21.8	J	C	4.89	J	CP	9.93	J	C	9.77	J	C
BENZO(B)FLUORANTHENE	36.5			18.7			21.4			27.1		
BENZO(E)PYRENE	39.6			17.6			18.4			21.1		
BENZO(G,H,I)PERYLENE	21.4			7.15			10.0	J	C	11.8	J	C
BENZO(K)FLUORANTHENE	11.6			7.78			8.22			10.4		
BIPHENYL	1.89	J	P	1.59	J	P	1.62	J	P	1.12	J	P
C1-CHRYSENES	23.8			10.5	J	P	9.42	J	P	11.2		
C1-DIBENZOTHIOPHENES	1.94	J	P	1.25	J	P	1.38	J	P	0.89	J	P
C1-FLUORANTHENES/PYRENES	44.4			15.6			13.9			19.0		
C1-FLUORENES	36.7			27.1			17.8			6.37	J	P
C1-NAPHTHALENES	14.5			7.68	J	P	7.62	J	P	8.49		
C1-PHENANTHRENES/ANTHRACENES	19.7			8.73	J	P	9.12	J	P	10.6		
C2-CHRYSENES	12.0	J	P	7.48	J	P	4.11	J	P	6.13	J	P
C2-DIBENZOTHIOPHENES	3.48	J	P	2.17	J	P	1.92	J	P	2.30	J	P
C2-FLUORENES	23.4			11.6	J	P	9.77	J	P	11.6	J	P
C2-NAPHTHALENES	11.1	J	P	5.17	J	P	4.83	J	P	6.41	J	P
C2-PHENANTHRENES/ANTHRACENES	21.8			10.6	J	P	8.67	J	P	11.9		
C3-CHRYSENES	0.26	J	P	0.13	J	P	0.08	J	P	0.32	J	P
C3-DIBENZOTHIOPHENES	4.77	J	P	2.79	J	P	2.98	J	P	2.99	J	P
C3-FLUORENES	29.6			5.73	J	P	7.73	J	P	13.7	J	P
C3-NAPHTHALENES	11.9	J	P	6.55	J	P	4.35	J	P	5.58	J	P
C3-PHENANTHRENES/ANTHRACENES	16.8			6.25	J	P	6.78	J	P	10.3		
C4-CHRYSENES	0.07	J	P	0.12	J	P	0.06	J	P	0.04	J	P
C4-NAPHTHALENES	10.3	J	P	5.99	J	P	4.26	J	P	5.21	J	P

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M01-300A			OU4-MU-M02-100A			OU4-MU-M03-100A			OU4-MU-M03-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/27/00			08/27/00		
LABORATORY ID:	C36424			C36423			C36413			C36414		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	9.1 %			9.9 %			11.7 %			14.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	6.97	J	P	5.72	J	P	3.42	J	P	4.93	J	P
CHRYSENE	36.6			14.9			21.6			23.9		
DIBENZO(A,H)ANTHRACENE	2.59			0.31	J	P	1.83	J	CDP	1.74	J	C
DIBENZOTHIOPHENE	1.10	J	P	0.58	J	P	0.64	J	P	0.67	J	P
FLUORANTHENE	57.2			25.1			35.7			44.2		
FLUORENE	8.34	J	CP	3.20	J	CP	3.33	J	CP	3.83	J	CP
INDENO(1,2,3-CD)PYRENE	14.1			4.74			8.18	J	C	9.51	J	C
NAPHTHALENE	8.80	J	EP	5.17	J	EP	4.93	J	EP	5.07	J	EP
PERYLENE	13.4	J	C	8.05	J	C	6.61			8.40		
PHENANTHRENE	15.9			5.45	J	P	10.2			10.5		
PYRENE	66.8			27.2			30.3			37.2		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M04-100A			OU4-MU-M05-100A			OU4-MU-M05-300A			OU4-MU-M06-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36415			C36416			C36417			C36418		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.9 %			13.9 %			12.4 %			11.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	1.74	J	P	1.79	J	P	1.78	J	P	1.61	J	P
1-METHYLNAPHTHALENE	2.51	J	P	2.96	J	P	3.40	J	P	2.90	J	P
1-METHYLPHENANTHRENE	2.04	J	P	4.68			1.91	J	P	1.77	J	P
2,6-DIMETHYLNAPHTHALENE	2.73	J	P	2.55	J	P	2.68	J	P	2.37	J	P
2-METHYLNAPHTHALENE	4.86			5.08			6.41			5.59		
ACENAPHTHENE	4.11	J	CEP	7.63	J	CEP	5.27	J	CEP	3.24	J	CEP
ACENAPHTHYLENE	10.9	J	CE	12.8	J	CE	8.32	J	CE	6.54	J	CEP
ANTHRACENE	20.4	J	CE	34.3	J	CE	16.1	J	CE	12.3	J	CE
BENZO(A)ANTHRACENE	11.2			74.1			8.39			11.6		
BENZO(A)PYRENE	8.09	J	C	82.2	J	C	6.39	J	C	9.23	J	C
BENZO(B)FLUORANTHENE	18.3			103			14.1			22.5		
BENZO(E)PYRENE	17.1			59.2			13.9			18.3		
BENZO(G,H,I)PERYLENE	10.2	J	C	52.9	J	C	8.23	J	C	10.5		
BENZO(K)FLUORANTHENE	6.66			46.3			5.68			8.45		
BIPHENYL	1.23	J	P	1.38	J	P	1.56	J	P	1.43	J	P
C1-CHRYSENES	8.53	J	P	29.1			8.12	J	P	9.20	J	P
C1-DIBENZOTHIOPHENES	1.43	J	P	2.16	J	P	1.21	J	P	0.93	J	P
C1-FLUORANTHENES/PYRENES	15.8			37.8			12.0			14.2		
C1-FLUORENES	13.7	J	P	9.67	J	P	11.8	J	P	22.4		
C1-NAPHTHALENES	7.37	J	P	8.04			9.81			8.49		
C1-PHENANTHRENES/ANTHRACENES	11.4			21.4			10.5			7.75	J	P
C2-CHRYSENES	5.06	J	P	12.0			4.72	J	P	5.73	J	P
C2-DIBENZOTHIOPHENES	1.82	J	P	2.53	J	P	2.07	J	P	2.39	J	P
C2-FLUORENES	12.5	J	P	14.5	J	P	15.7	J	P	10.2	J	P
C2-NAPHTHALENES	5.75	J	P	6.22	J	P	6.42	J	P	5.68	J	P
C2-PHENANTHRENES/ANTHRACENES	12.3			14.4			10.1			8.71	J	P
C3-CHRYSENES	0.04	J	P	0.09	J	P	0.19	J	P	0.03	J	P
C3-DIBENZOTHIOPHENES	2.48	J	P	2.64	J	P	2.52	J	P	2.37	J	P
C3-FLUORENES	14.9	J	P	11.5	J	P	17.9			8.23	J	P
C3-NAPHTHALENES	5.42	J	P	5.59	J	P	5.87	J	P	6.05	J	P
C3-PHENANTHRENES/ANTHRACENES	8.49	J	P	8.37	J	P	6.23	J	P	7.23	J	P
C4-CHRYSENES	1.14	J	P	3.73	J	P	0.10	J	P	0.10	J	P
C4-NAPHTHALENES	4.60	J	P	5.20	J	P	6.07	J	P	6.40	J	P

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M04-100A			OU4-MU-M05-100A			OU4-MU-M05-300A			OU4-MU-M06-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36415			C36416			C36417			C36418		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.9 %			13.9 %			12.4 %			11.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	4.76	J	P	4.79	J	P	4.01	J	P	4.30	J	P
CHRYSENE	16.4			78.7			14.8			21.3		
DIBENZO(A,H)ANTHRACENE	1.45	J	P	10.6			1.13	J	P	1.44	J	P
DIBENZOTHIOPHENE	0.57	J	P	1.69	J	P	0.57	J	P	0.92	J	P
FLUORANTHENE	31.3			147			25.8			38.7		
FLUORENE	3.70	J	CP	6.97	J	CP	3.33	J	CP	3.59	J	CP
INDENO(1,2,3-CD)PYRENE	7.54			56.6			5.73			8.99		
NAPHTHALENE	5.14	J	EP	5.50	J	EP	5.80	J	EP	6.29	J	EP
PERYLENE	7.64			25.9			6.08			6.73	J	C
PHENANTHRENE	8.41			40.3			7.51			10.3		
PYRENE	28.8			117			22.2			31.8		

SAMPLE NUMBER:	OU4-MU-M06-200A			OU4-MU-M06-300A			OU4-MU-M07-300A			OU4-MU-M13-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/28/00		
LABORATORY ID:	C36419			C36420			C36421			C36425		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.5 %			9.1 %			12.0 %			12.9 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	2.64	J	P	1.74	J	P	1.45	J	P	5.60	J	P
1-METHYLNAPHTHALENE	5.04			2.35	J	P	3.09	J	P	16.5		
1-METHYLPHENANTHRENE	1.97	J	P	1.51	J	P	1.28	J	P	7.93		
2,6-DIMETHYLNAPHTHALENE	3.63	J	P	2.05	J	P	2.13	J	P	10.6		
2-METHYLNAPHTHALENE	9.17			4.11	J	P	5.37			31.5		
ACENAPHTHENE	4.93	J	CEP	1.73	J	CEP	3.06	J	CEP	11.4	J	CE
ACENAPHTHYLENE	10.8	J	CE	6.87	J	CEP	6.49	J	CE	31.4	J	CE
ANTHRACENE	20.4	J	CE	12.6	J	CE	11.3	J	CE	74.8	J	CE
BENZO(A)ANTHRACENE	11.4			9.24			7.48			65.9		
BENZO(A)PYRENE	11.4	J	C	8.71	J	C	4.98	J	C	25.6	J	C
BENZO(B)FLUORANTHENE	25.7			13.4			13.8			87.5		
BENZO(E)PYRENE	23.1			11.7			12.7			67.7		
BENZO(G,H,I)PERYLENE	12.1			7.18			6.23			21.3		
BENZO(K)FLUORANTHENE	9.37			6.41			6.12			29.1		
BIPHENYL	1.27	J	P	1.62	J	P	1.29	J	P	2.19	J	P
C1-CHRYSENES	12.8			6.50	J	P	9.44	J	P	40.7		
C1-DIBENZOTHIOPHENES	1.23	J	P	0.86	J	P	1.10	J	P	3.94	J	P
C1-FLUORANTHENES/PYRENES	19.4			11.7			11.6			70.5		
C1-FLUORENES	17.4			30.5			10.1	J	P	22.9		
C1-NAPHTHALENES	14.2			6.46	J	P	8.46			48.0		
C1-PHENANTHRENES/ANTHRACENES	12.9			7.78	J	P	6.24	J	P	44.2		
C2-CHRYSENES	8.37	J	P	4.36	J	P	5.98	J	P	24.5		
C2-DIBENZOTHIOPHENES	2.55	J	P	2.21	J	P	1.42	J	P	7.74		
C2-FLUORENES	13.6	J	P	9.95	J	P	7.28	J	P	27.2		
C2-NAPHTHALENES	7.72	J	P	5.68	J	P	5.13	J	P	20.6		
C2-PHENANTHRENES/ANTHRACENES	14.6			8.30	J	P	8.88	J	P	37.9		
C3-CHRYSENES	0.29	J	P	0.03	J	P	0.08	J	P	1.93	J	P
C3-DIBENZOTHIOPHENES	3.48	J	P	1.73	J	P	1.88	J	P	10.1		
C3-FLUORENES	10.5	J	P	4.61	J	P	6.94	J	P	37.3		
C3-NAPHTHALENES	7.32	J	P	5.29	J	P	4.59	J	P	17.5		
C3-PHENANTHRENES/ANTHRACENES	10.9			3.99	J	P	6.43	J	P	26.3		
C4-CHRYSENES	0.04	J	P	0.12	J	P	0.04	J	P	1.98	J	P
C4-NAPHTHALENES	6.84	J	P	8.28	J	P	4.82	J	P	15.8		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M06-200A			OU4-MU-M06-300A			OU4-MU-M07-300A			OU4-MU-M13-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/28/00		
LABORATORY ID:	C36419			C36420			C36421			C36425		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.5 %			9.1 %			12.0 %			12.9 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	5.28	J	P	2.34	J	P	3.44	J	P	15.7		
CHRYSENE	21.3			13.6			12.2			76.6		
DIBENZO(A,H)ANTHRACENE	1.55	J	P	1.05	J	P	0.66	J	P	2.91		
DIBENZOTHIOPHENE	0.75	J	P	0.57	J	P	0.40	J	P	3.47		
FLUORANTHENE	36.2			27.2			19.6			186		
FLUORENE	4.54	J	CP	3.60	J	CP	2.91	J	CP	21.0	J	C
INDENO(1,2,3-CD)PYRENE	9.66			5.42			4.72			18.3		
NAPHTHALENE	8.69	J	E	4.36	J	EP	6.58	J	EP	22.2	J	E
PERYLENE	9.58	J	C	5.30	J	C	6.32	J	C	23.4	J	C
PHENANTHRENE	9.65			9.22			5.28	J	P	78.2		
PYRENE	34.1			23.4			19.7			152		

SAMPLE NUMBER:	OU4-MU-M14-200A			OU4-MU-R01-400A								
SAMPLE DATE:	08/28/00			08/27/00			/ /			/ /		
LABORATORY ID:	C36422			C36426								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	12.4 %			12.1 %			100.0 %			100.0 %		
UNITS:	NG/G			NG/G								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	2.18	J	P	2.37	J	P						
1-METHYLNAPHTHALENE	3.21	J	P	6.01								
1-METHYLPHENANTHRENE	2.55	J	P	2.30	J	P						
2,6-DIMETHYLNAPHTHALENE	3.03	J	P	3.14	J	P						
2-METHYLNAPHTHALENE	6.06			9.58								
ACENAPHTHENE	3.72	J	CEP	2.29	J	CEP						
ACENAPHTHYLENE	13.3	J	CE	18.1	J	CE						
ANTHRACENE	23.9	J	CE	38.8	J	CE						
BENZO(A)ANTHRACENE	20.8			28.7								
BENZO(A)PYRENE	15.1	J	C	15.6	J	C						
BENZO(B)FLUORANTHENE	28.6			44.2								
BENZO(E)PYRENE	27.8			34.1								
BENZO(G,H,I)PERYLENE	11.8			13.9								
BENZO(K)FLUORANTHENE	10.0			16.9								
BIPHENYL	1.42	J	P	1.93	J	P						
C1-CHRYSENES	18.8			22.5								
C1-DIBENZOTHIOPHENES	1.75	J	P	1.24	J	P						
C1-FLUORANTHENES/PYRENES	32.6			34.4								
C1-FLUORENES	17.7			37.6								
C1-NAPHTHALENES	9.27			15.6								
C1-PHENANTHRENES/ANTHRACENES	13.4			11.2								
C2-CHRYSENES	12.6			8.64	J	P						
C2-DIBENZOTHIOPHENES	2.81	J	P	3.20	J	P						
C2-FLUORENES	16.2	J	P	18.0								
C2-NAPHTHALENES	8.15	J	P	9.10	J	P						
C2-PHENANTHRENES/ANTHRACENES	17.4			15.0								
C3-CHRYSENES	0.12	J	P	0.33	J	P						
C3-DIBENZOTHIOPHENES	4.97			5.20								
C3-FLUORENES	13.1	J	P	10.2	J	P						
C3-NAPHTHALENES	7.98	J	P	7.37	J	P						
C3-PHENANTHRENES/ANTHRACENES	16.1			11.8								
C4-CHRYSENES	0.23	J	P	0.11	J	P						
C4-NAPHTHALENES	10.1	J	P	6.94	J	P						

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M14-200A			OU4-MU-R01-400A			/ /			/ /		
SAMPLE DATE:	08/28/00			08/27/00								
LABORATORY ID:	C36422			C36426								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	12.4 %			12.1 %			100.0 %			100.0 %		
UNITS:	NG/G			NG/G								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	7.52	J	P	6.31	J	P						
CHRYSENE	23.6			57.6								
DIBENZO(A,H)ANTHRACENE	1.42	J	P	2.10								
DIBENZOTHIOPHENE	0.65	J	P	0.72	J	P						
FLUORANTHENE	45.7			48.0								
FLUORENE	4.96	J	CP	8.34	J	CP						
INDENO(1,2,3-CD)PYRENE	8.44			11.2								
NAPHTHALENE	6.31	J	EP	8.74	J	EP						
PERYLENE	13.9	J	C	15.5	J	C						
PHENANTHRENE	8.92			9.23								
PYRENE	58.1			51.3								

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 12, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PCBs and PESTICIDES**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – T1170

SAMPLES: 14/Tissue/

OU4-MU-M01-300A	OU4-MU-M02-100A	OU4-MU-M03-100A
OU4-MU-M03-200A	OU4-MU-M04-100A	OU4-MU-M05-100A
OU4-MU-M05-300A	OU4-MU-M06-100A	OU4-MU-M06-200A
OU4-MU-M06-300A	OU4-MU-M07-300A	OU4-MU-M13-300A
OU4-MU-M14-200A	OU4-MU-R01-400A	

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG T1170 consisting of fourteen (14) tissue samples were included in this SDG. Samples were analyzed for pesticides and PCBs. No field duplicates were included in this SDG.

The samples were collected by Tetra Tech NUS on August 27-28, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using GERG SOP 9810 and 9805 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * Calibration
- Method Blank Results
- * Surrogate Standard Recoveries
- * Instrument Performance
- * Compound Identification
- * Compound Quantitation
- * Matrix Spike/Matrix Spike Duplicate Results
- * Standard Reference Materials

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANKS

The maximum concentration of contaminants found in the laboratory method blank analysis is summarized below.

Compound	Maximum Concentration	Blank Action Level
Tetrachlorobenzene, 1245-	0.20 ng/g	1.0 ng/g
Pentachlorobenzene	0.96 ng/g	4.8 ng/g
a-BHC	0.07 ng/g	0.35 ng/g
Pentachloroanisole	0.07 ng/g	0.35 ng/g
PCB 8/5	0.59 ng/g	2.95 ng/g
PCB 153/132	0.05 ng/g	0.25 ng/g
PCB 138/160	0.99 ng/g	4.95 ng/g
PCB170/190	0.33 ng/g	1.65 ng/g
PCB 81	0.31 ng/g	1.55 ng/g
PCB 77	0.27 ng/g	1.35 ng/g
PCB 169	0.72 ng/g	3.6 ng/g

Samples Affected: All

Blank Actions:

Dilution factors, percent solids, and sample aliquot used for analysis were taken into consideration prior to the application of all action levels. Positive results for all compounds below the blank action level were qualified at the reported concentration.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M01-300A			OU4-MU-M02-100A			OU4-MU-M03-100A			OU4-MU-M03-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/27/00			08/27/00		
LABORATORY ID:	C36424			C36423			C36413			C36414		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	9.1 %			9.9 %			11.7 %			14.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.38	J	P	0.46			0.23	J	P	0.38		
1,2,4,5-TETRACHLOROBENZENE	2.2	U	A	2.4	U	A	1.9	U	A	1.1	U	A
2,4'-DDD	2.0			0.88			1.2			1.1		
2,4'-DDE	0.48	U		0.44	U		0.37	U		0.31	U	
2,4'-DDT	3.5			1.6			2.8			2.0		
4,4'-DDD	4.4			1.4			3.5			2.3		
4,4'-DDE	12			4.1			4.2			4.4		
4,4'-DDT	8.8			0.86			2.7			1.6		
ALDRIN	0.22	J	P	0.18	J	P	0.43	U		0.36	U	
ALPHA-BHC	0.66	U	A	0.27	U	A	0.41	U	A	0.33	U	A
ALPHA-CHLORDANE	1.1			0.55			0.70			0.83		
BETA-BHC	0.35	U		0.88			7.9			7.2		
CHLORPYRIFOS	3.6	U		3.3	U		2.8	U		2.3	U	
CIS-NONACHLOR	0.71			0.63			1.1			0.65		
DELTA-BHC	0.22	U		0.20	U		0.17	U		0.14	U	
DIELDRIN	0.59			0.36	J	P	0.35			0.36		
ENDOSULFAN II	0.14	J	P	0.19	J	P	0.32	U		0.41		
ENDRIN	1.1	U		1.1	U		0.88	U		0.74	U	
GAMMA-BHC (LINDANE)	0.34	U		0.10	J	P	0.030	J	P	0.080	J	P
GAMMA-CHLORDANE	0.65			0.20	J	P	0.26	J	P	0.24	J	P
HEPTACHLOR	0.41	J	P	0.28	J	P	0.48	U		0.40	U	
HEPTACHLOR EPOXIDE	0.44	U		0.41	U		0.34	U		0.28	U	
HEXACHLOROBENZENE	0.55	U		0.38	J	P	0.30	J	P	0.19	J	P
MIREX	1.0	U		0.93	U		0.78	U		0.65	U	
OXYCHLORDANE	0.46	U		0.43	U		0.36	U		0.30	U	
PCB-101/90	6.2			5.8			14			8.4		
PCB-105	2.6			2.1			6.9			4.4		
PCB-114	1.5	U		1.4	U		1.2	U		0.99	U	
PCB-118	5.3			4.5			5.7			6.1		
PCB-126	1.5	U		1.4	U		1.2	U		0.99	U	
PCB-128	1.3			1.1			2.7			1.5		
PCB-138/160	10	U	A	8.7	U	A	35	U	A	16	U	A
PCB-149/123	6.8			5.5			28			11		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M01-300A			OU4-MU-M02-100A			OU4-MU-M03-100A			OU4-MU-M03-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/27/00			08/27/00		
LABORATORY ID:	C36424			C36423			C36413			C36414		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	9.1 %			9.9 %			11.7 %			14.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	14			12			52			22		
PCB-156	0.56	J	P	0.26	J	P	1.2	U		0.87	J	P
PCB-167	0.88	J	P	0.53	J	P	2.2			0.42	J	P
PCB-169	0.060	U	A	0.090	U	A	0.070	U	A	0.99	U	
PCB-170/190	0.37	U	A	0.40	U	A	1.8	U	A	1.1	U	A
PCB-18/17	4.0	U		3.7	U		3.1	U		2.6	U	
PCB-180	4.7			3.7			12			7.9		
PCB-187	5.1			4.3			22			14		
PCB-189	1.5	U		1.4	U		0.33	J	P	0.090	J	P
PCB-195/208	1.3	U		1.2	U		0.99	U		0.12	J	P
PCB-201/157/173	0.060	J	P	1.1	U		1.0			1.1		
PCB-206	1.3	U		1.2	U		1.0	U		0.23	J	P
PCB-209	1.7	U		1.6	U		1.3	U		1.1	U	
PCB-28	0.80	J	P	0.82	J	P	1.2			0.97		
PCB-44	0.71	J	P	0.58	J	P	0.65	J	P	0.62		
PCB-52	1.9			2.3			4.3			2.8		
PCB-66	0.89	J	P	0.67	J	P	0.42	J	P	0.59	J	P
PCB-77	0.21	U	A	0.23	U	A	1.2	U		0.21	U	A
PCB-8/5	15	U	A	18	U	A	10	U	A	2.5	U	A
PCB-81	1.5	U		1.4	U		1.2	U		0.99	U	
PENTACHLOROANISOLE	2.0	U	A	2.1	U	A	1.8	U	A	0.62	U	A
PENTACHLOROBENZENE	1.9	U	A	1.7	U	A	1.8	U	A	0.50	U	A
TRANS-NONACHLOR	0.92			0.58			0.49			0.61		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M04-100A			OU4-MU-M05-100A			OU4-MU-M05-300A			OU4-MU-M06-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36415			C36416			C36417			C36418		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.9 %			13.9 %			12.4 %			11.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.38			0.51			1.1			1.1		
1,2,4,5-TETRACHLOROBENZENE	2.0			1.8			3.0			2.5		
2,4'-DDD	1.5			2.0			1.1			5.9		
2,4'-DDE	0.40	U		0.32	U		0.35	U		0.15	J	P
2,4'-DDT	1.1			2.5			0.86			1.8		
4,4'-DDD	3.0			2.7			2.1			15		
4,4'-DDE	5.5			4.6			4.7			4.0		
4,4'-DDT	2.0			2.7			1.1			7.0		
ALDRIN	0.46	U		0.37	U		0.41	U		0.080	J	P
ALPHA-BHC	0.26	J	P	0.36			0.28	J	P	0.15	J	P
ALPHA-CHLORDANE	0.68			0.93			0.72			0.44		
BETA-BHC	1.3			6.9			0.64			1.8		
CHLORPYRIFOS	3.0	U		2.4	U		2.7	U		2.9	U	
CIS-NONACHLOR	0.72			0.82			0.63			0.39		
DELTA-BHC	0.18	U		0.15	U		0.16	U		0.18	U	
DIELDRIN	0.37			0.38			0.41			0.30	J	P
ENDOSULFAN II	0.54			0.28	J	P	0.20	J	P	0.090	J	P
ENDRIN	0.95	U		0.76	U		0.85	U		0.91	U	
GAMMA-BHC (LINDANE)	0.14	J	P	0.14	J	P	0.090	J	P	0.28	U	
GAMMA-CHLORDANE	0.28	J	P	0.27	J	P	0.21	J	P	0.18	J	P
HEPTACHLOR	0.52	U		0.41	U		0.46	U		0.33	J	P
HEPTACHLOR EPOXIDE	0.37	U		0.29	U		0.33	U		0.35	U	
HEXACHLOROBENZENE	0.050	J	P	0.22	J	P	0.14	J	P	0.44	U	
MIREX	0.84	U		0.67	U		0.75	U		0.81	U	
OXYCHLORDANE	0.39	U		0.31	U		0.35	U		0.37	U	
PCB-101/90	9.9			7.0			6.6			4.3		
PCB-105	3.8			3.1			2.3			1.5		
PCB-114	1.3	U		1.0	U		1.1	U		1.2	U	
PCB-118	6.6			5.5			4.4			3.5		
PCB-126	1.3	U		1.0	U		1.1	U		1.2	U	
PCB-128	1.7			1.5			1.2			0.89	J	P
PCB-138/160	19			11			11			7.1		
PCB-149/123	14			6.1			6.5			4.4		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M04-100A			OU4-MU-M05-100A			OU4-MU-M05-300A			OU4-MU-M06-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36415			C36416			C36417			C36418		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.9 %			13.9 %			12.4 %			11.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	28			13			14			10.0		
PCB-156	0.94	J	P	0.55	J	P	0.58	J	P	0.45	J	P
PCB-167	0.49	J	P	0.94	J	P	0.80	J	P	0.61	J	P
PCB-169	1.3	U		0.34	J	P	0.080	J	P	0.070	J	P
PCB-170/190	1.3			0.43	J	P	0.50	J	P	0.35	J	P
PCB-18/17	3.3	U		2.7	U		3.0	U		0.26	J	P
PCB-180	7.9			5.1			6.8			3.3		
PCB-187	14			6.9			9.6			4.8		
PCB-189	0.12	J	P	1.0	U		1.1	U		1.2	U	
PCB-195/208	1.1	U		0.050	J	P	0.21	J	P	1.0	U	
PCB-201/157/173	1.4			0.29	J	P	0.11	J	P	0.94	U	
PCB-206	1.1	U		0.88	U		0.98	U		1.1	U	
PCB-209	1.4	U		1.1	U		1.3	U		1.4	U	
PCB-28	1.3			1.2			1.1			0.89	J	P
PCB-44	0.85			0.70			0.71			0.62	J	P
PCB-52	5.6			2.9			2.9			1.9		
PCB-66	1.0	J	P	0.61	J	P	0.90	J	P	0.62	J	P
PCB-77	1.3	U		0.63	J	P	0.86	J	P	0.75	J	P
PCB-8/5	7.5			3.7			4.5			10		
PCB-81	1.3	U		1.0	U		0.13	J	P	1.2	U	
PENTACHLOROANISOLE	1.7			0.58			1.1			1.7		
PENTACHLOROBENZENE	2.0			1.0			1.8			2.0		
TRANS-NONACHLOR	0.77			0.70			0.74			0.34		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M06-200A			OU4-MU-M06-300A			OU4-MU-M07-300A			OU4-MU-M13-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/28/00		
LABORATORY ID:	C36419			C36420			C36421			C36425		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.5 %			9.1 %			12.0 %			12.9 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.66			1.6			0.57			0.26	J	P
1,2,4,5-TETRACHLOROBENZENE	1.5			2.1			1.9			2.5		
2,4'-DDD	2.0			0.67			0.57			2.5		
2,4'-DDE	0.51			0.48	U		0.37	U		0.79		
2,4'-DDT	1.1			0.99			0.51			1.0		
4,4'-DDD	4.4			1.8			1.2			2.2		
4,4'-DDE	4.6			2.8			2.8			7.1		
4,4'-DDT	2.8			0.59	J	P	0.48	J	P	2.7		
ALDRIN	0.35	U		0.55	U		0.11	J	P	0.39	U	
ALPHA-BHC	0.19	J	P	0.43			0.15	J	P	0.45		
ALPHA-CHLORDANE	0.89			0.50			0.51			1.4		
BETA-BHC	0.79			2.9			0.74			1.1		
CHLORPYRIFOS	2.3	U		3.6	U		2.8	U		2.6	U	
CIS-NONACHLOR	0.60			0.35	J	P	0.39			1.3		
DELTA-BHC	0.14	U		0.22	U		0.17	U		0.16	U	
DIELDRIN	0.46			0.31	J	P	0.28	J	P	0.69		
ENDOSULFAN II	0.13	J	P	0.42	U		0.090	J	P	0.15	J	P
ENDRIN	0.72	U		1.1	U		0.87	U		0.81	U	
GAMMA-BHC (LINDANE)	0.13	J	P	0.34	U		0.020	J	P	0.050	J	P
GAMMA-CHLORDANE	0.24	J	P	0.17	J	P	0.16	J	P	0.51		
HEPTACHLOR	0.39	U		0.79			0.48	U		0.45	U	
HEPTACHLOR EPOXIDE	0.28	U		0.44	U		0.34	U		0.32	U	
HEXACHLOROBENZENE	0.070	J	P	0.55	U		0.42	U		0.27	J	P
MIREX	0.63	U		1.0	U		0.77	U		0.72	U	
OXYCHLORDANE	0.040	J	P	0.46	U		0.36	U		0.080	J	P
PCB-101/90	7.6			4.0			4.0			13		
PCB-105	2.8			1.3			1.9			4.8		
PCB-114	0.97	U		1.5	U		1.2	U		1.1	U	
PCB-118	5.9			2.9			3.7			11		
PCB-126	0.97	U		0.13	J	P	1.2	U		1.1	U	
PCB-128	1.5			0.81	J	P	0.84	J	P	2.5		
PCB-138/160	14			6.3			6.4			17		
[illegible]	5.9			3.1			3.9			9.2		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M06-200A			OU4-MU-M06-300A			OU4-MU-M07-300A			OU4-MU-M13-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/28/00		
LABORATORY ID:	C36419			C36420			C36421			C36425		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.5 %			9.1 %			12.0 %			12.9 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	18			8.4			8.8			22		
PCB-156	0.60	J	P	0.28	J	P	0.41	J	P	0.66	J	P
PCB-167	0.99			1.5	U		0.45	J	P	1.6		
PCB-169	0.97	U		1.5	U		1.2	U		0.12	J	P
PCB-170/190	2.4			0.32	J	P	0.29	J	P	0.43	J	P
PCB-18/17	2.5	U		4.0	U		3.1	U		0.37	J	P
PCB-180	8.6			2.9			2.4			7.9		
PCB-187	12			3.3			3.2			7.8		
PCB-189	0.97	U		1.5	U		1.2	U		1.1	U	
PCB-195/208	0.35	J	P	1.3	U		0.98	U		0.91	U	
PCB-201/157/173	0.38	J	P	1.2	U		0.90	U		0.52	J	P
PCB-206	0.090	J	P	1.3	U		1.0	U		0.95	U	
PCB-209	1.1	U		1.7	U		1.3	U		1.2	U	
PCB-28	0.84			0.21	J	P	0.64	J	P	2.9		
PCB-44	0.67			0.55	J	P	0.46	J	P	2.8		
PCB-52	1.8			1.8			1.2			5.7		
PCB-66	0.92	J	P	0.59	J	P	0.51	J	P	3.8		
PCB-77	0.13	J	P	0.50	J	P	0.88	J	P	0.30	J	P
PCB-8/5	7.8			26			6.0			7.5		
PCB-81	0.97	U		0.36	J	P	1.0	J	P	1.1	U	
PENTACHLOROANISOLE	1.3			2.2			1.0			1.1		
PENTACHLOROBENZENE	1.2			2.1			0.99			1.8		
TRANS-NONACHLOR	0.81			0.43			0.44			1.4		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M14-200A			OU4-MU-R01-400A								
SAMPLE DATE:	08/28/00			08/27/00			/ /			/ /		
LABORATORY ID:	C36422			C36426								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	12.4 %			12.1 %			100.0 %			100.0 %		
UNITS:	NG/G			NG/G								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.41			0.58								
1,2,4,5-TETRACHLOROBENZENE	2.2			2.4								
2,4'-DDD	0.72			1.2								
2,4'-DDE	1.0			0.36	U							
2,4'-DDT	0.99			1.8								
4,4'-DDD	1.4			1.7								
4,4'-DDE	4.8			5.8								
4,4'-DDT	0.72			0.74								
ALDRIN	0.22	J	P	0.24	J	P						
ALPHA-BHC	0.42			0.33								
ALPHA-CHLORDANE	1.4			0.82								
BETA-BHC	1.7			0.42								
CHLORPYRIFOS	2.6	U		2.7	U							
CIS-NONACHLOR	0.81			1.2								
DELTA-BHC	0.16	U		0.17	U							
DIELDRIN	0.52			0.53								
ENDOSULFAN II	0.21	J	P	0.080	J	P						
ENDRIN	0.82	U		0.87	U							
GAMMA-BHC (LINDANE)	0.070	J	P	0.26	U							
GAMMA-CHLORDANE	0.39			0.41								
HEPTACHLOR	0.45	U		0.27	J	P						
HEPTACHLOR EPOXIDE	0.32	U		0.34	U							
HEXACHLOROBENZENE	0.57			0.36	J	P						
MIREX	0.72	U		0.77	U							
OXYCHLORDANE	0.050	J	P	0.35	U							
PCB-101/90	9.0			7.1								
PCB-105	2.6			2.7								
PCB-114	1.1	U		1.2	U							
PCB-118	8.0			8.3								
PCB-126	1.1	U		1.2	U							
PCB-128	1.5			1.7								
PCB-138/160	10			12								
PCB-140/123	4.6			5.5								

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1170

SAMPLE NUMBER:	OU4-MU-M14-200A			OU4-MU-R01-400A								
SAMPLE DATE:	08/28/00			08/27/00			/ /			/ /		
LABORATORY ID:	C36422			C36426								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	12.4 %			12.1 %			100.0 %			100.0 %		
UNITS:	NG/G			NG/G								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	15			16								
PCB-156	0.54	J	P	0.59	J	P						
PCB-167	1.1	J	P	1.1	J	P						
PCB-169	0.73	J	P	1.2	U							
PCB-170/190	0.31	J	P	0.22	J	P						
PCB-18/17	2.9	U		3.1	U							
PCB-180	5.5			5.9								
PCB-187	5.2			5.7								
PCB-189	1.1	U		1.2	U							
PCB-195/208	0.92	U		0.97	U							
PCB-201/157/173	0.24	J	P	0.34	J	P						
PCB-206	0.95	U		1.0	U							
PCB-209	1.2	U		1.3	U							
PCB-28	1.2			0.97								
PCB-44	0.87			0.72								
PCB-52	2.1			3.1								
PCB-66	0.99	J	P	1.0	J	P						
PCB-77	0.28	J	P	0.23	J	P						
PCB-8/5	11			21								
PCB-81	1.1	U		1.2	U							
PENTACHLOROANISOLE	1.5			2.4								
PENTACHLOROBENZENE	1.3			1.9								
TRANS-NONACHLOR	0.97			0.90								

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 7, 2000**

FROM: **DOUGLAS S. SCHLOER** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYNUCLEAR AROMATIC HYDROCARBONS**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – T1172

SAMPLES: 18 / Tissue / PAH

OU4-MU-M01-200A	OU4-MU-M02-200A	OU4-MU-M02-300A	OU4-MU-M07-100A
OU4-MU-M08-100A	OU4-MU-M08-200A	OU4-MU-M08-300A	OU4-MU-M09-100A
OU4-MU-M11-100A	OU4-MU-M11-200A	OU4-MU-M11-300A	OU4-MU-M12-100A
OU4-MU-M12-200A	OU4-MU-R01-300A	OU4-MU-R02-300A	OU4-MU-R03-300A
OU4-MU-R03-400A	OU4-MU-R04-300A		

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine; SDG T1172 consists of eighteen (18) mussel tissue samples. The samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). Two lab duplicate pairs were included in this SDG: OU4-MU-M12-100A and *OU4-MU-M12-100A-LD; OU4-MU-M11-200A and *OU4-MU-M11-200A-LD. The symbol (*) indicates samples that were not analyzed within this SDG.

The samples were collected by Tetra Tech NUS on August 29th, 2000 and were analyzed by Texas A&M University under NOAA Technical Memorandum NOS ORCA 130 Quality Assurance/Quality Control (QA/QC) criteria. All analyses and preparations were conducted using NOAA Technical Memorandum NOS ORCQ 130 (Program Mussel Watch) Methods.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * GC/MS Tuning and System Performance
- Initial / Continuing Calibration
- * Blank Contamination
- * Surrogate / Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate Results
- Blank Spike Results
- Lab Duplicate Results
- * Field Duplicate Results
- * Instrument Performance
- * Compound Identification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

CALIBRATION

The following table summarizes calibration noncompliances and corresponding validation actions. The key associated with this table is presented after the table.

Compound	CCV 10/24/00; (20:39)	CCV 10/25/00; (04:38)	CCV 10/25/00; (11:54)	CCV 10/25/00; (16:17)
1-Methylnaphthalene	X	X	X	
1-Methylphenanthrene				
Acenaphthene	X	X	X	X
Anthracene				
Acenaphthylene	X	X		X
Benzo(G,H,I)perylene				
Benzo(K)fluoranthene		X		
Benzo(B)fluoranthene		X		
Benzo(A)pyrene				
Benzo(E)pyrene	X	X	X	X
Chrysene	X	X	X	X
Dibenzo(A,H)anthracene			X	X
Fluorene		X		
Indeno(1,2,3-CD)pyrene	X		X	
Naphthalene			X	
Perylene		X	X	
Samples Affected:	OU4-MU-M11-100A OU4-MU-M11-200A OU4-MU-M11-300A OU4-MU-M12-100A	OU4-MU-M11-100A OU4-MU-M11-200A OU4-MU-M11-300A OU4-MU-M12-100A OU4-MU-M12-200A OU4-MU-R01-300A OU4-MU-R02-300A OU4-MU-R03-300A OU4-MU-R03-400A OU4-MU-R04-300A OU4-MU-M01-200A OU4-MU-M02-200A OU4-MU-M02-300A	OU4-MU-M12-200A OU4-MU-R01-300A OU4-MU-R02-300A OU4-MU-R03-300A OU4-MU-R03-400A OU4-MU-R04-300A OU4-MU-M01-200A OU4-MU-M02-200A OU4-MU-M02-300A OU4-MU-M07-100A OU4-MU-M08-100A OU4-MU-M08-200A OU4-MU-M08-300A OU4-MU-M09-100A	OU4-MU-M07-100A OU4-MU-M08-100A OU4-MU-M08-200A OU4-MU-M08-300A OU4-MU-M09-100A

Calibration Actions

X - Percent Difference (%D) greater than 15%. Qualify positive and nondetected results for the affected compounds as estimated (J) and (UJ) respectively.

LAB DUPLICATE RESULTS

Relative percent differences (RPDs) greater than 50% were noted for several compounds in the laboratory duplicates. Positive results for compounds that exceeded the 50% RPD quality control limit were qualified as estimated (J) in the lab duplicate pair.

STANDARD REFERENCE MATERIAL

Standard Reference Material (SRM) % recovery of acenaphthylene, acenaphthene, anthracene, methylnaphthalene, 2-methylnaphthalene, naphthalene and fluorene failed to meet the quality control limit of ± 35% deviation from manufacturer certified concentrations. Only positive results were reported for the aforementioned compounds, and these were qualified as estimated (J) in all samples.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix Spike and/or Matrix Spike Duplicate (MS / MSD) % recovery of acenaphthene, anthracene, fluorene, phenanthrene, naphthalene, fluoranthene, pyrene, benzo(G,H,I)perylene, benzo(A)anthracene, benzo(B)fluoranthene, benzo(K)fluoranthene, benzo(E)pyrene, benzo(A)pyrene, chrysene, and indeno(1,2,3-CD)pyrene exceeded the 40%-120% quality control limit. The positive results reported for the aforementioned compounds were qualified as estimated (J) in the unspiked sample OU4-MU-M11-300A.

MS / MSD Relative Percent Differences (RPDs) exceeded the 25% quality control limit for acenaphthene, anthracene, fluorene, phenanthrene, fluoranthene, pyrene, benzo(G,H,I)perylene, benzo(A)anthracene, benzo(B)fluoranthene, benzo(K)fluoranthene, benzo(E)pyrene, benzo(A)pyrene, chrysene, and indeno(1,2,3-CD)pyrene. Only positive results were reported for the aforementioned compounds and these were qualified as estimated (J) in the unspiked sample OU4-MU-M11-300A.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the reporting limit, RL, were qualified as estimated (J).

Samples were frozen from time of receipt at the laboratory to sample extraction. Therefore, holding time from sample collection to sample extraction is not an issue. No qualifiers were assigned on this basis.

Samples were reported on a dry weight basis. This is consistent with historical data from this site.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: The laboratory was not able to meet quality control criteria for continuing calibration of several PAH compounds.

SRM % recoveries of several compounds failed to meet quality control criteria.

Other Factors Affecting Data Quality: Laboratory duplicate RPDs exceeded 50%.

MS / MSD % recoveries and Relative Percent Differences (RPDs) of several compounds exceeded quality control limits.

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Douglas S. Schloer
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

		PORTSMOUTH NAVAL SHIPYARD LABORATORY DUPLICATES											
SDG		T1173		T1174				T1172		T1174			
FRACTION	COMPOUND	OU4-MU-M10-100A		OU4-MU-M10-100A-LD		RPD		OU4-MU-M11-200A		OU4-MU-M11-200A-LD		RPD	
		RESULT ng/g		RESULT ng/g				RESULT ng/g		RESULT ng/g			
PAH													
	1,6,7-Trimethylnaphthalene	1.38	J	1.92	J	-32.7		3.4	J	2.06	J	49.1	
	1-Methylnaphthalene	1.31	J	2.67	J	-68.3		9		2.68	J	108.2	
	1-Methylphenanthrene	1.66	J	2.6	J	-44.1		4.9	J	2.01	J	83.6	
	2,6-Dimethylnaphthalene	1.28	J	2.22	J	-53.7		3.4	J	2.19	J	43.3	
	2-Methylnaphthalene	2.27	J	4.44		-64.7		11.5		4.65		84.8	
	Acenaphthene	1.56	J	3.62	J	-79.5		8.2	J	5.98	J	31.3	
	Acenaphthylene	3.25	J	8.02		-84.6		16.7		11.05		40.7	
	Anthracene	6.6		13.98		-71.7		24.6		19.53		23.0	
	Benzo(A)anthracene	9.54		13.27		-32.7		15.8		14.44		9.0	
	Benzo(A)pyrene	10.26		13.73		-28.9		10.3		9.16		11.7	
	Benzo(B)fluoranthene	17		20.39		-18.1		21.2		22.83		-7.4	
	Benzo(E)pyrene	13.4		18.25		-30.6		27.2		21.12		25.2	
	Benzo(G,H,I)perylene	7.79		12.45		-46.0		11.5		10.48		9.3	
	Benzo(K)fluoranthene	6.27		11		-54.8		7.6		9.39		-21.1	
	Biphenyl	1.58	J	1.88	J	-17.3		3.3	J	1.63	J	67.7	
	C1-Chrysenes	7.4	J	10.14	J	-31.2		21		12.04	J	54.2	
	C1-Dibenzothiophenes	1.31	J	1.65	J	-23.0		3	J	1.31	J	78.4	
	C1-Fluoranthenes/Pyrenes	11.24		15.52		-32.0		27.7		19.58		34.3	
	C1-Fluorenes	11.87	J	8.6	J	31.9		21.7		14.13	J	42.3	
	C1-Naphthalenes	3.58	J	7.11	J	-66.0		20.6		7.33	J	95.0	
	C1-Phenanthrenes/Anthracenes	8.15	J	12.83		-44.6		16.4		11.85		32.2	
	C2-Chrysenes	5.41	J	7.58	J	-33.4		1	J	7.47	J	-152.8	
	C2-Dibenzothiophenes	1.7	J	3.13	J	-59.2		4.5	J	2.51	J	56.8	
	C2-Fluorenes	7.84	J	11.81	J	-40.4		15.5	J	13.22	J	15.9	
	C2-Naphthalenes	3.07	J	5.22	J	-51.9		20.3		6.45	J	103.6	
	C2-Phenanthrenes/Anthracenes	8.24	J	12.88		-43.9		26.3		14.93		55.2	
	C3-Chrysenes	0.06	J	0.05	J	18.2		0.3	J	0.07	J	124.3	
	C3-Dibenzothiophenes	1.8	J	2.56	J	-34.9		8.6		3.45	J	85.5	
	C3-Fluorenes	11.46	J	15.82	J	-32.0		36.2		15.35	J	80.9	
	C3-Naphthalenes	4.71	J	5.07	J	-7.4		26		7.14	J	113.8	
	C3-Phenanthrenes/Anthracenes	6.51	J	8.59	J	-27.5		23.5		9.23	J	87.2	
	C4-Chrysenes	0.05	J	0.06	J	-18.2		0.2	J	0.05	J	120.0	
	C4-Naphthalenes	3.34	J	7.4	J	-75.6		22		8.01	J	93.2	
	C4-Phenanthrenes/Anthracenes	3.36	J	4.65	J	-32.2		16.8		6.15	J	92.8	
	Chrysene	14.89		20.99		-34.0		25		22.21		11.8	
	Dibenzo(a,h)anthracene	1.44	J	1.8	J	-22.2		0.9	J	1.44	J	-46.2	
	Dibenzothiophene	0.83	J	1.07	J	-25.3		0.8	J	0.67	J	17.7	
	Fluoranthene	25.57		42.26		-49.2		39.8		35.65		11.0	
	Fluorene	2.64	J	5.85	J	-75.6		7.1	J	4.86	J	37.5	
	Indeno(1,2,3-c,d)pyrene	6.78		9.83		-36.7		6.6		7.18		-8.4	
	Naphthalene	3.04	J	5.46	J	-56.9		17.9		6.28	J	96.1	
	Perylene	5.75		8.1		-33.9		18.7		9.69		63.5	
	Phenanthrene	10.85		15.74		-36.8		8.5		9.47		-10.8	
	Pyrene	23.32		37.5		-46.6		38.3		32.17		17.4	

ND - Compound not detected.
NC - RPD not calculated.

		PORTSMOUTH NAVAL SHIPYARD LABORATORY DUPLICATES											
SDG		T1172		T1174				T1173		T1174			
FRACTION	COMPOUND	OU4-MU-M12-100A		OU4-MU-M12-100A-LD		RPD		OU4-MU-M13-100A		OU4-MU-M13-100A-LD		RPD	
		RESULT ng/g		RESULT ng/g				RESULT ng/g		RESULT ng/g			
PAH													
	1,6,7-Trimethylnaphthalene	10.5		5.68	J	59.6		104.94		94.14		10.8	
	1-Methylnaphthalene	45.3		22.05		69.0		109.31		88.74		20.8	
	1-Methylphenanthrene	71.8		30.68		80.2		553.46		456.91		19.1	
	2,6-Dimethylnaphthalene	19.4		11.83		48.5		153.61		129.71		16.9	
	2-Methylnaphthalene	64.1		34.03		61.3		161.08		129.54		21.7	
	Acenaphthene	389.8		212.52		58.9		1268.5		1092.93		14.9	
	Acenaphthylene	87.9		27.28		105.3		179.69		288.89		-46.6	
	Anthracene	498		195.21		87.4		1995.59		2021.77		-1.3	
	Benzo(A)anthracene	565.7		196.12		97.0		4332.69		3539.64		20.1	
	Benzo(A)pyrene	514.3		162.4		104.0		3461.4		2835.32		19.9	
	Benzo(B)fluoranthene	751.8		246.49		101.2		4478.56		3622.17		21.1	
	Benzo(E)pyrene	372.4		130.67		96.1		2075.4		1680.71		21.0	
	Benzo(G,H,I)perylene	273.4		86.67		103.7		907.47		792.52		13.5	
	Benzo(K)fluoranthene	274.8		101.03		92.5		131.22		1198.18		-160.5	
	Biphenyl	18.6		11.17		49.9		86.89		72.73		17.7	
	C1-Chrysenes	228.5		69.05		107.2		2070.74		1661.31		21.9	
	C1-Dibenzothiophenes	27.3		9.77		94.6		112.86		87.27		25.6	
	C1-Fluoranthenes/Pyrenes	449.7		145.11		102.4		2923.63		2473.64		16.7	
	C1-Fluorenes	76.5		43.74		54.5		577.86		656.04		3.8	
	C1-Naphthalenes	109.4		56.08		64.4		270.39		218.28		21.3	
	C1-Phenanthrenes/Anthracenes	283.4		108.16		89.5		1767.42		1522.01		14.9	
	C2-Chrysenes	120.5		23.13		135.6		499.83		341.21		37.7	
	C2-Dibenzothiophenes	22.3		5.61		119.6		67.86		57.77		16.1	
	C2-Fluorenes	37.7		21.31		55.5		235.64		226.26		4.1	
	C2-Naphthalenes	93.9		26.67		111.5		300.65		239.62		22.6	
	C2-Phenanthrenes/Anthracenes	155.2		47.64		106.1		694.33		569.44		19.8	
	C3-Chrysenes	0.1	J	0.14	J	-33.3		12.86		6.98	J	59.3	
	C3-Dibenzothiophenes	22		6.28		111.2		37.9		29.48		25.0	
	C3-Fluorenes	56.9		25.58		75.9		128.96		122.25		5.3	
	C3-Naphthalenes	59.2		14.53		121.2		224.82		190		16.8	
	C3-Phenanthrenes/Anthracenes	70.7		22.45		103.6		283.59		241.56		16.0	
	C4-Chrysenes	9.2	J	1.5	J	143.9		111.98		37		100.7	
	C4-Naphthalenes	41.1		9.98	J	121.8		104.5		97.98		6.4	
	C4-Phenanthrenes/Anthracenes	24.1		6.08	J	119.4		88.2		66.95		27.4	
	Chrysene	686.1		262.6		89.3		4976.02		4491.28		10.2	
	Dibenzo(a,h)anthracene	52.7		16.74		103.6		353.26		273.22		25.6	
	Dibenzothiophene	63.3		25.22		86.0		239.41		199.38		18.2	
	Fluoranthene	1884.1		768.06		84.2		8955.26		7958.28		11.8	
	Fluorene	275.5		157.93		54.3		1870.26		1667.85		11.4	
	Indeno(1,2,3-c,d)pyrene	325.6		96.86		108.3		1207.45		985.14		20.3	
	Naphthalene	140.1		70.3		66.3		127.54		103.91		20.4	
	Perylene	104.3		46.93		75.9		563.28		522.44		7.5	
	Phenanthrene	1226.8		559.27		74.7		6561.27		5222.3		22.7	
	Pyrene	1435		556.22		88.3		5747.47		5245.82		9.1	

ND - Compound not detected.
NC - RPD not calculated.

APPENDIX A

QUALIFIED LABORATORY RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: T1172

SAMPLE NUMBER:	OU4-MU-M01-200A			OU4-MU-M02-200A			OU4-MU-M02-300A			OU4-MU-M07-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36628			C36629			C36630			C36631		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.6 %			12.8 %			12.8 %			11.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	3.40	J	P	2.50	J	P	2.80	J	P	1.60	J	P
1-METHYLNAPHTHALENE	5.10	J	CE	5.10	J	C	4.70	J	C	3.70	J	CP
1-METHYLPHENANTHRENE	5.80			4.60	J	P	5.00			4.00	J	P
2,6-DIMETHYLNAPHTHALENE	3.60	J	P	3.10	J	P	3.30	J	P	2.40	J	P
2-METHYLNAPHTHALENE	8.30	J	E	7.00	J	E	6.20	J	E	5.90	J	E
ACENAPHTHENE	8.50	J	CE	9.90	J	CE	8.60	J	CEP	8.90	J	CEP
ACENAPHTHYLENE	17.3	J	CE	13.7	J	CE	14.2	J	CE	12.0	J	CE
ANTHRACENE	28.6			23.5			25.1			20.3		
BENZO(A)ANTHRACENE	30.2			18.1			15.9			20.8		
BENZO(A)PYRENE	23.7			14.1			11.0			17.6		
BENZO(B)FLUORANTHENE	35.7	J	C	24.8	J	C	24.8	J	C	32.4		
BENZO(E)PYRENE	37.0	J	C	27.5	J	C	24.3	J	C	30.4	J	C
BENZO(G,H,I)PERYLENE	19.6			13.2			11.9			15.5		
BENZO(K)FLUORANTHENE	15.8	J	C	11.9	J	C	9.20	J	C	15.4		
BIPHENYL	1.50	J	P	1.90	J	P	2.40	J	P	2.20	J	P
C1-CHRYSENES	30.3			22.0			22.6			23.2		
C1-DIBENZOTHIOPHENES	4.10			2.40	J	P	2.80	J	P	1.50	J	P
C1-FLUORANTHENES/PYRENES	42.2			26.7			24.0			24.7		
C1-FLUORENES	12.9	J	P	11.7	J	P	20.0			20.2		
C1-NAPHTHALENES	13.4			12.1			10.9			9.60		
C1-PHENANTHRENES/ANTHRACENES	23.5			16.3			15.8			15.3		
C2-CHRYSENES	22.7			0.90	J	P	10.9	J	P	10.1	J	P
C2-DIBENZOTHIOPHENES	6.80			4.10	J	P	4.50			4.60	J	P
C2-FLUORENES	21.1			10.5	J	P	10.4	J	P	11.0	J	P
C2-NAPHTHALENES	16.2			13.7	J	P	16.3			10.1	J	P
C2-PHENANTHRENES/ANTHRACENES	26.8			22.9			24.1			24.1		
C3-CHRYSENES	0.02	J	P	0.30	J	P	0.10	J	P	0.50	J	P
C3-DIBENZOTHIOPHENES	9.60			5.10			6.70			5.60		
C3-FLUORENES	29.8			25.6			34.4			23.0		
C3-NAPHTHALENES	20.8			20.7			22.2			10.2	J	P
C3-PHENANTHRENES/ANTHRACENES	17.9			19.3			18.1			16.3		
C4-CHRYSENES	0.10	J	P	0.20	J	P	0.20	J	P	0.10	J	P
C4-NAPHTHALENES	23.7			12.9			16.1			11.8	J	P

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SAMPLE NUMBER:	OU4-MU-M01-200A			OU4-MU-M02-200A			OU4-MU-M02-300A			OU4-MU-M07-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36628			C36629			C36630			C36631		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.6 %			12.8 %			12.8 %			11.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	13.5			14.1			10.6			10.1	J	P
CHRYSENE	40.3	J	C	31.7	J	C	27.2	J	C	35.1	J	C
DIBENZO(A,H)ANTHRACENE	2.40	J	C	1.10	J	CP	1.10	J	CP	2.10	J	C
DIBENZOTHIOPHENE	1.40	J	P	1.20	J	P	0.90	J	P	1.50	J	P
FLUORANTHENE	57.2			50.3			43.7			59.3		
FLUORENE	5.60	J	CEP	5.50	J	CEP	6.00	J	CEP	6.80	J	EP
INDENO(1,2,3-CD)PYRENE	12.9	J	C	8.10	J	C	5.80	J	C	12.1	J	C
NAPHTHALENE	9.30	J	CE	10.9	J	CE	5.40	J	CEP	7.50	J	CEP
PERYLENE	13.9	J	C	13.0	J	C	8.50	J	C	14.2	J	C
PHENANTHRENE	13.7			15.4			11.9			20.1		
PYRENE	61.6			44.0			42.7			51.2		

SAMPLE NUMBER:	OU4-MU-M08-100A			OU4-MU-M08-200A			OU4-MU-M08-300A			OU4-MU-M09-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/29/00		
LABORATORY ID:	C36632			C36633			C36634			C36635		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	13.9 %			9.9 %			9.7 %			14.0 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	3.30	J	P	2.80	J	P	1.70	J	P	2.60	J	P
1-METHYLNAPHTHALENE	5.50	J	CE	4.90	J	CE	3.60	J	CEP	4.20	J	CE
1-METHYLPHENANTHRENE	9.10			4.30	J	P	5.10	J	P	6.60		
2,6-DIMETHYLNAPHTHALENE	2.90	J	P	3.30	J	P	2.00	J	P	2.70	J	P
2-METHYLNAPHTHALENE	6.70	J	E	6.40	J	E	4.60	J	EP	6.10	J	E
ACENAPHTHENE	27.4	J	CE	10.0	J	CEP	6.90	J	CEP	7.70	J	CEP
ACENAPHTHYLENE	14.3	J	CE	19.6	J	CE	9.80	J	CE	18.2	J	CE
ANTHRACENE	45.0			31.9			18.5			37.3		
BENZO(A)ANTHRACENE	75.0			20.3			18.4			30.0		
BENZO(A)PYRENE	76.7			17.8			16.3			18.7		
BENZO(B)FLUORANTHENE	116			44.9			35.5			41.7		
BENZO(E)PYRENE	70.2	J	C	44.6	J	C	24.6	J	C	38.3	J	C
BENZO(G,H,I)PERYLENE	53.6			20.2			15.1			18.0		
BENZO(K)FLUORANTHENE	47.4			23.1			13.9			20.4		
BIPHENYL	2.70	J	P	2.60	J	P	2.30	J	P	1.50	J	P
C1-CHRYSENES	37.8			28.7			18.0			28.1		
C1-DIBENZOTHIOPHENES	5.20			3.20	J	P	2.40	J	P	3.50	J	P
C1-FLUORANTHENES/PYRENES	62.2			38.4			24.0			42.3		
C1-FLUORENES	22.0			19.7	J	P	13.6	J	P	16.6		
C1-NAPHTHALENES	12.2			11.4			8.20	J	P	10.2		
C1-PHENANTHRENES/ANTHRACENES	36.2			20.2			16.2			26.5		
C2-CHRYSENES	15.2			16.6			9.20	J	P	18.3		
C2-DIBENZOTHIOPHENES	5.90			7.00			4.10	J	P	6.00		
C2-FLUORENES	11.1	J	P	15.6	J	P	7.90	J	P	12.5	J	P
C2-NAPHTHALENES	11.6	J	P	13.8	J	P	10.0	J	P	12.5	J	P
C2-PHENANTHRENES/ANTHRACENES	36.2			33.9			22.4			39.2		
C3-CHRYSENES	0.20	J	P	0.10	J	P	0.03	J	P	0.10	J	P
C3-DIBENZOTHIOPHENES	8.90			9.50			5.90			9.80		
C3-FLUORENES	27.3			38.1			20.5	J	P	25.7		
C3-NAPHTHALENES	18.3			15.8			12.1	J	P	14.8		
C3-PHENANTHRENES/ANTHRACENES	24.4			27.9			16.0			32.1		
C4-CHRYSENES	0.20	J	P	0.10	J	P	0.20	J	P	0.10	J	P
C4-NAPHTHALENES	17.0			20.1			12.8	J	P	18.0		

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SAMPLE NUMBER:	OU4-MU-M08-100A	OU4-MU-M08-200A	OU4-MU-M08-300A	OU4-MU-M09-100A
SAMPLE DATE:	08/28/00	08/28/00	08/28/00	08/29/00
LABORATORY ID:	C36632	C36633	C36634	C36635
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	13.9 %	9.9 %	9.7 %	14.0 %
UNITS:	NG/G	NG/G	NG/G	NG/G
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	12.8			15.6			8.70	J	P	15.4		
CHRYSENE	106	J	C	48.2	J	C	34.2	J	C	44.2	J	C
DIBENZO(A,H)ANTHRACENE	6.70	J	C	3.00	J	C	1.20	J	CP	2.10	J	C
DIBENZOTHIOPHENE	10.2			1.40	J	P	1.60	J	CP	1.40	J	P
FLUORANTHENE	263			66.6			57.9			89.1		
FLUORENE	28.6	J	E	6.30	J	EP	5.30	J	EP	6.80	J	EP
INDENO(1,2,3-CD)PYRENE	51.6	J	C	14.6	J	C	11.3	J	C	13.5	J	C
NAPHTHALENE	12.5	J	CE	9.70	J	CEP	9.50	J	CEP	9.20	J	CE
PERYLENE	27.5	J	C	21.0	J	C	10.9	J	C	22.2	J	C
PHENANTHRENE	165			15.0			22.6			22.0		
PYRENE	200			67.5			54.4			87.4		

SAMPLE NUMBER:	OU4-MU-M11-100A			OU4-MU-M11-200A			OU4-MU-M11-300A			OU4-MU-M12-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36505			C36506			C36507			C36508		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.3 %			10.4 %			11.2 %			10.1 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	2.50	J	P	3.40	J	P	2.40	J	P	10.5	J	G
1-METHYLNAPHTHALENE	6.40	J	CE	9.00	J	CEG	5.30	J	CE	45.3	J	CEG
1-METHYLPHENANTHRENE	3.50	J	P	4.90	J	GP	4.90	J	P	71.8	J	G
2,6-DIMETHYLNAPHTHALENE	3.00	J	P	3.40	J	P	2.70	J	P	19.4		
2-METHYLNAPHTHALENE	8.60	J	E	11.5	J	EG	7.20	J	E	64.1	J	EG
ACENAPHTHENE	6.80	J	CEP	8.20	J	CEP	11.9	J	CDE	390	J	CEG
ACENAPHTHYLENE	9.30	J	CE	16.7	J	CE	8.40	J	CE	87.9	J	CEG
ANTHRACENE	13.3	J	E	24.6	J	E	22.6	J	DE	498	J	EG
BENZO(A)ANTHRACENE	7.30	J	C	15.8	J	C	15.6	J	CD	566	J	CG
BENZO(A)PYRENE	5.00			10.3			13.6	J	D	514	J	G
BENZO(B)FLUORANTHENE	10.3	J	C	21.2	J	C	23.2	J	CD	752	J	CG
BENZO(E)PYRENE	13.3	J	C	27.2	J	C	18.8	J	CD	372	J	CG
BENZO(G,H,I)PERYLENE	4.60			11.5			10.4	J	D	273		
BENZO(K)FLUORANTHENE	5.00	J	C	7.60	J	C	10.2	J	CD	275	J	CG
BIPHENYL	3.20	J	P	3.30	J	CGP	2.30	J	P	18.6		
C1-CHRYSENES	7.50	J	P	21.0	J	G	18.4			229	J	G
C1-DIBENZOTHIOPHENES	1.60	J	P	3.00	J	P	3.10	J	P	27.3	J	G
C1-FLUORANTHENES/PYRENES	14.5			27.7			21.5			450	J	G
C1-FLUORENES	14.0	J	P	21.7			21.8			76.5	J	G
C1-NAPHTHALENES	15.0			20.6	J	G	12.5			109	J	G
C1-PHENANTHRENES/ANTHRACENES	8.80			16.4			16.5			283	J	G
C2-CHRYSENES	0.30	J	P	1.00	J	GP	9.30	J	P	121	J	G
C2-DIBENZOTHIOPHENES	3.00	J	P	4.50	J	GP	5.20			22.3	J	G
C2-FLUORENES	7.70	J	P	15.5	J	P	10.8	J	P	37.7	J	G
C2-NAPHTHALENES	14.7			20.3	J	G	14.4	J	P	93.9	J	G
C2-PHENANTHRENES/ANTHRACENES	19.3			26.3	J	G	22.3			155	J	G
C3-CHRYSENES	0.40	J	P	0.30	J	GP	0.60	J	P	0.10	J	P
C3-DIBENZOTHIOPHENES	5.00			8.60	J	G	7.80			22.0	J	G
C3-FLUORENES	15.7			36.2	J	G	18.5			56.9	J	G
C3-NAPHTHALENES	17.0			26.0	J	G	16.6			59.2	J	G
C3-PHENANTHRENES/ANTHRACENES	12.2			23.5	J	G	21.2			70.7	J	G
C4-CHRYSENES	0.02	J	P	0.20	J	GP	0.10	J	P	9.20	J	P
C4-NAPHTHALENES	15.2			22.0	J	G	11.6	J	P	41.1	J	G

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SDG: T1172

SAMPLE NUMBER:	OU4-MU-M11-100A			OU4-MU-M11-200A			OU4-MU-M11-300A			OU4-MU-M12-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36505			C36506			C36507			C36508		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.3 %			10.4 %			11.2 %			10.1 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	7.40	J	P	16.8	J	G	8.20	J	P	24.1	J	G
CHRYSENE	13.9	J	C	25.0	J	C	23.1	J	CD	686	J	CG
DIBENZO(A,H)ANTHRACENE	0.90	J	P	0.90	J	P	1.10	J	P	52.7	J	G
DIBENZOTHIOPHENE	1.00	J	P	0.80	J	P	2.10	J	P	63.3	J	G
FLUORANTHENE	22.2			39.8			55.7	J	D	1884	J	G
FLUORENE	6.00	J	CEP	7.10	J	CEP	8.30	J	CDEP	276	J	CEG
INDENO(1,2,3-CD)PYRENE	2.90	J	C	6.60	J	C	7.70	J	CD	326	J	CG
NAPHTHALENE	14.0	J	E	17.9	J	EG	12.3	J	DE	140	J	EG
PERYLENE	14.8	J	C	18.7	J	CG	31.1	J	CD	104	J	CG
PHENANTHRENE	6.20			8.50			32.6	J	D	1227	J	G
PYRENE	22.1			38.3			47.2			1435	J	G

SAMPLE NUMBER:	OU4-MU-M12-200A			OU4-MU-R01-300A			OU4-MU-R02-300A			OU4-MU-R03-300A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/30/00		
LABORATORY ID:	C36509			C36510			C36511			C36512		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.9 %			11.7 %			12.9 %			12.0 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	3.70	J	P	1.70	J	P	2.40	J	P	5.80	J	P
1-METHYLNAPHTHALENE	9.00	J	CE	5.60	J	CE	6.70	J	CE	8.00	J	CE
1-METHYLPHENANTHRENE	15.2			2.90	J	P	3.00	J	P	6.40		
2,6-DIMETHYLNAPHTHALENE	4.60	J	P	1.90	J	P	2.90	J	P	5.30	J	P
2-METHYLNAPHTHALENE	12.4	J	E	6.50	J	E	8.80	J	E	11.4	J	E
ACENAPHTHENE	31.1	J	CE	4.60	J	CP	6.30	J	CEP	5.30	J	CEP
ACENAPHTHYLENE	39.4	J	CE	15.6	J	C	18.6	J	CE	14.6	J	CE
ANTHRACENE	120			25.9			28.0			24.2		
BENZO(A)ANTHRACENE	108			14.3			22.7			13.1		
BENZO(A)PYRENE	45.3			11.6			18.2			9.70		
BENZO(B)FLUORANTHENE	95.4	J	C	27.1	J	C	37.9	J	C	26.1	J	C
BENZO(E)PYRENE	69.1	J	C	33.5	J	C	39.9	J	C	26.8	J	C
BENZO(G,H,I)PERYLENE	22.3			10.0			13.5			9.10		
BENZO(K)FLUORANTHENE	45.1	J	C	9.10	J	C	18.4	J	C	9.20	J	C
BIPHENYL	3.60	J	P	2.10	J	P	2.50	J	P	2.80	J	P
C1-CHRYSENES	59.8			23.4			29.7			17.2		
C1-DIBENZOTHIOPHENES	5.00	J	P	2.30	J	P	2.90	J	P	4.10	J	P
C1-FLUORANTHENES/PYRENES	116			37.7			42.8			31.5		
C1-FLUORENES	29.0			10.1	J	P	16.1			17.8		
C1-NAPHTHALENES	21.4			12.1			15.5			19.5		
C1-PHENANTHRENES/ANTHRACENES	60.6			13.9			17.5			23.4		
C2-CHRYSENES	38.5			31.1			14.6			12.0		
C2-DIBENZOTHIOPHENES	7.40			4.30	J	P	6.00			8.10		
C2-FLUORENES	13.3	J	P	10.0	J	P	11.1	J	P	26.2		
C2-NAPHTHALENES	24.5			10.5	J	P	14.2	J	P	21.6		
C2-PHENANTHRENES/ANTHRACENES	51.7			29.1			32.9			38.2		
C3-CHRYSENES	0.10	J	P	0.10	J	P	0.10	J	P	0.20	J	P
C3-DIBENZOTHIOPHENES	9.90			8.60			7.80			12.3		
C3-FLUORENES	40.8			17.9			31.7			35.2		
C3-NAPHTHALENES	23.3			9.90	J	P	17.3			27.6		
C3-PHENANTHRENES/ANTHRACENES	34.0			26.9			31.0			24.9		
C4-CHRYSENES	0.10	J	P	0.10	J	P	0.10	J	P	0.04	J	P
C4-NAPHTHALENES	18.9			13.9			20.0			32.7		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1172

SAMPLE NUMBER:	OU4-MU-M12-200A			OU4-MU-R01-300A			OU4-MU-R02-300A			OU4-MU-R03-300A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/30/00		
LABORATORY ID:	C36509			C36510			C36511			C36512		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.9 %			11.7 %			12.9 %			12.0 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	16.5			14.2			17.0			15.0		
CHRYSENE	112	J	C	32.8	J	C	38.7	J	C	26.1	J	C
DIBENZO(A,H)ANTHRACENE	3.90	J	C	1.30	J	CP	1.60	J	CP	0.30	J	CP
DIBENZOTHIOPHENE	6.80			0.70	J	P	1.10	J	P	1.60	J	P
FLUORANTHENE	292			45.5			61.7			51.7		
FLUORENE	32.5	J	EC	4.10	J	CEP	5.60	J	CEP	5.90	J	CEP
INDENO(1,2,3-CD)PYRENE	19.2	J	C	5.70	J	C	9.80	J	C	5.10	J	C
NAPHTHALENE	20.6	J	EC	11.5	J	CE	11.5	J	CE	14.0	J	CE
PERYLENE	14.8	J	C	23.4	J	C	19.4	J	C	15.4	J	C
PHENANTHRENE	113			5.40	J	P	10.8			11.0		
PYRENE	263			55.8			69.7			50.6		

SAMPLE NUMBER:	OU4-MU-R03-400A			OU4-MU-R04-300A								
SAMPLE DATE:	08/30/00			08/30/00			/ /			/ /		
LABORATORY ID:	C36513			C36514								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	11.9 %			11.7 %			100.0 %			100.0 %		
UNITS:	NG/G			NG/G								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	5.40	J	P	3.20	J	P						
1-METHYLNAPHTHALENE	6.30	J	CE	4.50	J	CE						
1-METHYLPHENANTHRENE	7.60			5.20								
2,6-DIMETHYLNAPHTHALENE	4.00	J	P	3.60	J	P						
2-METHYLNAPHTHALENE	8.30	J	E	6.50	J	E						
ACENAPHTHENE	7.50	J	CP	5.20	J	CEP						
ACENAPHTHYLENE	18.6	J	C	8.30	J	CE						
ANTHRACENE	34.8			13.6								
BENZO(A)ANTHRACENE	17.3			9.30								
BENZO(A)PYRENE	13.8			5.40								
BENZO(B)FLUORANTHENE	27.4	J	C	15.0	J	C						
BENZO(E)PYRENE	32.3	J	C	16.2	J	C						
BENZO(G,H,I)PERYLENE	12.9			7.90								
BENZO(K)FLUORANTHENE	9.80	J	C	4.60	J	C						
BIPHENYL	2.00	J	P	1.70	J	P						
C1-CHRYSENES	29.0			9.50	J	P						
C1-DIBENZOTHIOPHENES	5.40			2.50	J	P						
C1-FLUORANTHENES/PYRENES	38.0			16.7								
C1-FLUORENES	18.6			12.5	J	P						
C1-NAPHTHALENES	14.6			11.0								
C1-PHENANTHRENES/ANTHRACENES	34.7			16.2								
C2-CHRYSENES	26.7			12.9								
C2-DIBENZOTHIOPHENES	11.9			3.80	J	P						
C2-FLUORENES	30.1			13.6	J	P						
C2-NAPHTHALENES	20.1			13.1	J	P						
C2-PHENANTHRENES/ANTHRACENES	52.7			23.4								
C3-CHRYSENES	0.20	J	P	0.10	J	P						
C3-DIBENZOTHIOPHENES	14.2			5.50								
C3-FLUORENES	56.2			22.6								
C3-NAPHTHALENES	33.2			17.9								
C3-PHENANTHRENES/ANTHRACENES	34.3			15.1								
C4-CHRYSENES	0.10	J	P	0.10	J	P						
C4-NAPHTHALENES	43.8			20.3								

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1172

SAMPLE NUMBER:	OU4-MU-R03-400A	OU4-MU-R04-300A		
SAMPLE DATE:	08/30/00	08/30/00	/ /	/ /
LABORATORY ID:	C36513	C36514		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	11.9 %	11.7 %	100.0 %	100.0 %
UNITS:	NG/G	NG/G		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	15.3			8.70	J	P						
CHRYSENE	34.6	J	C	17.3	J	C						
DIBENZO(A,H)ANTHRACENE	0.90	J	CP	0.60	J	CP						
DIBENZOTHIOPHENE	1.40	J	P	1.00	J	P						
FLUORANTHENE	64.5			30.1								
FLUORENE	7.00	J	CEP	4.30	J	CEP						
INDENO(1,2,3-CD)PYRENE	7.50	J	C	4.30	J	C						
NAPHTHALENE	11.3	J	CE	8.60	J	CEP						
PERYLENE	19.1	J	C	10.4	J	C						
PHENANTHRENE	13.9			8.00								
PYRENE	60.6			26.9								

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 12, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PCBs and PESTICIDES**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – T1172

SAMPLES: 18/Tissue/

OU4-MU-M01-200A	OU4-MU-M02-200A	OU4-MU-M02-300A
OU4-MU-M07-100A	OU4-MU-M08-100A	OU4-MU-M08-200A
OU4-MU-M08-300A	OU4-MU-M09-100A	OU4-MU-M11-100A
OU4-MU-M11-200A	OU4-MU-M11-300A	OU4-MU-M12-100A
OU4-MU-M12-200A	OU4-MU-R01-300A	OU4-MU-R02-300A
OU4-MU-R03-300A	OU4-MU-R03-400A	OU4-MU-R04-300A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG T1172 consisting of eighteen (18) tissue samples were included in this SDG. Samples were analyzed for pesticides and PCBs. Several field duplicates were included in this SDG: OU4-MU-M11-100A and OU4-MU-M11-100A-LD (in SDG T1173); OU4-MU-M11-200A and OU4-MU-M11-200A-LD (in SDG T1174); OU4-MU-M12-100A and OU4-MU-M12-100A-LD (in SDG T1174).

The samples were collected by Tetra Tech NUS on August 28-30, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using GERG SOP 9810 and 9805 analytical and reporting protocols.

The data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Calibration
• Method Blank Results
* • Surrogate Standard Recoveries
* • Instrument Performance
* • Compound Identification
• Compound Quantitation
• Matrix Spike/Matrix Spike Duplicate Results
• Standard Reference Materials
• Field Duplicate Results

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANKS

The maximum concentration of contaminants found in the laboratory method blank analysis is summarized below.

Compound	Maximum Concentration	Sediment Action Level
Tetrachlorobenzene, 1245-	0.39 ng/g	1.95 ng/g
Tetrachlorobenzene, 1234-	0.04 ng/g	0.20 ng/g
Pentachlorobenzene	0.44 ng/g	2.2 ng/g
b-BHC	0.19 ng/g	0.95 ng/g
Pentachloroanisole	0.06 ng/g	0.30 ng/g
PCB 52	0.06 ng/g	0.3 ng/g
PCB 44	0.13 ng/g	0.65 ng/g
PCB 153/132	0.49 ng/g	2.45 ng/g
PCB 138/160	0.27 ng/g	1.35 ng/g
PCB 180	0.17 ng/g	0.85 ng/g
PCB170/190	0.20 ng/g	1.0 ng/g
PCB 169	0.24 ng/g	1.2 ng/g

Samples Affected: All

Blank Actions:

Dilution factors, percent solids, and sample aliquot used for analysis were taken into consideration prior to the application of all action levels. Positive results for all compounds below the blank action level were qualified at the reported concentration.

STANDARD REFERENCE MATERIAL RESULTS

Recovery of PCB 105, PCB 180, abd Dieldrin exceeded the upper quality control limit. Positive results for thes compounds were qualified as estimated, J, in all samples. Recoveries of 2,4-DDE and 4,4'-DDT fell below the lower quality control limit. Positive and nondetected results were qualified as estimated, J and UJ, in all samples.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

FIELD DUPLICATE RESULTS

Several results exceeded the 50% relative percent difference (RPD) criteria in the field duplicate pair OU4-MU-M11-100A and OU4-MU-M11-100A-LD. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-MU-M11-200A and OU4-MU-M11-200A-LD. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-MU-M12-100A and OU4-MU-M12-100A-LD. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses. Standard reference material recoveries were outside the quality control limits for several compounds.

Other Factors Affecting Data Quality: Field duplicate results exceeded the 50% RPD criteria.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

	OU4-LJ-M11-100A SDG T1172	OU4-LJ-M11-100A-LD SDG T1173	RPD
1,2,3,4-Tetrachlorobenzene	0.14 U*	8.24	NC
1,2,4,5-Tetrachlorobenzene	0.41 U*	0.36 J	200
2,4'-DDD	1.18	0.45 U	200
2,4'-DDE	0.1 J	0.63 U	NC
2,4'-DDT	0.33	0.58 U	NC
4,4'-DDD	2.23	0.55 U	200
4,4'-DDE	4.03	2.76	37
4,4'-DDT	0.83	0.85 U	NC
Aldrin	0.35 U	0.73 U	NA
a-BHC	0.22 J	0.52 U	NC
a-Chlordane	0.66	0.55 U	200
b-BHC	0.25 U*	0.16 J	NC
Chlorpyrifos	2.31 U	4.8 U	NA
cis-Nonachlor	0.86	0.5 U	200
d-BHC	0.14 U	0.29 U	NA
Dieldrin	0.6	2.23	-115
Endosulfan II	0.25 J	0.55 U	NC
Endrin	0.73 U	1.52 U	NA
g-BHC	0.22 U	0.45 U	NA
g-Chlordane	0.25 J	0.58 U	NC
Heptachlor	0.4 U	0.83 U	NA
Heptachlor epoxide	0.28 U	0.58 U	NA
Hexachlorobenzene	0.08 J	0.27 J	-109
Mirex	0.64 U	1.34 U	NA
Oxychlordane	0.3 U	0.66	200
PCB-101/90	7.78	1.74 U	200
PCB-105	3.37	0.77 J	126
PCB-114	0.98 U	2.04 U	NA
PCB-118	7.85	3.04	88
PCB-126	0.98 U	2.04 U	NA
PCB-128	1.99	0.5 J	120
PCB-138/160	11.18	3.42 U*	200
PCB-149/123	6.21	0.13 J	192
PCB-153/132	12.92	5.49 U*	200
PCB-156	0.92 J	2.04 U	NC
PCB-167	0.7 J	2.04 U	NC
PCB-169	0.18 U*	2.04 U	NA
PCB-170/190	0.34 U*	0.6 U*	NA
PCB-18/17	2.57 U	9.18	200
PCB-180	5.58	1.28 U*	200
PCB-187	3.76	1.72	74
PCB-189	0.98 U	2.04 U	NA
PCB-195/208	0.82 U	1.7 U	NA
PCB-206	0.85 U	1.76 U	NA
PCB-209	1.11 U	2.3 U	NA
PCB-28	0.66 J	1.61 U	NC
PCB-44	0.68 U*	1.19 U	NA
PCB-52	2.03 U*	0.04 J	NC
PCB-66	0.93 J	0.33 J	95
PCB-77	0.63 J	0.75 U*	NC
PCB-8/5	2.18	0.86 J	87
PCB-81	0.98 U	2.04 U	NA
Pentachloroanisole	0.89 J*	0.26 U*	200
Pentachlorobenzene	0.64 J*	0.48 U*	200
trans-Nonachlor	0.77	0.35 U	200
PCB-201/157/173	0.19 J	1.57 U	NC

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-M11-200A SDG T1172	OU4-M11-200A-LD SDG T1174	RPD
1,2,3,4-Tetrachlorobenzene	0.19 U*	0.46	200
1,2,4,5-Tetrachlorobenzene	0.64 U*	3.85 U*	NA
2,4'-DDD	2.28	2.48	-8
2,4'-DDE	0.43 U	0.72	200
2,4'-DDT	2.88	2.19	27
4,4'-DDD	3.13	2.74	13
4,4'-DDE	10.19	7.25	34
4,4'-DDT	1.14	1.15	-1
Aldrin	0.49 U	0.17 J	NC
a-BHC	0.38	0.39	-3
a-Chlordane	1.28	1.2	6
b-BHC	3.36 U*	8.68	200
Chlorpyrifos	3.2 U	2.88 U	NA
cis-Nonachlor	3	3.18	-6
d-BHC	0.2 U	0.14 J	NC
Dieldrin	1.56	0.98	46
Endosulfan II	0.93	0.98	-5
Endrin	1.01 U	0.91 U	NA
g-BHC	0.14 J	0.15 J	-7
g-Chlordane	0.51	0.57	-11
Heptachlor	0.56 U	0.14 J	NC
Heptachlor epoxide	0.39 U	0.35 U	NA
Hexachlorobenzene	0.32 J	0.39 J	-20
Mirex	0.89 U	0.8 U	NA
Oxychlordane	0.41 U	0.37 U	NA
PCB-101/90	35.62	27.96	24
PCB-105	15.3	5.79	90
PCB-114	1.36 U	1.22 U	NA
PCB-118	32.95	25.53	25
PCB-126	1.36 U	1.22 U	NA
PCB-128	9.86	7.6	26
PCB-138/160	46.35	36.02	25
PCB-149/123	23.91	15.29	44
PCB-153/132	44.85	35.99	22
PCB-156	2.84	5.08	-57
PCB-167	3.28	2.72	19
PCB-169	0.38 U*	1.22 U	NA
PCB-170/190	0.74 U*	1 U*	NA
PCB-18/17	3.56 U	3.21 U	NA
PCB-180	9.97	6.37 U*	200
PCB-187	8.5	6.1	33
PCB-189	1.36 U	1.22 U	NA
PCB-195/208	1.13 U	1.02 U	NA
PCB-206	1.18 U	1.06 U	NA
PCB-209	1.54 U	1.38 U	NA
PCB-28	1.11	1.07 U*	200
PCB-44	1.96 U*	1.94 U*	NA
PCB-52	6.08	4.19	37
PCB-66	2.32	1.14 J	68
PCB-77	1.08 J	1.22 U	NC
PCB-8/5	7.95	0.6 J	172
PCB-81	0.74 J	1.22 U	NC
Pentachloroanisole	1.66 U*	0.88 U*	NA
Pentachlorobenzene	1.3 U*	2.49 U*	NA
trans-Nonachlor	1.39	1.07	26
PCB-201/157/173	1.05 U	0.98	NC

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-MU-M12-100A SDG T1172	OU4-MU-M12-100A-LD SDG T1174	RPD
1,2,3,4-Tetrachlorobenzene	0.18 U*	0.5	200
1,2,4,5-Tetrachlorobenzene	0.79 U*	1.63 U*	NA
2,4'-DDD	23.42	2.1	167
2,4'-DDE	0.43 U	0.25 J	NC
2,4'-DDT	2.48	1.16	73
4,4'-DDD	4.97	1.87	91
4,4'-DDE	9.33	5.51	51
4,4'-DDT	1.21	0.82	38
Aldrin	0.5 U	0.13 J	NC
a-BHC	0.51	0.76	-39
a-Chlordane	1.41	1.69	-18
b-BHC	1.5 U*	5.4	200
Chlorpyrifos	3.25 U	2.82 U	NA
cis-Nonachlor	2.01	1.25	47
d-BHC	0.2 U	0.17 U	NA
Dieldrin	1.48	0.51	97
Endosulfan II	1.38	0.32 U	200
Endrin	1.03 U	0.89 U	NA
g-BHC	0.31 U	0.11 J	NC
g-Chlordane	0.41	0.62	-41
Heptachlor	0.56 U	0.24 J	NC
Heptachlor epoxide	0.4 U	0.34 U	NA
Hexachlorobenzene	0.23 J	0.25 J	-8
Mirex	0.91 U	0.78 U	NA
Oxychlordane	0.42 U	0.36 U	NA
PCB-101/90	19.36	12.3	45
PCB-105	8.82	2.78	104
PCB-114	1.38 U	1.2 U	NA
PCB-118	17.1	9.68	55
PCB-126	1.38 U	1.2 U	NA
PCB-128	4.38	2.75	46
PCB-138/160	30.29	19.32	44
PCB-149/123	21.12	11.16	62
PCB-153/132	42.42	27.77	42
PCB-156	2.84	1.27	76
PCB-167	2.65	1.45	59
PCB-169	1.38 U	1.2 U	NA
PCB-170/190	2.34 U*	1.03 U*	NA
PCB-18/17	4.97	3.14 U	200
PCB-180	12.65	6.95 U*	200
PCB-187	21.36	12.74	51
PCB-189	1.38 U	1.2 U	NA
PCB-195/208	0.28 J	0.12 J	80
PCB-206	1.19 U	1.03 U	NA
PCB-209	1.56 U	0.89 J	NC
PCB-28	3.5	2.67 U*	200
PCB-44	4.05 U*	3.26 U*	NA
PCB-52	7.03	4.67	40
PCB-66	6.3	3.2	65
PCB-77	2.78	1.2 U	200
PCB-8/5	6.11	2.27	92
PCB-81	0.26 J	0.11 J	81
Pentachloroanisole	0.88 U*	0.46 U*	NA
Pentachlorobenzene	0.78 U*	2.84 U*	NA
trans-Nonachlor	0.95	1.21	-24
PCB-201/157/173	1.98	1.78	13

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO20 ORTSMOUTH
SOIL DATA
GERG
SDG: T1172

SAMPLE NUMBER:	OU4-MU-M01-200A			OU4-MU-M02-200A			OU4-MU-M02-300A			OU4-MU-M07-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36628			C36629			C36630			C36631		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.6 %			12.8 %			12.8 %			11.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.22	U	A	0.22	U	A	0.28	U	A	0.19	U	A
1,2,4,5-TETRACHLOROBENZENE	0.36	U	A	0.37	U	A	1.1	U	A	1.3	U	A
2,4'-DDD	4.2			2.3			2.9			2.5		
2,4'-DDE	0.46	J	E	0.24	J	EP	0.25	J	EP	0.22	J	EP
2,4'-DDT	1.1			1.8			2.1			0.58		
4,4'-DDD	7.7			4.5			2.5			3.0		
4,4'-DDE	15			9.9			11			9.2		
4,4'-DDT	6.2	J	E	2.4	J	E	2.2	J	E	1.6	J	E
ALDRIN	0.030	J	P	0.13	J	P	0.40	U		0.080	J	P
ALPHA-BHC	0.32			0.21	J	P	0.24	J	P	0.20	J	P
ALPHA-CHLORDANE	2.2			1.3			1.2			1.1		
BETA-BHC	4.6	U	A	1.1	U	A	3.0	U	A	1.3	U	A
CHLORPYRIFOS	2.2	U		2.6	U		2.6	U		2.9	U	
CIS-NONACHLOR	0.78			1.2			1.0			1.0		
DELTA-BHC	0.13	U		0.16	U		0.16	U		0.18	U	
DIELDRIN	2.3	J	E	0.90	J	E	0.75	J	E	0.83	J	E
ENDOSULFAN II	0.18	J	P	0.26	J	P	0.12	J	P	0.21	J	P
ENDRIN	0.70	U		0.82	U		0.82	U		0.91	U	
GAMMA-BHC (LINDANE)	0.13	J	P	0.12	J	P	0.12	J	P	0.13	J	P
GAMMA-CHLORDANE	1.5			0.35			0.40			0.38		
HEPTACHLOR	0.38	U		0.45	U		0.45	U		0.50	U	
HEPTACHLOR EPOXIDE	0.27	U		0.32	U		0.32	U		0.35	U	
HEXACHLOROBENZENE	0.20	J	P	0.19	J	P	0.16	J	P	0.11	J	P
MIREX	0.61	U		0.73	U		0.72	U		0.80	U	
OXYCHLORDANE	0.28	U		0.34	U		0.33	U		0.37	U	
PCB-101/90	7.7			8.3			7.4			7.6		
PCB-105	2.9	J	E	2.9	J	E	3.4	J	E	3.7	J	E
PCB-114	0.94	U		1.1	U		1.1	U		1.2	U	
PCB-118	6.8			8.0			6.6			7.8		
PCB-126	0.94	UJ	E	1.1	UJ	E	1.1	UJ	E	1.2	UJ	E
PCB-128	1.8			2.1			2.0			2.0		
PCB-138/160	12			14			13			12		
PCB-149/123	7.2			7.8			7.6			6.6		

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SAMPLE NUMBER:	OU4-MU-M01-200A			OU4-MU-M02-200A			OU4-MU-M02-300A			OU4-MU-M07-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36628			C36629			C36630			C36631		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.6 %			12.8 %			12.8 %			11.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	16	U	A	19			16	U	A	17	U	A
PCB-156	0.94	U		1.1	U		0.94	J	P	0.97	J	P
PCB-167	1.1			1.1			1.0	J	P	1.0	J	P
PCB-169	0.080	U	A	0.15	U	A	1.1	U		1.2	U	
PCB-170/190	0.52	U	A	0.37	U	A	0.31	U	A	0.38	U	A
PCB-18/17	2.4	U		0.57	J	P	0.51	J	P	3.2	U	
PCB-180	5.6	U	A	5.7	U	A	5.5	U	A	5.2	U	A
PCB-187	5.5			6.5			5.9			5.9		
PCB-189	0.94	U		1.1	U		1.1	U		1.2	U	
PCB-195/208	0.78	U		0.92	U		0.92	U		1.0	U	
PCB-201/157/173	0.38	J	P	0.47	J	P	0.29	J	P	0.28	J	P
PCB-206	0.81	U		0.96	U		0.95	U		1.1	U	
PCB-209	1.1	U		1.2	U		1.2	U		1.4	U	
PCB-28	0.93			0.98			1.0			1.0		
PCB-44	0.81	U	A	1.0	U	A	0.82	U	A	0.93	U	A
PCB-52	2.3			2.6			1.8	U	A	2.1	U	A
PCB-66	1.1			1.5			0.95	J	P	1.3		
PCB-77	0.20	J	P	0.070	J	P	1.4			0.67	J	P
PCB-8/5	1.5			2.3			4.4			4.1		
PCB-81	0.94	U		1.1	U		1.1	U		1.2	U	
PENTACHLOROANISOLE	0.70	U	A	0.85	U	A	1.3	U	A	0.98	U	A
PENTACHLOROBENZENE	0.44	U	A	0.61	U	A	0.65	U	A	0.54	U	A
TRANS-NONACHLOR	1.7			0.95			1.0			0.99		

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SAMPLE NUMBER:	OU4-MU-M08-100A			OU4-MU-M08-200A			OU4-MU-M08-300A			OU4-MU-M09-100A		
SAMPLE DATE:	08/28/00			08/29/00			08/28/00			08/29/00		
LABORATORY ID:	C36632			C36633			C36634			C36635		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	13.9 %			9.9 %			9.7 %			14.0 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.30	U	A	0.43	U	A	0.17	U	A	0.28	U	A
1,2,4,5-TETRACHLOROBENZENE	3.4	U	A	2.2	U	A	1.3	U	A	1.1	U	A
2,4'-DDD	26			6.6			7.2			4.9		
2,4'-DDE	0.72			1.0			0.27	J	P	0.26	J	P
2,4'-DDT	4.1			2.2			2.2			3.3		
4,4'-DDD	58			15			15			7.9		
4,4'-DDE	22			16			11			13		
4,4'-DDT	11			2.9			5.7			4.8		
ALDRIN	0.37	U		0.50	U		0.52	U		0.35	U	
ALPHA-BHC	0.17	J	P	0.47			0.33	J	P	0.25	J	P
ALPHA-CHLORDANE	1.4			2.4			0.98			2.0		
BETA-BHC	1.2	U	A	1.7	U	A	1.2	U	A	8.6		
CHLORPYRIFOS	2.4	U		3.3	U		3.4	U		2.3	U	
CIS-NONACHLOR	0.85			1.4			0.94			1.9		
DELTA-BHC	0.15	U		0.20	U		0.21	U		0.14	U	
DIELDRIN	1.0			1.3			0.60			1.3		
ENDOSULFAN II	0.48			0.26	J	P	0.20	J	P	0.30		
ENDRIN	0.76	U		1.0	U		1.1	U		0.73	U	
GAMMA-BHC (LINDANE)	0.080	J	P	0.17	J	P	0.10	J	P	0.14	J	P
GAMMA-CHLORDANE	1.2			0.94			0.61			0.94		
HEPTACHLOR	0.41	U		0.57	U		0.59	U		0.40	U	
HEPTACHLOR EPOXIDE	0.29	U		0.40	U		0.42	U		0.28	U	
HEXACHLOROBENZENE	0.17	J	P	0.26	J	P	0.14	J	P	0.31	J	P
MIREX	0.67	U		0.92	U		0.95	U		0.65	U	
OXYCHLORDANE	0.31	U		0.43	U		0.44	U		0.30	U	
PCB-101/90	14			17			8.9			12		
PCB-105	6.6			6.4			4.6			6.5		
PCB-114	1.0	U		1.4	U		1.5	U		0.98	U	
PCB-118	13			15			7.7			11		
PCB-126	1.0	U		1.4	U		1.5	U		0.98	U	
PCB-128	3.6			4.1			2.2			3.6		
PCB-138/160	24			27			17			22		
PCB-149/123	16			16			11			16		

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SAMPLE NUMBER:	OU4-MU-M08-100A			OU4-MU-M08-200A			OU4-MU-M08-300A			OU4-MU-M09-100A		
SAMPLE DATE:	08/28/00			08/29/00			08/28/00			08/29/00		
LABORATORY ID:	C36632			C36633			C36634			C36635		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	13.9 %			9.9 %			9.7 %			14.0 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	33			37			22			29		
PCB-156	1.7			1.5			0.16	J	P	0.98	U	
PCB-167	1.8			2.0			1.2	J	P	1.8		
PCB-169	1.0	U		0.17	U	A	0.52	U	A	0.98	U	
PCB-170/190	1.2	U	A	0.83	U	A	0.87	U	A	1.1	U	A
PCB-18/17	0.10	J	P	0.56	J	P	3.8	U		0.95	J	P
PCB-180	7.1			9.8			6.0			9.5		
PCB-187	11			13			8.7			11		
PCB-189	1.0	U		1.4	U		1.5	U		0.17	J	P
PCB-195/208	0.85	U		1.2	U		1.2	U		0.82	U	
PCB-201/157/173	0.73	J	P	1.1			0.52	J	P	0.84		
PCB-206	0.88	U		1.2	U		1.3	U	A	0.85	U	
PCB-209	1.1	U		1.6	U		1.6	U	A	1.1	U	
PCB-28	0.86			1.8			0.63	J	P	1.2		
PCB-44	1.5	U	A	1.7	U	A	0.85	J	P	1.4	U	A
PCB-52	4.0			3.8			1.9			3.7		
PCB-66	1.7			2.1			1.0	J	P	1.6		
PCB-77	0.41	J	P	0.20	J	P	0.47	J	P	0.33	J	P
PCB-8/5	5.0			3.6			3.4			1.6	J	P
PCB-81	0.28	J	P	1.4	U		1.5	U		0.98	U	
PENTACHLOROANISOLE	0.89	U	A	1.0	U	A	0.58	U	A	0.81	U	A
PENTACHLOROBENZENE	0.64	U	A	1.2	U	A	0.88	U	A	0.74	U	A
TRANS-NONACHLOR	1.6			1.9			0.96			1.7		

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SAMPLE NUMBER:	OU4-MU-M11-100A			OU4-MU-M11-200A			OU4-MU-M11-300A			OU4-MU-M12-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36505			C36506			C36507			C36508		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.3 %			10.4 %			11.2 %			10.1 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.14	U	A	0.19	U	AG	0.17	U	A	0.18	U	AG
1,2,4,5-TETRACHLOROBENZENE	0.41	U	AG	0.64	U	A	0.63	U	A	0.79	U	A
2,4'-DDD	1.2	J	G	2.3			1.2			23	J	G
2,4'-DDE	0.10	J	EP	0.43	UJ	EG	0.39	UJ	E	0.43	UJ	E
2,4'-DDT	0.33			2.9			1.4			2.5	J	G
4,4'-DDD	2.2	J	G	3.1			2.0			5.0	J	G
4,4'-DDE	4.0			10			5.8			9.3	J	G
4,4'-DDT	0.83	J	E	1.4	J	E	1.0	J	E	1.2	J	E
ALDRIN	0.35	U		0.49	U		0.45	U		0.50	U	
ALPHA-BHC	0.22	J	P	0.38			0.38			0.51		
ALPHA-CHLORDANE	0.66	J	G	1.3			1.1			1.4		
BETA-BHC	0.25	U	A	3.4	U	AG	0.98	U	A	1.5	U	AG
CHLORPYRIFOS	2.3	U		3.2	U		3.0	U		3.2	U	
CIS-NONACHLOR	0.86	J	G	3.0			1.2			2.0		
DELTA-BHC	0.14	U		0.20	U		0.18	U		0.20	U	
DIELDRIN	0.60	J	EG	1.6	J	E	0.82	J	E	1.5	J	EG
ENDOSULFAN II	0.25	J	P	0.93			0.26	J	P	1.4	J	G
ENDRIN	0.73	U		1.0	U		0.94	U		1.0	U	
GAMMA-BHC (LINDANE)	0.22	U		0.14	J	P	0.16	J	P	0.31	U	
GAMMA-CHLORDANE	0.25	J	P	0.51			0.30	J	P	0.41		
HEPTACHLOR	0.40	U		0.56	U		0.51	U		0.56	U	
HEPTACHLOR EPOXIDE	0.28	U		0.39	U		0.36	U		0.40	U	
HEXACHLOROBENZENE	0.080	J	GP	0.32	J	P	0.17	J	P	0.23	J	P
MIREX	0.65	U		0.89	U		0.82	U		0.91	U	
OXYCHLORDANE	0.30	UJ	G	0.41	U		0.38	U		0.42	U	
PCB-101/90	7.8	J	G	36			10			19		
PCB-105	3.4	J	EG	15	J	EG	5.6	J	E	8.8	J	EG
PCB-114	0.98	U		1.4	U		1.3	U		1.4	U	
PCB-118	7.9	J	G	33			12			17	J	G
PCB-126	0.98	UJ	E	1.4	UJ	E	2.2	J	E	1.4	UJ	E
PCB-128	2.0	J	G	9.9			2.8			4.4		
PCB-138/160	11	J	G	46			15			30		
PCB-149/123	6.2	J	G	24			7.2			21	J	G

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SAMPLE NUMBER:	OU4-MU-M11-100A			OU4-MU-M11-200A			OU4-MU-M11-300A			OU4-MU-M12-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36505			C36506			C36507			C36508		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	14.3 %			10.4 %			11.2 %			10.1 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	13	J	G	45			18			42		
PCB-156	0.92	J	P	2.8	J	G	1.5			2.8	J	G
PCB-167	0.70	J	P	3.3			1.2	J	P	2.7	J	G
PCB-169	0.18	U	A	0.38	U	A	0.16	U	A	1.4	U	
PCB-170/190	0.34	U	A	0.74	U	A	0.47	U	A	2.3	U	A
PCB-18/17	2.6	UJ	G	3.6	U		0.48	J	P	5.0	J	G
PCB-180	5.6	J	EG	10.0	J	EG	6.4	U	A	13	J	EG
PCB-187	3.8	J	G	8.5			6.5			21	J	G
PCB-189	0.98	U		1.4	U		1.3	U		1.4	U	
PCB-195/208	0.82	U		1.1	U		1.0	U		0.28	J	GP
PCB-201/157/173	0.19	J	P	1.0	U		0.46	J	P	2.0		
PCB-206	0.85	U		1.2	U		1.1	U		1.2	U	
PCB-209	1.1	U		1.5	U		1.4	U		1.6	U	
PCB-28	0.66	J	P	1.1	J	G	0.73	J	P	3.5	J	G
PCB-44	0.68	U	A	2.0	U	A	1.0	U	A	4.1	U	A
PCB-52	2.0	U	A	6.1			3.0			7.0		
PCB-66	0.93	J	GP	2.3	J	G	1.5			6.3	J	G
PCB-77	0.63	J	P	1.1	J	P	1.3	U		2.8	J	G
PCB-8/5	2.2	J	G	8.0	J	G	7.6			6.1	J	G
PCB-81	0.98	U		0.74	J	P	1.3	U		0.26	J	GP
PENTACHLOROANISOLE	0.89	U	AG	1.7	U	A	1.6	U	A	0.88	U	A
PENTACHLOROBENZENE	0.64	U	AG	1.3	U	A	1.1	U	A	0.78	U	A
TRANS-NONACHLOR	0.77	J	G	1.4			0.88			0.95		

SAMPLE NUMBER:	OU4-MU-M12-200A			OU4-MU-R01-300A			OU4-MU-R02-300A			OU4-MU-R03-300A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/30/00		
LABORATORY ID:	C36509			C36510			C36511			C36512		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.9 %			11.7 %			12.9 %			12.0 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.15	U	A	0.20	U	A	0.13	U	A	0.16	U	A
1,2,4,5-TETRACHLOROBENZENE	0.84	U	A	1.1	U	A	0.76	U	A	0.93	U	A
2,4'-DDD	6.6			1.9			2.0			1.7		
2,4'-DDE	0.40	UJ	E	0.28	J	EP	0.11	J	EP	0.24	J	EP
2,4'-DDT	1.5			0.47			1.0			0.22	J	P
4,4'-DDD	2.8			3.1			3.1			2.9		
4,4'-DDE	6.4			8.6			6.5			6.8		
4,4'-DDT	1.2	J	E	0.83	J	E	0.93	J	E	0.77	J	E
ALDRIN	0.11	J	P	0.42	U		0.39	U		0.070	J	P
ALPHA-BHC	0.35			0.32			0.31			0.38		
ALPHA-CHLORDANE	1.0			1.1			0.99			1.1		
BETA-BHC	1.5	U	A	0.51	U	A	1.3	U	A	0.83	U	A
CHLORPYRIFOS	3.0	U		2.8	U		2.6	U		2.7	U	
CIS-NONACHLOR	1.7			1.4			1.1			0.86		
DELTA-BHC	0.18	U		0.17	U		0.16	U		0.17	U	
DIELDRIN	0.89	J	E	0.96	J	E	0.82	J	E	0.85	J	E
ENDOSULFAN II	0.48			0.22	J	P	0.19	J	P	0.14	J	P
ENDRIN	0.95	U		0.87	U		0.81	U		0.86	U	
GAMMA-BHC (LINDANE)	0.29	U		0.26	U		0.080	J	P	0.12	J	P
GAMMA-CHLORDANE	0.39			0.56			0.42			0.40		
HEPTACHLOR	0.52	U		0.48	U		0.45	U		0.47	U	
HEPTACHLOR EPOXIDE	0.37	U		0.34	U		0.32	U		0.33	U	
HEXACHLOROBENZENE	0.22	J	P	0.18	J	P	0.21	J	P	0.24	J	P
MIREX	0.84	U		0.77	U		0.72	U		0.76	U	
OXYCHLORDANE	0.39	U		0.36	U		0.33	U		0.35	U	
PCB-101/90	15			8.2			7.7			7.0		
PCB-105	6.5	J	E	3.9	J	E	2.9	J	E	2.7	J	E
PCB-114	1.3	U		1.2	U		1.1	U		1.2	U	
PCB-118	7.8			9.7			9.2			6.5		
PCB-126	1.3	UJ	E	1.2	UJ	E	1.1	UJ	E	1.2	UJ	E
PCB-128	3.4			2.1			2.0			1.7		
PCB-138/160	30			13			13			11		
PCB-149/123	25			6.3			5.6			4.7		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1172

SAMPLE NUMBER:	OU4-MU-M12-200A			OU4-MU-R01-300A			OU4-MU-R02-300A			OU4-MU-R03-300A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/30/00		
LABORATORY ID:	C36509			C36510			C36511			C36512		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.9 %			11.7 %			12.9 %			12.0 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	43			16			17			14		
PCB-156	2.7			1.2	J	P	1.1	U		0.19	J	P
PCB-167	1.9			1.1	J	P	1.1			0.96	J	P
PCB-169	0.060	U	A	1.2	U		1.1	U		1.2	U	
PCB-170/190	1.6	U	A	0.37	U	A	0.37	U	A	0.60	U	A
PCB-18/17	3.3	U		0.27	J	P	0.48	J	P	0.57	J	P
PCB-180	12	J	E	6.8	J	E	7.9	J	E	7.2	J	E
PCB-187	18			5.2			6.0			6.3		
PCB-189	0.21	J	P	1.2	U		1.1	U		1.2	U	
PCB-195/208	1.1	U		0.98	U		0.91	U		0.97	U	
PCB-201/157/173	1.9			0.30	J	P	0.31	J	P	0.89	U	
PCB-206	1.1	U		1.0	U		0.95	U		1.0	U	
PCB-209	1.4	U		1.3	U		1.2	U		1.3	U	
PCB-28	1.4			0.66	J	P	0.66	J	P	0.70	J	P
PCB-44	1.3	U	A	0.81	U	A	0.82	U	A	0.75	U	A
PCB-52	3.3			2.1	U	A	2.3	U	A	1.9	U	A
PCB-66	2.3			1.6			1.4			1.1		
PCB-77	0.46	J	P	1.2	U		0.23	J	P	1.2	U	
PCB-8/5	6.1			4.2			6.0			3.6		
PCB-81	1.3	U		1.2	U		1.1	U		0.14	J	P
PENTACHLOROANISOLE	0.76	U	A	0.66	U	A	0.89	U	A	0.61	U	A
PENTACHLOROBENZENE	0.72	U	A	0.73	U	A	0.99	U	A	0.89	U	A
TRANS-NONACHLOR	0.76			1.2			0.94			1.1		

SAMPLE NUMBER:	OU4-MU-R03-400A			OU4-MU-R04-300A								
SAMPLE DATE:	08/30/00			08/30/00			/ /			/ /		
LABORATORY ID:	C36513			C36514								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	11.9 %			11.7 %			100.0 %			100.0 %		
UNITS:	NG/G			NG/G								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.25	U	A	0.17	U	A						
1,2,4,5-TETRACHLOROBENZENE	0.80	U	A	0.33	U	A						
2,4'-DDD	2.3			1.2								
2,4'-DDE	0.17	J	EP	0.15	J	EP						
2,4'-DDT	0.52			0.27	J	P						
4,4'-DDD	4.5			1.7								
4,4'-DDE	10			5.1								
4,4'-DDT	1.5	J	E	0.56	J	E						
ALDRIN	0.090	J	P	0.050	J	P						
ALPHA-BHC	0.42			0.27	J	P						
ALPHA-CHLORDANE	1.5			0.94								
BETA-BHC	3.2	U	A	0.98	U	A						
CHLORPYRIFOS	2.7	U		2.8	U							
CIS-NONACHLOR	1.5			0.56								
DELTA-BHC	0.17	U		0.17	U							
DIELDRIN	1.1	J	E	0.61	J	E						
ENDOSULFAN II	0.080	J	P	0.17	J	P						
ENDRIN	0.87	U		0.90	U							
GAMMA-BHC (LINDANE)	0.16	J	P	0.090	J	P						
GAMMA-CHLORDANE	0.57			0.26	J	P						
HEPTACHLOR	0.48	U		0.49	U							
HEPTACHLOR EPOXIDE	0.34	U		0.35	U							
HEXACHLOROBENZENE	0.19	J	P	0.10	J	P						
MIREX	0.77	U		0.79	U							
OXYCHLORDANE	0.35	U		0.37	U							
PCB-101/90	9.6			4.8								
PCB-105	3.8	J	E	2.0	J	E						
PCB-114	1.2	U		1.2	U							
PCB-118	11			4.5								
PCB-126	1.6	J	E	1.2	UJ	E						
PCB-128	2.6			1.2								
PCB-138/160	17			7.5								
PCB-149/123	7.3	U	A	3.8	U	A						

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1172

SAMPLE NUMBER:	OU4-MU-R03-400A	OU4-MU-R04-300A		
SAMPLE DATE:	08/30/00	08/30/00	/ /	/ /
LABORATORY ID:	C36513	C36514		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	11.9 %	11.7 %	100.0 %	100.0 %
UNITS:	NG/G	NG/G		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	21			9.7	U	A						
PCB-156	1.2	U		1.2	U							
PCB-167	1.4			0.72	J	P						
PCB-169	0.11	U	A	0.16	U	A						
PCB-170/190	0.46	U	A	0.27	U	A						
PCB-18/17	1.2	J	P	0.55	J	P						
PCB-180	11	J	E	3.4	U	A						
PCB-187	7.3			3.4								
PCB-189	1.2	U		1.2	U							
PCB-195/208	0.97	U		1.0	U							
PCB-201/157/173	0.43	J	P	0.93	U							
PCB-206	1.0	U		1.0	U							
PCB-209	1.3	U		1.4	U							
PCB-28	0.81	J	P	0.43	J	P						
PCB-44	0.93	U	A	0.55	U	A						
PCB-52	2.7	U	A	1.1	U	A						
PCB-66	1.2			0.65	J	P						
PCB-77	0.68	J	P	0.31	J	P						
PCB-8/5	3.9			2.8								
PCB-81	1.2	U		1.2	U							
PENTACHLOROANISOLE	1.1	U	A	0.47	U	A						
PENTACHLOROBENZENE	0.38	U		0.32	U	A						
TRANS-NONACHLOR	1.4			0.75								

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 8, 2000**

FROM: **DOUGLAS S. SCHLOER** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYNUCLEAR AROMATIC HYDROCARBONS**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – T1173

SAMPLES: 18 / Tissue / PAH

OU4-LJ-M01-100A	OU4-LJ-M01-100A-LD	OU4-LJ-M02-100A	OU4-LJ-M03-100A
OU4-LJ-M04-100A	OU4-LJ-M05-100A	OU4-LJ-M06-100A	OU4-LJ-M07-100A
OU4-LJ-M08-100A	OU4-LJ-M11-100A-LD	OU4-MU-M09-200A	OU4-MU-M10-100A
OU4-MU-M10-200A	OU4-MU-M10-300A	OU4-MU-M13-100A	OU4-MU-M14-100A
OU4-MU-R02-400A	OU4-MU-R04-400A		

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine; SDG T1173 consists of eighteen (18) tissue samples. The samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). Four lab duplicate pairs were included in this SDG: OU4-LJ-M01-100A and *OU4-LJ-M01-100A-LD; *OU4-LJ-M11-100A and OU4-LJ-M11-100A-LD; OU4-MU-M10-100A and *OU4-MU-M10-100A-LD; *OU4-MU-M13-100A and OU4-MU-M13-100A-LD. The symbol (*) indicates samples that were not analyzed within this SDG.

The samples were collected by Tetra Tech NUS on August 28th and 29th, 2000 and were analyzed by Texas A&M University under NOAA Technical Memorandum NOS ORCA 130 Quality Assurance/Quality Control (QA/QC) criteria. All analyses and preparations were conducted using NOAA Technical Memorandum NOS ORCQ 130 (Program Mussel Watch) Methods.

The data were evaluated based on the following parameters:

*	Data Completeness
*	Holding Times
*	GC/MS Tuning and System Performance
	Initial / Continuing Calibration
*	Blank Contamination
*	Surrogate / Internal Standard Recoveries
	Matrix Spike / Matrix Spike Duplicate Results
	Blank Spike Results
	Lab Duplicate Results
*	Field Duplicate Results
*	Instrument Performance
*	Compound Identification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

CALIBRATION

The following table summarizes calibration noncompliances and corresponding validation actions. The key associated with this table is presented after the table.

Compound	CCV 10/23/00;(09:11)	CCV 10/23/00;(20:55)	CCV 10/24/00;(11:31)	CCV 10/24/00;(15:15)
Acenaphthene	X			
Anthracene		X		
Benzo(A)pyrene	X			
Benzo(G,H,I)perylene			X	X
Benzo(K)fluoranthene				X
Dibenzo(A,H)anthracene			X	X
Fluorene	X	X	X	
Indeno(1,2,3-CD)perylene			X	X
Perylene				X
Samples Affected:	OU4-MU-M09-200A	OU4-MU-M09-200A	OU4-LJ-M02-100A	OU4-LJ-M02-100A
	OU4-MU-M10-100A	OU4-MU-M10-100A	OU4-MU-R02-400A	OU4-MU-R02-400A
	OU4-MU-M10-200A	OU4-MU-M10-200A	OU4-MU-R04-400A	OU4-MU-R04-400A
	OU4-MU-M10-300A	OU4-MU-M10-300A		
	OU4-MU-M13-100A	OU4-MU-M13-100A		
	OU4-MU-M14-100A	OU4-MU-M14-100A		
		OU4-LJ-M07-100A		
		OU4-LJ-M08-100A		
		OU4-LJ-M01-100A-LD		
		OU4-LJ-M11-100A-LD		
		OU4-LJ-M03-100A		
		OU4-LJ-M04-100A		
		OU4-LJ-M05-100A		

Calibration Actions

X - Percent Difference (%D) greater than 15%. Qualify positive and nondetected results for the affected compounds as estimated (J) and (UJ) respectively.

STADARD REFERENCE MATERIAL

Standard Reference Material (SRM) % recoveries of anthracene, fluorene and naphthalene failed to meet the quality control limit of ± 35% deviation from manufacturer certified concentrations. Only positive results were reported for the aforementioned compounds and these were qualified as estimated (J) in all samples.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike and/or Matrix Spike Duplicate (MS / MSD) % recovery of dibenzo(A,H)anthracene and benzo(G,H,I)perylene exceeded the 40%-120% quality control limit. The positive results reported for dibenzo(A,H)anthracene and benzo(G,H,I)perylene were qualified as estimated (J) in the unspiked sample OU4-MU-M09-200A.

An MS / MSD Relative Percent Difference (RPD) exceeded quality control limits for benzo(K)fluoranthene. The positive result reported for benzo(K)fluoranthene was qualified as estimated (J) in the unspiked sample OU4-MU-M09-200A.

LAB DUPLICATE RESULTS

Relative percent differences (RPDs) greater than 50% were noted for several compounds in the laboratory duplicates. Positive results for compounds that exceeded the 50% RPD quality control limit were qualified as estimated (J) in the lab duplicate pair.

COMPOUND QUANTITATION

Several sample results reported on the electronic deliverable (EDD) contained four or more significant figures. The EDD was modified by TtNUS to match Form 1 results; however, these discrepancies were not considered significant.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the reporting limit, RL, were qualified as estimated (J).

Samples were frozen from time of receipt at the laboratory to sample extraction. Therefore, holding time from sample collection to sample extraction is not an issue. No qualifiers were assigned on this basis.

Samples were reported on a dry weight basis. This is consistent with historical data from this site.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: The laboratory was not able to meet quality control criteria for continuing calibration of several compounds.

SRM % recovery of several compounds failed to meet quality control criteria.

Other Factors Affecting Data Quality: Laboratory duplicate RPDs exceeded 50%.

% Recovery several MS / MSD compounds exceeded the 40%-120% quality control limit.

MS / MSD Relative Percent Difference of benzo(K)fluoranthene exceeded the 25% quality control limit.

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Douglas S. Schloer
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

		PORTSMOUTH NAVAL SHIPYARD LAB DUPLICATES											
SDG		T1173		T1173				T1174		T1173			
FRACTION	COMPOUND	OU4-LJ-M01-100A		OU4-LJ-M01-100A-LD		RPD		OU4-LJ-M11-100-A		OU4-LJ-M11-100A-LD		RPD	
		RESULT ng/g		RESULT ng/g				RESULT ng/g		RESULT ng/g			
PAH													
	1,6,7-Trimethylnaphthalene	1.06	J	0.98	J	7.8		0.81	J	0.71	J	13.2	
	1-Methylnaphthalene	3.3	J	3.43	J	-3.9		2.98	J	1.94	J	42.3	
	1-Methylphenanthrene	1.12	J	0.89	J	22.9		0.52	J	0.5	J	3.9	
	2,6-Dimethylnaphthalene	1.16	J	1.03	J	11.9		1.63	J	0.96	J	51.7	
	2-Methylnaphthalene	4.98	J	4.34	J	13.7		3.67	J	2.74	J	29.0	
	Acenaphthene	1.74	J	1.48	J	16.1		0.65	J	0.35	J	60.0	
	Acenaphthylene	0.78	J	0.92	J	-16.5		0.56	J	0.47	J	17.5	
	Anthracene	2.61	J	2.16	J	18.9		0.61	J	0.68	J	-10.9	
	Benzo(A)anthracene	6.13	J	5.73	J	6.7		1.46	J	1.74	J	-17.5	
	Benzo(A)pyrene	7.31	J	5.47	J	28.8		1.88	J	0.92	J	68.6	
	Benzo(B)fluoranthene	8.17		7.14		13.5		1.9	J	3.13	J	-48.9	
	Benzo(E)pyrene	4.94	J	5.17	J	-4.5		3.11	J	3.07	J	1.3	
	Benzo(G,H,I)perylene	3.74	J	3.85	J	-2.9		2.63	J	3.02	J	-13.8	
	Benzo(K)fluoranthene	4.11	J	3.83	J	7.1		1.4	J	5.15	J	-114.5	
	Biphenyl	1.9	J	1.75	J	8.2		2.07	J	1.57	J	27.5	
	C1-Chrysenes	3.2	J	3.56	J	-10.7		0.1	J	1.86	J	-179.6	
	C1-Dibenzothiophenes	0.91	J	1.26	J	-32.3		0.74	J	0.06	J	170.0	
	C1-Fluoranthenes/Pyrenes	5.15	J	5.11	J	0.8		3.58	J	2.48	J	36.3	
	C1-Fluorenes	3.79	J	3.95	J	-4.1		3.61	J	4.44	J	-20.6	
	C1-Naphthalenes	8.28	J	7.77	J	6.4		6.65	J	4.68	J	34.8	
	C1-Phenanthrenes/Anthracenes	4.46	J	3.63	J	20.5		3.22	J	4.41	J	-31.2	
	C2-Chrysenes	1.55	J	1.13	J	31.3		0.07	J	0.09	J	-25.0	
	C2-Dibenzothiophenes	0.11	J	0.02	J	138.5		0.02	J	0.02	J	0.0	
	C2-Fluorenes	3.57	J	0.49	J	151.7		2.38	J	1.78	J	28.8	
	C2-Naphthalenes	4.12	J	3.1	J	28.3		3.55	J	3	J	16.8	
	C2-Phenanthrenes/Anthracenes	3.45	J	3.55	J	-2.9		2.13	J	2.93	J	-31.6	
	C3-Chrysenes	0.27	J	0.07	J	117.6		0.17	J	0.11	J	42.9	
	C3-Dibenzothiophenes	0.05	J	0.03	J	50.0		0.05	J	0.06	J	-18.2	
	C3-Fluorenes	0.55	J	1.62	J	-98.6		0.09	J	0.39	J	-125.0	
	C3-Naphthalenes	3.12	J	2.48	J	22.9		1.82	J	2.82	J	-43.1	
	C3-Phenanthrenes/Anthracenes	1.72	J	0.3	J	140.6		0.08	J	0.24	J	-100.0	
	C4-Chrysenes	0.62	J	0.12	J	135.1		0.02	J	0.22	J	-166.7	
	C4-Naphthalenes	0.3	J	3.98	J	-172.0		0.11	J	2.05	J	-179.6	
	C4-Phenanthrenes/Anthracenes	0.46	J	0.06	J	153.8		0.04	J	0.11	J	-93.3	
	Chrysene	11.32		9.37	J	18.8		3.05	J	4.82	J	-45.0	
	Dibenzo(a,h)anthracene	0.27	J	0.36	J	-28.6		0.09	J	0.23	J	-87.5	
	Dibenzothiophene	0.57	J	0.61	J	-6.8		0.44	J	0.3	J	37.8	
	Fluoranthene	17.57		16.59		5.7		6.42	J	6.96	J	-8.1	
	Fluorene	2.78	J	2	J	32.6		1.93	J	1.17	J	49.0	
	Indeno(1,2,3-c,d)pyrene	3.31	J	3.26	J	1.5		1.39	J	1.9	J	-31.0	
	Naphthalene	7.3	J	5.99	J	19.7		5.09	J	4.68	J	8.4	
	Perylene	3.57	J	4.14	J	-14.8		3.25	J	2.66	J	20.0	
	Phenanthrene	8.36	J	7.3	J	13.5		2.73	J	2.86	J	-4.7	
	Pyrene	14.24		13.14	J	8.0		5.06	J	5.6	J	-10.1	

ND - Compound not detected.
NC - RPD not calculated.

		PORTSMOUTH NAVAL SHIPYARD LABORATORY DUPLICATES											
SDG		T1173		T1174				T1172		T1174			
FRACTION	COMPOUND	OU4-MU-M10-100A		OU4-MU-M10-100A-LD		RPD		OU4-MU-M11-200A		OU4-MU-M11-200A-LD		RPD	
		RESULT ng/g		RESULT ng/g				RESULT ng/g		RESULT ng/g			
PAH													
	1,6,7-Trimethylnaphthalene	1.38	J	1.92	J	-32.7		3.4	J	2.06	J	49.1	
	1-Methylnaphthalene	1.31	J	2.67	J	-68.3		9		2.68	J	108.2	
	1-Methylphenanthrene	1.66	J	2.6	J	-44.1		4.9	J	2.01	J	83.6	
	2,6-Dimethylnaphthalene	1.28	J	2.22	J	-53.7		3.4	J	2.19	J	43.3	
	2-Methylnaphthalene	2.27	J	4.44		-64.7		11.5		4.65		84.8	
	Acenaphthene	1.56	J	3.62	J	-79.5		8.2	J	5.98	J	31.3	
	Acenaphthylene	3.25	J	8.02		-84.6		16.7		11.05		40.7	
	Anthracene	6.6		13.98		-71.7		24.6		19.53		23.0	
	Benzo(A)anthracene	9.54		13.27		-32.7		15.8		14.44		9.0	
	Benzo(A)pyrene	10.26		13.73		-28.9		10.3		9.16		11.7	
	Benzo(B)fluoranthene	17		20.39		-18.1		21.2		22.83		-7.4	
	Benzo(E)pyrene	13.4		18.25		-30.6		27.2		21.12		25.2	
	Benzo(G,H,I)perylene	7.79		12.45		-46.0		11.5		10.48		9.3	
	Benzo(K)fluoranthene	6.27		11		-54.8		7.6		9.39		-21.1	
	Biphenyl	1.58	J	1.88	J	-17.3		3.3	J	1.63	J	67.7	
	C1-Chrysenes	7.4	J	10.14	J	-31.2		21		12.04	J	54.2	
	C1-Dibenzothiophenes	1.31	J	1.65	J	-23.0		3	J	1.31	J	78.4	
	C1-Fluoranthenes/Pyrenes	11.24		15.52		-32.0		27.7		19.58		34.3	
	C1-Fluorenes	11.87	J	8.6	J	31.9		21.7		14.13	J	42.3	
	C1-Naphthalenes	3.58	J	7.11	J	-66.0		20.6		7.33	J	95.0	
	C1-Phenanthrenes/Anthracenes	8.15	J	12.83		-44.6		16.4		11.85		32.2	
	C2-Chrysenes	5.41	J	7.58	J	-33.4		1	J	7.47	J	-152.8	
	C2-Dibenzothiophenes	1.7	J	3.13	J	-59.2		4.5	J	2.51	J	56.8	
	C2-Fluorenes	7.84	J	11.81	J	-40.4		15.5	J	13.22	J	15.9	
	C2-Naphthalenes	3.07	J	5.22	J	-51.9		20.3		6.45	J	103.6	
	C2-Phenanthrenes/Anthracenes	8.24	J	12.88		-43.9		26.3		14.93		55.2	
	C3-Chrysenes	0.06	J	0.05	J	18.2		0.3	J	0.07	J	124.3	
	C3-Dibenzothiophenes	1.8	J	2.56	J	-34.9		8.6		3.45	J	85.5	
	C3-Fluorenes	11.46	J	15.82	J	-32.0		36.2		15.35	J	80.9	
	C3-Naphthalenes	4.71	J	5.07	J	-7.4		26		7.14	J	113.8	
	C3-Phenanthrenes/Anthracenes	6.51	J	8.59	J	-27.5		23.5		9.23	J	87.2	
	C4-Chrysenes	0.05	J	0.06	J	-18.2		0.2	J	0.05	J	120.0	
	C4-Naphthalenes	3.34	J	7.4	J	-75.6		22		8.01	J	93.2	
	C4-Phenanthrenes/Anthracenes	3.36	J	4.65	J	-32.2		16.8		6.15	J	92.8	
	Chrysene	14.89		20.99		-34.0		25		22.21		11.8	
	Dibenzo(a,h)anthracene	1.44	J	1.8	J	-22.2		0.9	J	1.44	J	-46.2	
	Dibenzothiophene	0.83	J	1.07	J	-25.3		0.8	J	0.67	J	17.7	
	Fluoranthene	25.57		42.26		-49.2		39.8		35.65		11.0	
	Fluorene	2.64	J	5.85	J	-75.6		7.1	J	4.86	J	37.5	
	Indeno(1,2,3-c,d)pyrene	6.78		9.83		-36.7		6.6		7.18		-8.4	
	Naphthalene	3.04	J	5.46	J	-56.9		17.9		6.28	J	96.1	
	Perylene	5.75		8.1		-33.9		18.7		9.69		63.5	
	Phenanthrene	10.85		15.74		-36.8		8.5		9.47		-10.8	
	Pyrene	23.32		37.5		-46.6		38.3		32.17		17.4	

ND - Compound not detected.
NC - RPD not calculated.

		PORTSMOUTH NAVAL SHIPYARD LABORATORY DUPLICATES											
SDG		T1172		T1174				T1173		T1174			
FRACTION	COMPOUND	OU4-MU-M12-100A		OU4-MU-M12-100A-LD		RPD		OU4-MU-M13-100A		OU4-MU-M13-100A-LD		RPD	
		RESULT ng/g		RESULT ng/g				RESULT ng/g		RESULT ng/g			
PAH													
	1,6,7-Trimethylnaphthalene	10.5		5.68	J	59.6		104.94		94.14		10.8	
	1-Methylnaphthalene	45.3		22.05		69.0		109.31		88.74		20.8	
	1-Methylphenanthrene	71.8		30.68		80.2		553.46		456.91		19.1	
	2,6-Dimethylnaphthalene	19.4		11.83		48.5		153.61		129.71		16.9	
	2-Methylnaphthalene	64.1		34.03		61.3		161.08		129.54		21.7	
	Acenaphthene	389.8		212.52		58.9		1268.5		1092.93		14.9	
	Acenaphthylene	87.9		27.28		105.3		179.69		288.89		-46.6	
	Anthracene	498		195.21		87.4		1995.59		2021.77		-1.3	
	Benzo(A)anthracene	565.7		196.12		97.0		4332.69		3539.64		20.1	
	Benzo(A)pyrene	514.3		162.4		104.0		3461.4		2835.32		19.9	
	Benzo(B)fluoranthene	751.8		246.49		101.2		4478.56		3622.17		21.1	
	Benzo(E)pyrene	372.4		130.67		96.1		2075.4		1680.71		21.0	
	Benzo(G,H,I)perylene	273.4		86.67		103.7		907.47		792.52		13.5	
	Benzo(K)fluoranthene	274.8		101.03		92.5		131.22		1198.18		-160.5	
	Biphenyl	18.6		11.17		49.9		86.89		72.73		17.7	
	C1-Chrysenes	228.5		69.05		107.2		2070.74		1661.31		21.9	
	C1-Dibenzothiophenes	27.3		9.77		94.6		112.86		87.27		25.6	
	C1-Fluoranthenes/Pyrenes	449.7		145.11		102.4		2923.63		2473.64		16.7	
	C1-Fluorenes	76.5		43.74		54.5		577.86		556.04		3.8	
	C1-Naphthalenes	109.4		56.08		64.4		270.39		218.28		21.3	
	C1-Phenanthrenes/Anthracenes	283.4		108.16		89.5		1767.42		1522.01		14.9	
	C2-Chrysenes	120.5		23.13		135.6		499.83		341.21		37.7	
	C2-Dibenzothiophenes	22.3		5.61		119.6		67.86		57.77		16.1	
	C2-Fluorenes	37.7		21.31		55.5		235.64		226.26		4.1	
	C2-Naphthalenes	93.9		26.67		111.5		300.65		239.62		22.6	
	C2-Phenanthrenes/Anthracenes	155.2		47.64		106.1		694.33		569.44		19.8	
	C3-Chrysenes	0.1	J	0.14	J	-33.3		12.86		6.98	J	59.3	
	C3-Dibenzothiophenes	22		6.28		111.2		37.9		29.48		25.0	
	C3-Fluorenes	56.9		25.58		75.9		128.96		122.25		5.3	
	C3-Naphthalenes	59.2		14.53		121.2		224.82		190		16.8	
	C3-Phenanthrenes/Anthracenes	70.7		22.45		103.6		283.59		241.56		16.0	
	C4-Chrysenes	9.2	J	1.5	J	143.9		111.98		37		100.7	
	C4-Naphthalenes	41.1		9.98	J	121.8		104.5		97.98		6.4	
	C4-Phenanthrenes/Anthracenes	24.1		6.08	J	119.4		88.2		66.95		27.4	
	Chrysene	686.1		262.6		89.3		4976.02		4491.28		10.2	
	Dibenzo(a,h)anthracene	52.7		16.74		103.6		353.26		273.22		25.6	
	Dibenzothiophene	63.3		25.22		86.0		239.41		199.38		18.2	
	Fluoranthene	1884.1		768.06		84.2		8955.26		7958.28		11.8	
	Fluorene	275.5		157.93		54.3		1870.26		1667.85		11.4	
	Indeno(1,2,3-c,d)pyrene	325.6		96.86		108.3		1207.45		985.14		20.3	
	Naphthalene	140.1		70.3		66.3		127.54		103.91		20.4	
	Perylene	104.3		46.93		75.9		563.28		522.44		7.5	
	Phenanthrene	1226.8		559.27		74.7		6561.27		5222.3		22.7	
	Pyrene	1435		556.22		88.3		5747.47		5245.82		9.1	

ND - Compound not detected.
NC - RPD not calculated.

APPENDIX A

QUALIFIED LABORATORY RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1173

SAMPLE NUMBER:	OU4-LJ-M01-100A			OU4-LJ-M01-100A-LD			OU4-LJ-M02-100A			OU4-LJ-M03-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36920			C36938			C36921			C36922		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.8 %			20.2 %			20.2 %			23.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	1.06	J	P	0.98	J	P	0.74	J	P	1.05	J	P
1-METHYLNAPHTHALENE	3.30	J	P	3.43	J	P	2.37	J	P	3.39	J	P
1-METHYLPHENANTHRENE	1.12	J	P	0.89	J	P	0.85	J	P	0.89	J	P
2,6-DIMETHYLNAPHTHALENE	1.16	J	P	1.03	J	P	0.90	J	P	0.98	J	P
2-METHYLNAPHTHALENE	4.98	J	P	4.34	J	P	3.87	J	P	5.42	J	P
ACENAPHTHENE	1.74	J	P	1.48	J	P	1.21	J	P	1.21	J	P
ACENAPHTHYLENE	0.78	J	P	0.92	J	P	0.64	J	P	0.87	J	P
ANTHRACENE	2.61	J	EP	2.16	J	CEP	1.26	J	EP	1.67	J	CEP
BENZO(A)ANTHRACENE	6.13	J	P	5.73	J	P	7.86	J	P	3.29	J	P
BENZO(A)PYRENE	7.31	J	P	5.47	J	P	11.3			3.53	J	P
BENZO(B)FLUORANTHENE	8.17			7.14			13.5			6.15		
BENZO(E)PYRENE	4.94	J	P	5.17	J	P	9.37			5.30	J	P
BENZO(G,H,I)PERYLENE	3.74	J	P	3.85	J	P	5.28	J	C	3.57	J	P
BENZO(K)FLUORANTHENE	4.11	J	P	3.83	J	P	6.20	J	CP	3.45	J	P
BIPHENYL	1.90	J	P	1.75	J	P	1.29	J	P	1.47	J	P
C1-CHRYSENES	3.20	J	P	3.56	J	P	7.79	J	P	3.22	J	P
C1-DIBENZOTHIOPHENES	0.91	J	P	1.26	J	P	0.68	J	P	0.66	J	P
C1-FLUORANTHENES/PYRENES	5.15	J	P	5.11	J	P	8.85	J	P	5.22	J	P
C1-FLUORENES	3.79	J	P	3.95	J	P	3.16	J	P	3.33	J	P
C1-NAPHTHALENES	8.28	J	P	7.77	J	P	6.24	J	P	8.81	J	P
C1-PHENANTHRENES/ANTHRACENES	4.46	J	P	3.63	J	P	3.93	J	P	3.58	J	P
C2-CHRYSENES	1.55	J	P	1.13	J	P	3.34	J	P	0.70	J	P
C2-DIBENZOTHIOPHENES	0.11	J	GP	0.02	J	GP	0.88	J	P	0.06	J	P
C2-FLUORENES	3.57	J	GP	0.49	J	GP	4.48	J	P	4.23	J	P
C2-NAPHTHALENES	4.12	J	P	3.10	J	P	3.01	J	P	4.24	J	P
C2-PHENANTHRENES/ANTHRACENES	3.45	J	P	3.55	J	P	3.76	J	P	2.76	J	P
C3-CHRYSENES	0.27	J	GP	0.07	J	GP	0.06	J	P	0.16	J	P
C3-DIBENZOTHIOPHENES	0.05	J	GP	0.03	J	GP	0.04	J	P	0.06	J	P
C3-FLUORENES	0.55	J	GP	1.62	J	GP	0.66	J	P	2.58	J	P
C3-NAPHTHALENES	3.12	J	P	2.48	J	P	2.07	J	P	2.77	J	P
C3-PHENANTHRENES/ANTHRACENES	1.72	J	GP	0.30	J	GP	1.80	J	P	1.67	J	P
C4-CHRYSENES	0.62	J	GP	0.12	J	GP	0.04	J	P	0.45	J	P
C4-NAP[illegible]LENES	0.30	J	GP	3.[illegible]	J	GP	0.13	J	P	1.75	J	P

SAMPLE NUMBER:	OU4-LJ-M01-100A			OU4-LJ-M01-100A-LD			OU4-LJ-M02-100A			OU4-LJ-M03-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36920			C36938			C36921			C36922		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.8 %			20.2 %			20.2 %			23.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	0.46	J	GP	0.06	J	GP	0.02	J	P	0.64	J	P
CHRYSENE	11.3			9.37	J	GP	16.4			9.39		
DIBENZO(A,H)ANTHRACENE	0.27	J	P	0.36	J	GP	0.45	J	CP	0.16	J	P
DIBENZOTHIOPHENE	0.57	J	P	0.61	J	GP	0.42	J	P	0.38	J	P
FLUORANTHENE	17.6			16.6			15.7			12.5		
FLUORENE	2.78	J	EP	2.00	J	CEP	1.62	J	CEP	1.96	J	CEP
INDENO(1,2,3-CD)PYRENE	3.31	J	P	3.26	J	P	8.54	J	C	2.40	J	P
NAPHTHALENE	7.30	J	EP	5.99	J	EP	5.25	J	EP	7.21	J	EP
PERYLENE	3.57	J	P	4.14	J	P	5.13	J	CP	3.14	J	P
PHENANTHRENE	8.36	J	P	7.30	J	P	3.83	J	P	3.38	J	P
PYRENE	14.2			13.1			14.2			11.2		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1173

SAMPLE NUMBER:	OU4-LJ-M04-100A			OU4-LJ-M05-100A			OU4-LJ-M06-100A			OU4-LJ-M07-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36923			C36924			C36925			C36926		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.9 %			18.9 %			22.7 %			19.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	1.17	J	P	1.10	J	P	1.09	J	P	0.74	J	P
1-METHYLNAPHTHALENE	1.81	J	P	2.05	J	P	2.74	J	P	2.38	J	P
1-METHYLPHENANTHRENE	1.87	J	P	1.33	J	P	0.60	J	P	0.74	J	P
2,6-DIMETHYLNAPHTHALENE	1.30	J	P	1.06	J	P	1.03	J	P	1.31	J	P
2-METHYLNAPHTHALENE	2.60	J	P	3.32	J	P	4.08	J	P	3.79	J	P
ACENAPHTHENE	1.89	J	P	1.36	J	P	0.86	J	P	1.64	J	P
ACENAPHTHYLENE	0.59	J	P	0.56	J	P	0.70	J	P	0.71	J	P
ANTHRACENE	4.93	J	CEP	1.73	J	CEP	1.34	J	EP	1.24	J	CEP
BENZO(A)ANTHRACENE	10.1	J	P	4.31	J	P	1.85	J	P	8.30	J	P
BENZO(A)PYRENE	11.3			7.10	J	P	2.92	J	P	13.3		
BENZO(B)FLUORANTHENE	13.6			7.53			4.40	J	P	15.5		
BENZO(E)PYRENE	12.1			8.45			3.90	J	P	10.6		
BENZO(G,H,I)PERYLENE	6.23			6.03			3.54	J	P	6.75		
BENZO(K)FLUORANTHENE	6.06	J	P	4.46	J	P	2.18	J	P	5.42	J	P
BIPHENYL	1.88	J	P	1.46	J	P	1.62	J	P	1.56	J	P
C1-CHRYSENES	7.86	J	P	4.63	J	P	1.31	J	P	8.30	J	P
C1-DIBENZOTHIOPHENES	1.46	J	P	0.85	J	P	0.06	J	P	1.27	J	P
C1-FLUORANTHENES/PYRENES	9.39	J	P	5.43	J	P	3.94	J	P	9.47	J	P
C1-FLUORENES	5.01	J	P	2.50	J	P	2.68	J	P	3.48	J	P
C1-NAPHTHALENES	4.41	J	P	5.37	J	P	6.82	J	P	6.17	J	P
C1-PHENANTHRENES/ANTHRACENES	7.80	J	P	4.16	J	P	3.00	J	P	4.00	J	P
C2-CHRYSENES	6.19	J	P	2.71	J	P	0.11	J	P	3.32	J	P
C2-DIBENZOTHIOPHENES	0.18	J	P	1.15	J	P	0.06	J	P	0.53	J	P
C2-FLUORENES	4.60	J	P	2.06	J	P	0.19	J	P	3.96	J	P
C2-NAPHTHALENES	3.29	J	P	3.07	J	P	3.54	J	P	2.78	J	P
C2-PHENANTHRENES/ANTHRACENES	4.76	J	P	3.53	J	P	2.08	J	P	3.76	J	P
C3-CHRYSENES	0.21	J	P	0.08	J	P	0.31	J	P	0.06	J	P
C3-DIBENZOTHIOPHENES	0.03	J	P	0.04	J	P	0.09	J	P	0.30	J	P
C3-FLUORENES	5.69	J	P	0.21	J	P	0.11	J	P	3.82	J	P
C3-NAPHTHALENES	3.21	J	P	2.60	J	P	0.06	J	P	3.62	J	P
C3-PHENANTHRENES/ANTHRACENES	2.88	J	P	0.91	J	P	0.12	J	P	1.86	J	P
C4-CHRYSENES	0.02	J	P	0.08	J	P	1.19	J	P	0.06	J	P
C4-NAPHTHALENES	2.37	J	P	2	J	P	0.09	J	P	1.50	J	P

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: T1173

SAMPLE NUMBER:	OU4-LJ-M04-100A			OU4-LJ-M05-100A			OU4-LJ-M06-100A			OU4-LJ-M07-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36923			C36924			C36925			C36926		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.9 %			18.9 %			22.7 %			19.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	0.07	J	P	0.02	J	P	0.02	J	P	0.57	J	P
CHRYSENE	17.0			12.8			5.58	J	P	17.0		
DIBENZO(A,H)ANTHRACENE	0.98	J	P	0.04	J	P	0.21	J	P	1.44	J	P
DIBENZOTHIOPHENE	0.64	J	P	0.67	J	P	0.32	J	P	0.44	J	P
FLUORANTHENE	21.1			15.4			8.28			16.1		
FLUORENE	3.11	J	CEP	1.78	J	CEP	1.59	J	EP	1.68	J	CEP
INDENO(1,2,3-CD)PYRENE	6.37			5.42			0.06	J	P	10.5		
NAPHTHALENE	3.84	J	EP	4.25	J	EP	4.76	J	EP	5.98	J	EP
PERYLENE	6.59			5.58	J	P	3.18	J	P	7.04		
PHENANTHRENE	9.93	J	P	3.87	J	P	3.06	J	P	4.11	J	P
PYRENE	19.4			10.8			6.52			15.1		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1173

SAMPLE NUMBER:	OU4-LJ-M08-100A			OU4-LJ-M11-100A-LD			OU4-MU-M09-200A			OU4-MU-M10-100A		
SAMPLE DATE:	09/07/00			09/07/00			08/29/00			08/29/00		
LABORATORY ID:	C36927			C36939			C36636			C36637		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	23.1 %			20.1 %			9.8 %			12.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	2.84	J	P	0.71	J	P	1.40	J	P	1.38	J	P
1-METHYLNAPHTHALENE	3.74	J	P	1.94	J	P	1.66	J	P	1.31	J	GP
1-METHYLPHENANTHRENE	4.00	J	P	0.50	J	P	3.48	J	P	1.66	J	P
2,6-DIMETHYLNAPHTHALENE	4.18	J	P	0.96	J	GP	1.33	J	P	1.28	J	GP
2-METHYLNAPHTHALENE	7.81			2.74	J	P	2.83	J	P	2.27	J	GP
ACENAPHTHENE	4.89	J	P	0.35	J	GP	5.13	J	CP	1.56	J	CGP
ACENAPHTHYLENE	6.90	J	P	0.47	J	P	4.43	J	P	3.25	J	GP
ANTHRACENE	13.7	J	EC	0.68	J	CEP	10.5	J	CE	6.60	J	CEG
BENZO(A)ANTHRACENE	19.3			1.74	J	P	16.7			9.54		
BENZO(A)PYRENE	13.6			0.92	J	GP	16.6	J	C	10.3	J	C
BENZO(B)FLUORANTHENE	31.1			3.13	J	P	32.7			17.0		
BENZO(E)PYRENE	26.4			3.07	J	P	23.6			13.4		
BENZO(G,H,I)PERYLENE	11.7			3.02	J	P	15.9	J	D	7.79		
BENZO(K)FLUORANTHENE	11.5			5.15	J	GP	11.3	J	D	6.27	J	G
BIPHENYL	2.58	J	P	1.57	J	P	1.86	J	P	1.58	J	P
C1-CHRYSENES	15.1	J	P	1.86	J	GP	13.7	J	P	7.40	J	P
C1-DIBENZOTHIOPHENES	2.20	J	P	0.06	J	GP	1.06	J	P	1.31	J	P
C1-FLUORANTHENES/PYRENES	25.3			2.48	J	P	16.5			11.2		
C1-FLUORENES	26.6			4.44	J	P	12.9	J	P	11.9	J	P
C1-NAPHTHALENES	11.6	J	P	4.68	J	P	4.49	J	P	3.58	J	GP
C1-PHENANTHRENES/ANTHRACENES	15.2			4.41	J	P	9.86	J	P	8.15	J	P
C2-CHRYSENES	8.76	J	P	0.09	J	P	6.92	J	P	5.41	J	P
C2-DIBENZOTHIOPHENES	4.25	J	P	0.02	J	P	1.74	J	P	1.70	J	GP
C2-FLUORENES	15.8	J	P	1.78	J	P	11.6	J	P	7.84	J	P
C2-NAPHTHALENES	7.98	J	P	3.00	J	P	3.80	J	P	3.07	J	GP
C2-PHENANTHRENES/ANTHRACENES	19.9			2.93	J	P	11.9			8.24	J	P
C3-CHRYSENES	0.10	J	P	0.11	J	P	13.8	U		0.06	J	P
C3-DIBENZOTHIOPHENES	4.03	J	P	0.06	J	P	1.88	J	P	1.80	J	P
C3-FLUORENES	14.6	J	P	0.39	J	GP	9.00	J	P	11.5	J	P
C3-NAPHTHALENES	9.48	J	P	2.82	J	P	2.82	J	P	4.71	J	P
C3-PHENANTHRENES/ANTHRACENES	13.6	J	P	0.24	J	GP	5.48	J	P	6.51	J	P
C4-CHRYSENES	0.09	J	P	0.22	J	GP	3.22	J	P	0.05	J	P
C4-NAPHTHALENES	10.9	J	P	2	J	GP	3.14	J	P	3.34	J	GP

CTO2( )ORTSMOUTH
SOIL DATA
GERG
SDG: T1173

SAMPLE NUMBER:	OU4-LJ-M08-100A	OU4-LJ-M11-100A-LD	OU4-MU-M09-200A	OU4-MU-M10-100A
SAMPLE DATE:	09/07/00	09/07/00	08/29/00	08/29/00
LABORATORY ID:	C36927	C36939	C36636	C36637
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	23.1 %	20.1 %	9.8 %	12.5 %
UNITS:	NG/G	NG/G	NG/G	NG/G
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	8.49	J	P	0.11	J	GP	5.28	J	P	3.36	J	P
CHRYSENE	27.9			4.82	J	P	26.6			14.9		
DIBENZO(A,H)ANTHRACENE	1.38	J	P	0.23	J	GP	2.47	J	D	1.44	J	P
DIBENZOTHIOPHENE	1.15	J	P	0.30	J	P	0.65	J	P	0.83	J	P
FLUORANTHENE	49.3			6.96	J	P	35.3			25.6		
FLUORENE	8.09	J	CEP	1.17	J	CEP	3.05	J	CEP	2.64	J	CEGP
INDENO(1,2,3-CD)PYRENE	8.45			1.90	J	P	13.0			6.78		
NAPHTHALENE	5.87	J	EP	4.68	J	EP	4.69	J	EP	3.04	J	EGP
PERYLENE	15.0			2.66	J	P	10.3			5.75		
PHENANTHRENE	18.4			2.86	J	P	9.24			10.9		
PYRENE	49.1			5.60	J	P	35.7			23.3		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1173

SAMPLE NUMBER:	OU4-MU-M10-200A			OU4-MU-M10-300A			OU4-MU-M13-100A			OU4-MU-M14-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/28/00			08/28/00		
LABORATORY ID:	C36638			C36639			C36640			C36641		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.1 %			13.1 %			12.6 %			9.6 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	1.86	J	P	3.31	J	P	105			0.89	J	P
1-METHYLNAPHTHALENE	1.56	J	P	2.18	J	P	109			4.09	J	P
1-METHYLPHENANTHRENE	2.76	J	P	6.93			553			3.04	J	P
2,6-DIMETHYLNAPHTHALENE	1.99	J	P	2.57	J	P	154			0.93	J	P
2-METHYLNAPHTHALENE	2.88	J	P	3.48	J	P	161			5.84		
ACENAPHTHENE	2.10	J	CP	5.86	J	CP	1269	J	C	1.55	J	CP
ACENAPHTHYLENE	5.47	J	P	7.32			180			0.14	J	P
ANTHRACENE	9.36	J	CE	24.8	J	CE	1996	J	CE	5.49	J	CEP
BENZO(A)ANTHRACENE	12.7			36.3			4333			19.2		
BENZO(A)PYRENE	12.8	J	C	29.8	J	C	3461	J	C	20.5	J	C
BENZO(B)FLUORANTHENE	22.7			56.7			4479			22.8		
BENZO(E)PYRENE	22.8			43.6			2075			11.9		
BENZO(G,H,I)PERYLENE	8.46			22.9			907			6.88		
BENZO(K)FLUORANTHENE	7.60			22.4			131			9.41	J	G
BIPHENYL	1.63	J	P	2.48	J	P	86.9			2.14	J	P
C1-CHRYSENES	14.0			23.7			2071			6.93	J	P
C1-DIBENZOTHIOPHENES	1.49	J	P	3.55	J	P	113			1.21	J	P
C1-FLUORANTHENES/PYRENES	16.1			38.2			2924			15.8		
C1-FLUORENES	9.81	J	P	11.8	J	P	578			5.85	J	P
C1-NAPHTHALENES	4.44	J	P	5.66	J	P	270			9.93		
C1-PHENANTHRENES/ANTHRACENES	10.8	J	P	20.9			1767			8.67	J	P
C2-CHRYSENES	5.92	J	P	10.0	J	P	500			1.95	J	P
C2-DIBENZOTHIOPHENES	2.68	J	P	8.94			67.9			0.04	J	P
C2-FLUORENES	10.4	J	P	16.8			236			5.40	J	P
C2-NAPHTHALENES	4.73	J	P	5.90	J	P	301			3.93	J	P
C2-PHENANTHRENES/ANTHRACENES	12.8			23.6			694			5.31	J	P
C3-CHRYSENES	0.07	J	P	0.07	J	P	12.9			0.43	J	GP
C3-DIBENZOTHIOPHENES	2.93	J	P	10.6			37.9			0.04	J	P
C3-FLUORENES	11.6	J	P	13.7	J	P	129			2.21	J	P
C3-NAPHTHALENES	5.99	J	P	8.24	J	P	225			2.84	J	P
C3-PHENANTHRENES/ANTHRACENES	9.34	J	P	18.9			284			2.59	J	P
C4-CHRYSENES	0.17	J	P	0.09	J	P	112			0.35	J	GP
C4-NAPHTHALENES	6.28	J	P	1[illegible]	J	P	105			1.07	J	P

SAMPLE NUMBER:	OU4-MU-M10-200A			OU4-MU-M10-300A			OU4-MU-M13-100A			OU4-MU-M14-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/28/00			08/28/00		
LABORATORY ID:	C36638			C36639			C36640			C36641		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.1 %			13.1 %			12.6 %			9.6 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	6.11	J	P	7.60	J	P	88.2			0.07	J	P
CHRYSENE	21.9			61.4			4976			26.7		
DIBENZO(A,H)ANTHRACENE	1.38	J	P	3.95			353			1.73	J	P
DIBENZOTHIOPHENE	0.58	J	P	2.18			239			0.94	J	P
FLUORANTHENE	32.0			87.3			8955			43.4		
FLUORENE	3.63	J	CEP	8.67	J	CE	1870	J	CE	2.98	J	CEP
INDENO(1,2,3-CD)PYRENE	7.96			20.7			1207			8.90		
NAPHTHALENE	3.10	J	EP	3.73	J	EP	128	J	E	8.84	J	EP
PERYLENE	9.36			15.4			563			6.40		
PHENANTHRENE	8.12			34.9			6561			15.7		
PYRENE	30.7			78.6			5747			32.4		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1173

SAMPLE NUMBER:	OU4-MU-R02-400A	OU4-MU-R04-400A		
SAMPLE DATE:	08/29/00	08/29/00	/ /	/ /
LABORATORY ID:	C36642	C36643		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	11.0 %	14.4 %	100.0 %	100.0 %
UNITS:	NG/G	NG/G		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	114			3.94	J	P						
1-METHYLNAPHTHALENE	104			3.21								
1-METHYLPHENANTHRENE	547			5.43								
2,6-DIMETHYLNAPHTHALENE	160			4.32	J	P						
2-METHYLNAPHTHALENE	150			6.84								
ACENAPHTHENE	1368			2.42	J	P						
ACENAPHTHYLENE	192			4.77	J	P						
ANTHRACENE	2103	J	E	11.4	J	E						
BENZO(A)ANTHRACENE	4302			13.5								
BENZO(A)PYRENE	3430			10.8								
BENZO(B)FLUORANTHENE	4383			20.4								
BENZO(E)PYRENE	2012			17.8								
BENZO(G,H,I)PERYLENE	843	J	C	9.71	J	C						
BENZO(K)FLUORANTHENE	1398	J	C	8.40	J	C						
BIPHENYL	90.5			2.61	J	P						
C1-CHRYSENES	2236			10.3								
C1-DIBENZOTHIOPHENES	119			2.25	J	P						
C1-FLUORANTHENES/PYRENES	2937			16.2								
C1-FLUORENES	618			13.3	J	P						
C1-NAPHTHALENES	254			10.1								
C1-PHENANTHRENES/ANTHRACENES	1809			18.0								
C2-CHRYSENES	607			5.04	J	P						
C2-DIBENZOTHIOPHENES	73.8			5.42								
C2-FLUORENES	266			21.6								
C2-NAPHTHALENES	294			8.56	J	P						
C2-PHENANTHRENES/ANTHRACENES	688			19.5								
C3-CHRYSENES	12.1	J	P	0.07	J	P						
C3-DIBENZOTHIOPHENES	42.1			5.57								
C3-FLUORENES	203			14.3	J	P						
C3-NAPHTHALENES	224			10.6								
C3-PHENANTHRENES/ANTHRACENES	289			12.4								
C4-CHRYSENES	112			0.19	J	P						
C4-NAP[illegible]LENES	89.5			12[illegible]								

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: T1173

SAMPLE NUMBER:	OU4-MU-R02-400A	OU4-MU-R04-400A		
SAMPLE DATE:	08/29/00	08/29/00	/ /	/ /
LABORATORY ID:	C36642	C36643		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	11.0 %	14.4 %	100.0 %	100.0 %
UNITS:	NG/G	NG/G		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	105			8.32								
CHRYSENE	5443			22.2								
DIBENZO(A,H)ANTHRACENE	310	J	C	1.30	J	CP						
DIBENZOTHIOPHENE	251			0.81	J	P						
FLUORANTHENE	9053			32.8								
FLUORENE	1974	J	CE	4.44	J	CEP						
INDENO(1,2,3-CD)PYRENE	1068	J	C	7.02	J	C						
NAPHTHALENE	122	J	E	4.33	J	EP						
PERYLENE	602	J	C	7.18	J	C						
PHENANTHRENE	6477			11.1								
PYRENE	6226			28.5								

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 12, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PCBs and PESTICIDES**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – T1173

SAMPLES: 18/Tissue/

OU4-LJ-M01-100A	OU4-LJ-M01-100A-LD	OU4-LJ-M02-100A
OU4-LJ-M03-100A	OU4-LJ-M04-100A	OU4-LJ-M05-100A
OU4-LJ-M06-100A	OU4-LJ-M07-100A	OU4-LJ-M08-100A
OU4-LJ-M11-100A-LD	OU4-MU-M09-200A	OU4-MU-M10-100A
OU4-MU-M10-200A	OU4-MU-M10-300A	OU4-MU-M13-100A
OU4-MU-M14-100A	OU4-MU-R02R-400A	OU4-MU-R04-400A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG T1173 consisting of eighteen (18) tissue samples were included in this SDG. Samples were analyzed for pesticides and PCBs. Several field duplicates were included in this SDG: OU4-MU-M10-100A-LD (in SDG T1174) and OU4-MU-M10-100A; OU4-MU-M11-100A-LD and OU4-MU-M11-100A (in SDG T1172); OU4-LJ-M01-100A-LD and OU4-LJ-M01-100A; and OU4-MU-M13-100A-LD (in SDG T1174) and OU4-MU-M13-100A.

The samples were collected by Tetra Tech NUS on August 28-30, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using GERG SOP 9810 and 9805 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- Data Completeness
- Holding Times
- Calibration
- Method Blank Results
- Surrogate Standard Recoveries
- Instrument Performance
- Compound Identification
- Compound Quantitation
- Matrix Spike/Matrix Spike Duplicate Results
- Standard Reference Materials
- Field Duplicate Results

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANKS

The maximum concentration of contaminants found in the laboratory method blank analysis is summarized below.

Compound	Maximum Concentration	Blank Action Level
Pentachlorobenzene	0.36 ng/g	1.8 ng/g
Pentachloroanisole	0.06 ng/g	0.30 ng/g
PCB 44	0.16 ng/g	0.8 ng/g
PCB 153/132	0.53 ng/g	2.65 ng/g
PCB 138/160	0.30 ng/g	1.5 ng/g
PCB 180	0.16 ng/g	0.8 ng/g
PCB170/190	0.16 ng/g	0.8 ng/g
PCB 77	0.14 ng/g	0.7 ng/g

Samples Affected: All

Blank Actions:

Dilution factors, percent solids, and sample aliquot used for analysis were taken into consideration prior to the application of all action levels. Positive results for all compounds below the blank action level were qualified at the reported concentration.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS) recovery of Endrin, Chlorpyrifos, and 2,4'-DDE exceeded the upper quality control limit. No qualifiers were assigned on this basis. MS and matrix spike duplicate recoveries of PCB 8/5 exceeded the upper quality control limit. The positive result in the unspiked sample, OU4-MU-M09-200A was qualified as estimated, J. Relative percent differences (RPDs) exceeded the upper quality control limit for Chlorpyrifos and PCB 18/17. No qualifiers were assigned on this basis.

STANDARD REFERENCE MATERIAL RESULTS

The compounds Dieldrin and PCB 126 were not detected. Nondetected results were rejected, UR, in all samples. Positive results were qualified as estimated, J. Recovery of 4,4'-DDT fell below the lower quality control limit. Positive and nondetected results were qualified as estimated, J and UJ, in all samples.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

Internference was noted on the Form 1s for 2,4'-DDD in samples OU4-MU-M13-100A and OU4-MU-R02-400A. The positive results were qualified as estimated, J, for this reason.

FIELD DUPLICATE RESULTS

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-LJ-M01-100A and OU4-LJ-M01-100A-LD. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-MU-M11-100A and OU4-MU-M11-100A-LD. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-MU-M10-100A and OU4-MU-M1 100A-LD. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-MU-M13-100A and OU4-MU-M13-

100A-LD. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses. Standard reference material recoveries were outside the quality control limits for several compounds.

Other Factors Affecting Data Quality: Field duplicate results exceeded the 50% RPD criteria.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

	OU4-LJ-M04-100A SDG T1173	OU4-LJ-M04-100A-LD SDG T1173	RPD
1,2,3,4-Tetrachlorobenzene	15	13.32	12
1,2,4,5-Tetrachlorobenzene	0.32 J	0.1 J	105
2,4'-DDD	0.57	0.46 U	200
2,4'-DDE	0.66 U	0.65 U	NA
2,4'-DDT	0.23 J	0.6 U	NC
4,4'-DDD	0.22 J	0.56 U	NC
4,4'-DDE	3.05	2.64	14
4,4'-DDT	0.89 U	0.86 U	NA
Aldrin	0.77 U	0.75 U	NA
a-BHC	0.54 U	0.53 U	NA
a-Chlordane	0.58 U	0.56 U	NA
b-BHC	0.1 J	0.27 J	-92
Chlorpyrifos	5.04 U	4.9 U	NA
cis-Nonachlor	0.25 J	0.51 U	NC
d-BHC	0.09 J	0.3 U	NC
Dieldrin	2.86	2.19	27
Endosulfan II	0.58 U	0.56 U	NA
Endrin	1.59 U	1.55 U	NA
g-BHC	0.48 U	0.46 U	NA
g-Chlordane	0.25 J	0.6 U	NC
Heptachlor	0.87 U	0.85 U	NA
Heptachlor epoxide	0.24 J	0.6 U	NC
Hexachlorobenzene	0.51 J	0.07 J	152
Mirex	0.33 J	1.36 U	NC
Oxychlordane	1.27	0.56 J	78
PCB-101/90	0.9 J	0.67 J	29
PCB-105	1.95	1.29 J	41
PCB-114	2.14 U	2.08 U	NA
PCB-118	6.75	5.56	19
PCB-126	0.64 J	2.08 U	NC
PCB-128	1.23 J	0.88 J	33
PCB-138/160	5.43 U*	5.51 U*	NA
PCB-149/123	2.14 U	0.18 J	NC
PCB-153/132	7.55 U*	8.26 U*	NA
PCB-156	2.14 U	0.31 J	NC
PCB-167	0.39 J	0.27 J	36
PCB-169	2.14 U	0.25 J	NC
PCB-170/190	1.52 U*	1.55 U*	NA
PCB-18/17	5.63	5.79	-3
PCB-180	2.14 U*	3.42 U*	NA
PCB-187	2.55	4.83	-62
PCB-189	2.14 U	2.08 U	NA
PCB-195/208	0.47 J	0.23 J	69
PCB-206	0.47 J	0.18 J	89
PCB-209	0.44 J	2.35 U	NC
PCB-28	0.34 J	1.65 U	NC
PCB-44	0.38 U*	1.21 U	NA
PCB-52	1.33 J	1.41 U	NC
PCB-66	0.8 J	0.6 J	29
PCB-77	2.14 U	2.08 U	NA
PCB-8/5	1.26 J	0.72 J	55
PCB-81	2.14 U	2.08 U	NA
Pentachloroanisole	0.47 U*	0.33 U*	NA
Pentachlorobenzene	0.64 U*	0.42 U*	NA
trans-Nonachlor	0.4	0.1 J	120
PCB-201/157/173	0.33 J	1.6 U	NC

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-LJ-M11-100A SDG T1172	OU4-LJ-M11-100A-LD SDG T1173	RPD
1,2,3,4-Tetrachlorobenzene	0.14 U*	8.24	NC
1,2,4,5-Tetrachlorobenzene	0.41 U*	0.36 J	200
2,4'-DDD	1.18	0.45 U	200
2,4'-DDE	0.1 J	0.63 U	NC
2,4'-DDT	0.33	0.58 U	NC
4,4'-DDD	2.23	0.55 U	200
4,4'-DDE	4.03	2.76	37
4,4'-DDT	0.83	0.85 U	NC
Aldrin	0.35 U	0.73 U	NA
a-BHC	0.22 J	0.52 U	NC
a-Chlordane	0.66	0.55 U	200
b-BHC	0.25 U*	0.16 J	NC
Chlorpyrifos	2.31 U	4.8 U	NA
cis-Nonachlor	0.86	0.5 U	200
d-BHC	0.14 U	0.29 U	NA
Dieldrin	0.6	2.23	-115
Endosulfan II	0.25 J	0.55 U	NC
Endrin	0.73 U	1.52 U	NA
g-BHC	0.22 U	0.45 U	NA
g-Chlordane	0.25 J	0.58 U	NC
Heptachlor	0.4 U	0.83 U	NA
Heptachlor epoxide	0.28 U	0.58 U	NA
Hexachlorobenzene	0.08 J	0.27 J	-109
Mirex	0.64 U	1.34 U	NA
Oxychlordane	0.3 U	0.66	200
PCB-101/90	7.78	1.74 U	200
PCB-105	3.37	0.77 J	126
PCB-114	0.98 U	2.04 U	NA
PCB-118	7.85	3.04	88
PCB-126	0.98 U	2.04 U	NA
PCB-128	1.99	0.5 J	120
PCB-138/160	11.18	3.42 U*	200
PCB-149/123	6.21	0.13 J	192
PCB-153/132	12.92	5.49 U*	200
PCB-156	0.92 J	2.04 U	NC
PCB-167	0.7 J	2.04 U	NC
PCB-169	0.18 U*	2.04 U	NA
PCB-170/190	0.34 U*	0.6 U*	NA
PCB-18/17	2.57 U	9.18	200
PCB-180	5.58	1.28 U*	200
PCB-187	3.76	1.72	74
PCB-189	0.98 U	2.04 U	NA
PCB-195/208	0.82 U	1.7 U	NA
PCB-206	0.85 U	1.76 U	NA
PCB-209	1.11 U	2.3 U	NA
PCB-28	0.66 J	1.61 U	NC
PCB-44	0.68 U*	1.19 U	NA
PCB-52	2.03 U*	0.04 J	NC
PCB-66	0.93 J	0.33 J	95
PCB-77	0.63 J	0.75 U*	NC
PCB-8/5	2.18	0.86 J	87
PCB-81	0.98 U	2.04 U	NA
Pentachloroanisole	0.89 J*	0.26 U*	200
Pentachlorobenzene	0.64 J*	0.48 U*	200
trans-Nonachlor	0.77	0.35 U	200
PCB-201/157/173	0.19 J	1.57 U	NC

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-MU-M10-100A SDG T1173	OU4-MU-M10-100A-LD SDG T1174	RPD
1,2,3,4-Tetrachlorobenzene	0.22 J	0.39	-56
1,2,4,5-Tetrachlorobenzene	0.26 J	2.64 U*	NC
2,4'-DDD	4.73	5.31	-12
2,4'-DDE	0.49	0.56	-13
2,4'-DDT	9.26	9.57	-3
4,4'-DDD	7.14	6.52	9
4,4'-DDE	8.39	10.67	-24
4,4'-DDT	15.48	19.18	-21
Aldrin	0.4 U	0.09 J	NC
a-BHC	0.28 U	0.41	200
a-Chlordane	2.3	3.26	-35
b-BHC	0.92	28.21	-187
Chlorpyrifos	2.64 U	2.83 U	NA
cis-Nonachlor	0.08 J	0.45	-140
d-BHC	0.16 U	0.05 J	NC
Dieldrin	0.5	0.47	6
Endosulfan II	0.16 J	0.32 U	NC
Endrin	0.83 U	0.89 U	NA
g-BHC	0.25 U	0.14 J	NC
g-Chlordane	1.79	2.41	-30
Heptachlor	0.23 J	0.25 J	-8
Heptachlor epoxide	0.32 U	0.34 U	NA
Hexachlorobenzene	0.05 J	0.38 J	-153
Mirex	0.73 U	0.79 U	NA
Oxychlordane	0.34 U	0.36 U	NA
PCB-101/90	4.13	4.48	-8
PCB-105	1.44	1.2	18
PCB-114	1.12 U	1.2 U	NA
PCB-118	3.82	4.75	-22
PCB-126	1.12 U	1.2 U	NA
PCB-128	0.91	1.2	-27
PCB-138/160	5.59 U*	7.13 U*	NA
PCB-149/123	3.28	3.6	-9
PCB-153/132	7.6 U*	9.64 U*	NA
PCB-156	0.5 J	0.71 J	-35
PCB-167	0.4 J	0.66 J	-49
PCB-169	1.12 U	1.2 U	NA
PCB-170/190	0.22 U*	0.27 U*	NA
PCB-18/17	2.94 U	3.15 U	NA
PCB-180	2.72 U*	3.36 U*	NA
PCB-187	2.49	3.02	-19
PCB-189	1.12 U	1.2 U	NA
PCB-195/208	0.93 U	1 U	NA
PCB-206	0.97 U	1.04 U	NA
PCB-209	1.26 U	1.36 U	NA
PCB-28	0.37 J	0.68 U*	NC
PCB-44	0.41 U*	0.68 U*	NA
PCB-52	1.31	1.86	-35
PCB-66	0.37 J	0.23 J	47
PCB-77	1.12 U	1.2 U	NA
PCB-8/5	7.68	3.2	82
PCB-81	1.12 U	1.2 U	NA
Pentachloroanisole	1.54 U*	0.63 U*	NA
Pentachlorobenzene	0.57 U*	2.35 U*	NA
trans-Nonachlor	1.34	1.66	-21
PCB-201/157/173	0.86 U	0.93 U	NA

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NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-MU-M13-100A SDG T1173	OU4-MU-M13-100A-LD SDG T1174	RPD
1,2,3,4-Tetrachlorobenzene	0.52	0.48	8
1,2,4,5-Tetrachlorobenzene	0.31 J	4.75 U*	NC
2,4'-DDD	364 JU	1.43	198
2,4'-DDE	0.34	0.6	-55
2,4'-DDT	0.33	1.39	-123
4,4'-DDD	4.28	3.54	19
4,4'-DDE	11.06	8.04	32
4,4'-DDT	3.52	1.32	91
Aldrin	0.39 U	0.59	200
a-BHC	2.01	1.67	18
a-Chlordane	3.18	1.73	59
b-BHC	6.25	8.02	-25
Chlorpyrifos	2.56 U	2.53 U	NA
cis-Nonachlor	2.02	2.09	-3
d-BHC	0.15 U	0.03 J	NC
Dieldrin	0.3 U	0.3 U	NA
Endosulfan II	6.28	1.39	128
Endrin	0.81 U	0.8 U	NA
g-BHC	0.24 U	0.18 J	NC
g-Chlordane	0.31 U	0.82	200
Heptachlor	0.44 U	0.31 J	NC
Heptachlor epoxide	0.31 U	0.31 U	NA
Hexachlorobenzene	0.63	0.13 J	132
Mirex	0.71 U	0.06 J	NC
Oxychlordane	18.9	1.46	171
PCB-101/90	15.53	10.49	39
PCB-105	6.46	2.37	93
PCB-114	1.08 U	1.07 U	NA
PCB-118	24.11	11.7	69
PCB-126	1.08 U	1.07 U	NA
PCB-128	3.07	2.85	7
PCB-138/160	20.6	17.23	18
PCB-149/123	10.52	10.44	1
PCB-153/132	25.72	23.46	9
PCB-156	1.66	2.15	-26
PCB-167	5.85	2.72	73
PCB-169	1.08 U	1.07 U	NA
PCB-170/190	49.45	16.04	102
PCB-18/17	38.34	2.82 U	200
PCB-180	10.68	8.03 U*	200
PCB-187	10.71	8.32	25
PCB-189	1.08 U	0.72 J	NC
PCB-195/208	1.12	0.65 J	53
PCB-206	0.94 U	0.93 U	NA
PCB-209	1.22 U	1.21 U	NA
PCB-28	3.65	5.17 U*	NC
PCB-44	2.44 U*	2.21 U*	NA
PCB-52	4.84	8.79	-58
PCB-66	6.19	2.65	80
PCB-77	0.53 U*	1.07 U	NA
PCB-8/5	36.29	1.74 U	200
PCB-81	0.25 J	0.17 J	38
Pentachloroanisole	3.1 U*	0.85 U*	NA
Pentachlorobenzene	0.86 U*	2.77 U*	NA
trans-Nonachlor	1.47	1.21	19
PCB-201/157/173	1.12	2.16	-63

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1173

SAMPLE NUMBER:	OU4-LJ-M01-100A			OU4-LJ-M01-100A-LD			OU4-LJ-M02-100A			OU4-LJ-M03-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36920			C36938			C36921			C36922		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.8 %			20.2 %			20.2 %			23.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	15			13			11			13		
1,2,4,5-TETRACHLOROBENZENE	0.32	J	GP	0.10	J	GP	0.19	J	P	0.19	J	P
2,4'-DDD	0.57	J	G	0.47	UJ	G	0.43	U		0.40	U	
2,4'-DDE	0.67	U		0.65	U		0.60	U		0.55	U	
2,4'-DDT	0.23	J	P	0.60	U		0.56	U		0.51	U	
4,4'-DDD	0.22	J	P	0.57	U		0.53	U		0.48	U	
4,4'-DDE	3.1			2.6			3.1			2.4		
4,4'-DDT	0.89	UJ	E	0.87	UJ	E	0.80	U		0.74	UJ	E
ALDRIN	0.77	U		0.75	U		0.70	U		0.64	U	
ALPHA-BHC	0.55	U		0.53	U		0.49	U		0.45	U	
ALPHA-CHLORDANE	0.58	U		0.57	U		0.53	U		0.48	U	
BETA-BHC	0.10	J	GP	0.27	J	GP	0.45	U		0.61		
CHLORPYRIFOS	5.0	U		4.9	U		4.5	U		4.2	U	
CIS-NONACHLOR	0.25	J	P	0.52	U		0.48	U		0.44	U	
DELTA-BHC	0.090	J	P	0.30	U		0.28	U		0.26	U	
DIELDRIN	2.9	J	E	2.2	J	E	2.0	J	E	1.8	J	E
ENDOSULFAN II	0.58	U		0.57	U		0.53	U		0.48	U	
ENDRIN	1.6	U		1.6	U		1.4	U		1.3	U	
GAMMA-BHC (LINDANE)	0.48	U		0.47	U		0.43	U		0.40	U	
GAMMA-CHLORDANE	0.25	J	P	0.60	U		0.56	U		0.51	U	
HEPTACHLOR	0.88	U		0.85	U		0.79	U		0.72	U	
HEPTACHLOR EPOXIDE	0.24	J	P	0.60	U		0.56	U		0.51	U	
HEXACHLOROBENZENE	0.51	J	GP	0.070	J	GP	0.24	J	P	0.18	J	P
MIREX	0.33	J	P	1.4	U		1.3	U		1.2	U	
OXYCHLORDANE	1.3	J	G	0.56	J	GP	0.62			0.78		
PCB-101/90	0.90	J	P	0.67	J	GP	0.70	J	P	0.74	J	P
PCB-105	2.0			1.3	J	GP	0.81	J	P	0.57	J	P
PCB-114	2.1	U		2.1	U		1.9	U		1.8	U	
PCB-118	6.8			5.6			3.2			2.7		
PCB-126	0.64	J	EP	2.1	UR	E	1.9	U		1.8	UR	E
PCB-12[illegible]	1.2	J	P	0.88	J	P	0.63	J	P	0.53	J	P
PCB-1[illegible]0	5.4	U	A	[illegible]	U	A	3.7			3.3	U	A
PCB-149/123	2.1	U		[illegible]	J	P	0.11	J	P	0.11	J	P

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1173

SAMPLE NUMBER:	OU4-LJ-M01-100A			OU4-LJ-M01-100A-LD			OU4-LJ-M02-100A			OU4-LJ-M03-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36920			C36938			C36921			C36922		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.8 %			20.2 %			20.2 %			23.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	7.6	U	A	8.3	U	A	5.4	U	A	4.9	U	A
PCB-156	2.1	U		0.31	J	P	1.9	U		1.8	U	
PCB-167	0.39	J	P	0.27	J	P	1.9	U		1.8	U	
PCB-169	2.1	U		0.25	J	P	0.32	J	P	0.42	J	P
PCB-170/190	1.5	U	A	1.6	U	A	1.1	U	A	0.70	U	A
PCB-18/17	5.6	J	G	5.8			3.8	J	P	1.1	J	P
PCB-180	2.1	U	A	3.4	U	A	1.6	U	A	1.5	U	A
PCB-187	2.6	J	G	4.8	J	G	1.6			1.6		
PCB-189	2.1	U		2.1	U		1.9	U		1.8	U	
PCB-195/208	0.47	J	GP	0.23	J	GP	0.16	J	P	0.15	J	P
PCB-201/157/173	0.33	J	P	1.6	U		1.5	U		1.4	U	
PCB-206	0.47	J	P	0.18	J	GP	0.17	J	P	0.15	J	P
PCB-209	0.44	J	P	2.4	U		2.2	U		2.0	U	
PCB-28	0.34	J	P	1.7	U		0.14	J	P	0.10	J	P
PCB-44	0.38	U	A	1.2	U		0.10	U	A	0.090	U	A
PCB-52	1.3	J	P	1.4	U		0.14	J	P	0.44	J	P
PCB-66	0.80	J	P	0.60	J	P	0.60	J	P	0.43	J	P
PCB-77	2.1	U		2.1	U		0.29	U	A	1.8	U	
PCB-8/5	1.3	J	GP	0.72	J	GP	0.43	J	P	0.35	J	P
PCB-81	2.1	U		2.1	U		1.9	U		1.8	U	
PENTACHLOROANISOLE	0.47	U	A	0.33	U	A	0.24	U	A	0.30	U	A
PENTACHLOROBENZENE	0.64	U	A	0.42	U	A	0.44	U	A	0.39	U	A
TRANS-NONACHLOR	0.40	J	G	0.10	J	GP	0.10	J	P	0.31	U	

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1173

SAMPLE NUMBER:	OU4-LJ-M04-100A			OU4-LJ-M05-100A			OU4-LJ-M06-100A			OU4-LJ-M07-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36923			C36924			C36925			C36926		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.9 %			18.9 %			22.7 %			19.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	10			7.9			1.3			9.1		
1,2,4,5-TETRACHLOROBENZENE	0.79	J	P	0.20	J	P	0.020	J	P	0.060	J	P
2,4'-DDD	0.45	U		0.48	U		0.39	U		0.49	U	
2,4'-DDE	0.63	U		0.66	U		0.54	U		0.68	U	
2,4'-DDT	0.58	U		0.61	U		0.50	U		0.62	U	
4,4'-DDD	0.55	U		0.58	U		0.47	U		0.59	U	
4,4'-DDE	3.7			5.0			1.2			2.3		
4,4'-DDT	0.84	UJ	E	0.88	UJ	E	0.72	UJ	E	0.90	UJ	E
ALDRIN	0.73	U		0.77	U		0.63	U		0.78	U	
ALPHA-BHC	0.52	U		0.54	U		0.45	U		0.56	U	
ALPHA-CHLORDANE	0.55	U		0.58	U		0.47	U		0.59	U	
BETA-BHC	0.10	J	P	0.22	J	P	0.29	J	P	0.59		
CHLORPYRIFOS	4.8	U		5.0	U		4.1	U		5.1	U	
CIS-NONACHLOR	0.50	U		0.53	U		0.43	U		0.54	U	
DELTA-BHC	0.29	U		0.31	U		0.25	U		0.31	U	
DIELDRIN	1.7	J	E	2.2	J	E	1.4	J	E	1.8	J	E
ENDOSULFAN II	0.12	J	P	0.58	U		0.47	U		0.59	U	
ENDRIN	1.5	U		1.6	U		1.3	U		1.6	U	
GAMMA-BHC (LINDANE)	0.45	U		0.48	U		0.39	U		0.49	U	
GAMMA-CHLORDANE	0.58	U		0.61	U		0.50	U		0.62	U	
HEPTACHLOR	0.83	U		0.87	U		0.71	U		0.88	U	
HEPTACHLOR EPOXIDE	0.58	U		0.61	U		0.50	U		0.62	U	
HEXACHLOROBENZENE	0.20	J	P	0.30	J	P	0.060	J	P	0.20	J	P
MIREX	1.3	U		1.4	U		1.1	U		1.4	U	
OXYCHLORDANE	0.56	J	P	0.70			0.35	J	P	0.60	J	P
PCB-101/90	1.7	J	P	1.4	J	P	1.5	U		1.9	U	
PCB-105	0.90	J	P	1.8			0.61	J	P	0.61	J	P
PCB-114	2.0	U		2.1	U		1.7	U		2.2	U	
PCB-118	4.3			7.3			2.1	J	P	2.5	J	P
PCB-126	2.0	UR	E	2.1	UR	E	1.7	UR	E	2.2	UR	E
PCB-12[illegible]	0.76	J	P	1.4	J	P	0.36	J	P	0.46	J	P
PCB-1[illegible]	6.2	U	A	[illegible]			2.6	U	A	2.9	U	A
PCB-149/123	0.71	J	P	0.[illegible]	J	P	1.7	U		0.14	J	P

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SAMPLE NUMBER:	OU4-LJ-M04-100A			OU4-LJ-M05-100A			OU4-LJ-M06-100A			OU4-LJ-M07-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36923			C36924			C36925			C36926		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	19.9 %			18.9 %			22.7 %			19.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	8.9	U	A	11	U	A	3.9	U	A	4.6	U	A
PCB-156	2.0	U		2.1	U		1.7	U		2.2	U	
PCB-167	2.0	U		0.48	J	P	1.7	U		2.2	U	
PCB-169	2.0	U		0.10	J	P	1.7	U		0.030	J	P
PCB-170/190	1.6	U	A	1.6	U	A	0.33	U	A	0.28	U	A
PCB-18/17	2.1	J	P	6.2			0.85	J	P	7.8		
PCB-180	3.6	U	A	3.5	U	A	1.1	U	A	1.4	U	A
PCB-187	4.5			3.8			1.2			1.8		
PCB-189	2.0	U		2.1	U		1.7	U		2.2	U	
PCB-195/208	0.32	J	P	0.32	J	P	1.4	U		1.8	U	
PCB-201/157/173	1.6	U		1.6	U		1.3	U		1.7	U	
PCB-206	0.36	J	P	0.30	J	P	0.16	J	P	1.2	J	P
PCB-209	2.3	U		2.4	U		2.0	U		2.4	U	
PCB-28	0.16	J	P	0.28	J	P	0.19	J	P	1.7	U	
PCB-44	0.12	U	A	1.2	U		1.0	U		1.3	U	
PCB-52	0.92	J	P	0.81	J	P	1.2	U		1.5	U	
PCB-66	0.77	J	P	1.2	J	P	0.34	J	P	0.24	J	P
PCB-77	0.52	U	A	0.31	U	A	1.7	U		0.24	U	A
PCB-8/5	3.3	U		0.57	J	P	2.8	U		0.42	J	P
PCB-81	2.0	U		2.1	U		0.18	J	P	2.2	U	
PENTACHLOROANISOLE	0.28	U	A	0.19	U	A	0.17	U	A	0.25	U	A
PENTACHLOROBENZENE	0.28	U	A	0.31	U	A	0.32	U	A	0.33	U	A
TRANS-NONACHLOR	0.36	U		0.18	J	P	0.31	U		0.38	U	

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SAMPLE NUMBER:	OU4-LJ-M08-100A			OU4-LJ-M11-100A-LD			OU4-MU-M09-200A			OU4-MU-M10-100A		
SAMPLE DATE:	09/07/00			09/07/00			08/29/00			08/29/00		
LABORATORY ID:	C36927			C36939			C36636			C36637		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	23.1 %			20.1 %			9.8 %			12.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.48	J	P	8.2			0.53			0.22	J	GP
1,2,4,5-TETRACHLOROBENZENE	0.31	J	GP	0.36	J	P	0.24	J	P	0.26	J	P
2,4'-DDD	2.2	J	G	0.46	U		2.1			4.7		
2,4'-DDE	0.54	U		0.64	U		0.27	J	P	0.49		
2,4'-DDT	0.87			0.59	U		0.35	J	P	9.3		
4,4'-DDD	2.2	J	G	0.56	U		2.3			7.1		
4,4'-DDE	7.9			2.8			5.1			8.4		
4,4'-DDT	0.94	J	E	0.85	UJ	E	1.1	J	E	15	J	E
ALDRIN	0.63	U		0.74	U		0.50	U		0.40	U	
ALPHA-BHC	0.45	U		0.52	U		0.36	U		0.29	UJ	G
ALPHA-CHLORDANE	0.88	J	G	0.56	U		0.74			2.3		
BETA-BHC	1.6			0.16	J	P	0.32	U		0.92	J	G
CHLORPYRIFOS	4.1	U		4.8	U		3.3	U		2.6	U	
CIS-NONACHLOR	1.4	J	G	0.51	U		0.13	J	P	0.080	J	GP
DELTA-BHC	0.25	U		0.29	U		0.20	U		0.16	U	
DIELDRIN	0.97	J	EG	2.2	J	E	0.79	J	E	0.50	J	E
ENDOSULFAN II	0.23	J	P	0.56	U		0.26	J	P	0.16	J	P
ENDRIN	1.3	U		1.5	U		1.0	U		0.84	U	
GAMMA-BHC (LINDANE)	0.090	J	P	0.46	U		0.040	J	P	0.25	U	
GAMMA-CHLORDANE	0.38	J	P	0.59	U		0.38	J	P	1.8		
HEPTACHLOR	0.71	U		0.83	U		0.57	U		0.23	J	P
HEPTACHLOR EPOXIDE	0.50	U		0.59	U		0.40	U		0.32	U	
HEXACHLOROBENZENE	0.23	J	GP	0.27	J	P	0.070	J	P	0.050	J	GP
MIREX	1.1	U		1.3	U		0.91	U		0.74	U	
OXYCHLORDANE	0.53	UJ	G	0.66			0.42	U		0.34	U	
PCB-101/90	8.0	J	G	1.7	U		7.5			4.1		
PCB-105	2.9	J	G	0.77	J	P	3.7			1.4		
PCB-114	1.7	U		2.0	U		1.4	U		1.1	U	
PCB-118	7.7	J	G	3.0			6.2			3.8		
PCB-126	1.7	UR	E	2.0	UR	E	1.4	UR	E	1.1	UR	E
PCB-128	2.0	J	G	0.50	J	P	1.8			0.91		
PCB-1[illegible]	13	J	G	[illegible]	U	A	13			5.6	U	A
PCB-149/123	6.7	J	G	0.[illegible]	J	P	8.1			3.3		

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SAMPLE NUMBER:	OU4-LJ-M08-100A			OU4-LJ-M11-100A-LD			OU4-MU-M09-200A			OU4-MU-M10-100A		
SAMPLE DATE:	09/07/00			09/07/00			08/29/00			08/29/00		
LABORATORY ID:	C36927			C36939			C36636			C36637		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	23.1 %			20.1 %			9.8 %			12.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	18	J	G	5.5	U	A	15			7.6	U	A
PCB-156	0.89	J	P	2.0	U		1.2	J	P	0.50	J	P
PCB-167	0.82	J	P	2.0	U		0.86	J	P	0.40	J	P
PCB-169	0.030	J	P	2.0	U		1.4	U		1.1	U	
PCB-170/190	0.40	U	A	0.60	U	A	0.40	U	A	0.22	U	A
PCB-18/17	4.6	UJ	G	9.2			3.6	U		2.9	U	
PCB-180	6.1	J	G	1.3	U	A	3.6	U	A	2.7	U	A
PCB-187	6.6	J	G	1.7			6.2			2.5		
PCB-189	1.7	U		2.0	U		1.4	U		1.1	U	
PCB-195/208	1.4	U		1.7	U		1.2	U		0.94	U	
PCB-201/157/173	0.16	J	P	1.6	U		0.30	J	P	0.86	U	
PCB-206	1.5	U		1.8	U		1.2	U		0.97	U	
PCB-209	2.0	U		2.3	U		1.6	U		1.3	U	
PCB-28	0.83	J	P	1.6	U		0.56	J	P	0.37	J	P
PCB-44	0.71	U	A	1.2	U		0.89	U	A	0.41	U	A
PCB-52	1.9			0.040	J	P	1.8			1.3		
PCB-66	1.0	J	GP	0.33	J	P	0.91	J	P	0.37	J	P
PCB-77	0.18	U	A	0.75	U	A	1.4	U		1.1	U	
PCB-8/5	17	J	G	0.86	J	P	5.3	J	D	7.7	J	G
PCB-81	1.7	U		2.0	U		1.4	U		1.1	U	
PENTACHLOROANISOLE	3.8	J	G	0.26	U	A	1.2	U	A	1.5	U	A
PENTACHLOROBENZENE	0.80	U	AG	0.48	U	A	0.23	U	A	0.57	U	A
TRANS-NONACHLOR	1.1	J	G	0.36	U		0.76			1.3		

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SAMPLE NUMBER:	OU4-MU-M10-200A			OU4-MU-M10-300A			OU4-MU-M13-100A			OU4-MU-M14-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/28/00			08/28/00		
LABORATORY ID:	C36638			C36639			C36640			C36641		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.1 %			13.1 %			12.6 %			9.6 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.12	J	P	0.31			0.52			13		
1,2,4,5-TETRACHLOROBENZENE	0.28	J	P	0.55	J	P	0.31	J	P	0.81	J	P
2,4'-DDD	2.2			8.7			364	J	GQ	0.32	U	
2,4'-DDE	0.25	J	P	0.33	U		0.34	UJ	G	0.44	U	
2,4'-DDT	0.86			4.8			0.33	J	G	0.41	U	
4,4'-DDD	3.9			18			4.3			0.31	J	P
4,4'-DDE	7.0			21			11			5.3		
4,4'-DDT	1.7	J	E	9.4	J	E	3.5	J	EG	0.59	UJ	E
ALDRIN	0.49	U		0.38	U		0.39	UJ	G	0.51	U	
ALPHA-BHC	0.35	U		0.27	U		2.0			0.36	U	
ALPHA-CHLORDANE	1.1			1.9			3.2	J	G	0.38	U	
BETA-BHC	1.2			1.1			6.3			0.43		
CHLORPYRIFOS	3.2	U		2.5	U		2.6	U		3.3	U	
CIS-NONACHLOR	0.090	J	P	0.21	J	P	2.0			0.35	U	
DELTA-BHC	0.20	U		0.15	U		0.16	U		0.20	U	
DIELDRIN	0.89	J	E	1.6	J	E	0.31	UR	E	2.5	J	E
ENDOSULFAN II	0.15	J	P	0.59			6.3	J	G	0.38	U	
ENDRIN	1.0	U		0.79	U		0.81	U		1.0	U	
GAMMA-BHC (LINDANE)	0.090	J	P	0.080	J	P	0.24	U		0.32	U	
GAMMA-CHLORDANE	0.51			0.71			0.31	UJ	G	0.41	U	
HEPTACHLOR	0.56	U		0.43	U		0.44	U		0.57	U	
HEPTACHLOR EPOXIDE	0.39	U		0.31	U		0.31	U		0.090	J	P
HEXACHLOROBENZENE	0.12	J	P	0.15	J	P	0.63	J	G	0.080	J	P
MIREX	0.90	U		0.70	U		0.71	U		0.92	U	
OXYCHLORDANE	0.42	U		0.32	U		19	J	G	3.3		
PCB-101/90	7.5			39			16			0.71	J	P
PCB-105	2.7			16			6.5	J	G	1.0	J	P
PCB-114	1.4	U		1.1	U		1.1	U		1.4	U	
PCB-118	7.2			32			24	J	G	3.4		
PCB-126	1.4	UR	E	1.1	UR	E	1.1	UR	E	1.4	UR	E
PCB-128	1.6			6.9			3.1			0.63	J	P
PCB-1[illegible]	10			[illegible]			21			5.2	U	A
PCB-149/123	4.6			0[illegible]	J	P	11			0.32	J	P

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SAMPLE NUMBER:	OU4-MU-M10-200A			OU4-MU-M10-300A			OU4-MU-M13-100A			OU4-MU-M14-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/28/00			08/28/00		
LABORATORY ID:	C36638			C36639			C36640			C36641		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	10.1 %			13.1 %			12.6 %			9.6 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	13	U	A	33			26			7.0	U	A
PCB-156	0.87	J	P	2.0			1.7			1.4	U	
PCB-167	0.72	J	P	2.2			5.9	J	G	1.4	U	
PCB-169	0.050	J	P	1.1	U		1.1	U		1.4	U	
PCB-170/190	0.24	U	A	0.75	U	A	49	J	G	0.49	U	A
PCB-18/17	3.6	U		2.8	U		38	J	G	1.3	J	P
PCB-180	5.5			7.4			11	J	G	2.5	U	A
PCB-187	4.6			6.9			11			2.7		
PCB-189	1.4	U		1.1	U		1.1	U		1.4	U	
PCB-195/208	1.1	U		0.88	U		1.1	J	G	0.27	J	P
PCB-201/157/173	0.12	J	P	0.36	J	P	1.1	J	G	1.1	U	
PCB-206	1.2	U	A	0.92	U		0.94	U		0.33	J	P
PCB-209	1.5	U		1.2	U		1.2	U		1.6	U	
PCB-28	0.63	J	P	0.81	J	P	3.7			1.1	U	
PCB-44	0.86	U	A	5.2			2.4	U	A	0.82	U	
PCB-52	1.8			15			4.8	J	G	0.96	U	
PCB-66	0.83	J	P	2.4			6.2	J	G	0.39	J	P
PCB-77	1.4	U		0.38	U	A	0.53	U	A	1.4	U	
PCB-8/5	3.7			2.7			36	J	G	0.35	J	P
PCB-81	1.4	U		1.1	U		0.25	J	P	1.4	U	
PENTACHLOROANISOLE	1.3	U	A	1.0	U	A	3.1	U	A	0.22	U	A
PENTACHLOROBENZENE	0.42	U	A	0.60	U	A	0.86	U	A	0.39	U	A
TRANS-NONACHLOR	1.1			1.4			1.5			0.25	U	

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SAMPLE NUMBER:	OU4-MU-R02-400A			OU4-MU-R04-400A								
SAMPLE DATE:	08/29/00			08/29/00			/ /			/ /		
LABORATORY ID:	C36642			C36643								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	11.0 %			14.4 %			100.0 %			100.0 %		
UNITS:	NG/G			NG/G								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	2.9			0.030	J	P						
1,2,4,5-TETRACHLOROBENZENE	1.4			0.65	J	P						
2,4'-DDD	357	J	Q	1.6								
2,4'-DDE	0.39	U		0.39								
2,4'-DDT	1.5			0.70								
4,4'-DDD	5.9			2.1								
4,4'-DDE	11			6.5								
4,4'-DDT	3.5			0.51								
ALDRIN	0.45	U		0.35	U							
ALPHA-BHC	2.1			0.25	U							
ALPHA-CHLORDANE	2.0			0.74								
BETA-BHC	6.2			1.5								
CHLORPYRIFOS	2.9	U		2.3	U							
CIS-NONACHLOR	2.3			0.95								
DELTA-BHC	0.18	U		0.14	U							
DIELDRIN	0.37			0.030	J	P						
ENDOSULFAN II	11			0.12	J	P						
ENDRIN	0.93	U		0.73	U							
GAMMA-BHC (LINDANE)	0.030	J	P	0.11	J	P						
GAMMA-CHLORDANE	0.36	U		0.25	J	P						
HEPTACHLOR	0.53			0.40	U							
HEPTACHLOR EPOXIDE	0.36	U		0.28	U							
HEXACHLOROBENZENE	0.92			0.17	J	P						
MIREX	0.82	U		0.64	U							
OXYCHLORDANE	9.7			0.30	U							
PCB-101/90	12			5.0								
PCB-105	6.5			2.2								
PCB-114	1.3	U		0.98	U							
PCB-118	22			5.0								
PCB-126	1.3	U		0.98	U							
PCB-12[illegible]	5.3			1.3								
PCB-1[illegible]	21			[illegible]								
PCB-140/1[illegible]	14			4.[illegible]								

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SAMPLE NUMBER:	OU4-MU-R02-400A			OU4-MU-R04-400A								
SAMPLE DATE:	08/29/00			08/29/00			/ /			/ /		
LABORATORY ID:	C36642			C36643								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	11.0 %			14.4 %			100.0 %			100.0 %		
UNITS:	NG/G			NG/G								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	27			10								
PCB-156	1.2	J	P	0.47	J	P						
PCB-167	6.5			0.64	J	P						
PCB-169	1.3	U		0.13	J	P						
PCB-170/190	53			0.26	J	P						
PCB-18/17	28			2.6	U							
PCB-180	12			3.9								
PCB-187	12			3.7								
PCB-189	0.59	J	P	0.98	U							
PCB-195/208	1.1			0.81	U							
PCB-201/157/173	1.1			0.75	U							
PCB-206	1.1	U		0.85	U							
PCB-209	1.4	U		1.1	U							
PCB-28	3.6			0.55	J	P						
PCB-44	2.5			0.46	J	P						
PCB-52	5.3			1.6								
PCB-66	5.6			0.64	J	P						
PCB-77	0.53	J	P	0.98	U							
PCB-8/5	46			3.7								
PCB-81	0.55	J	P	0.12	J	P						
PENTACHLOROANISOLE	4.0			1.6								
PENTACHLOROBENZENE	0.52			0.48								
TRANS-NONACHLOR	1.3			0.85								

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 8, 2000**

FROM: **DOUGLAS S. SCHLOER** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYNUCLEAR AROMATIC HYDROCARBONS**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – T1174

SAMPLES: 14 / Tissue / PAH

OU4-LJ-M09-100A	OU4-LJ-M10-100A	OU4-LJ-M11-100A	OU4-LJ-M12-100A
OU4-LJ-M13-100A	OU4-LJ-M14-100A	OU4-LJ-R01-100A	OU4-LJ-R02-100A
OU4-LJ-R03-100A	OU4-LJ-R04-100A	OU4-MU-M10-100A-LD	OU4-MU-M11-200A-LD
OU4-MU-M12-100A-LD	OU4-MU-M13-100A-LD		

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine; SDG T1174 consists of fourteen (14) lobster and mussel tissue samples. The samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). Five lab duplicate pairs were included in this SDG: *OU4-MU-M10-100A and OU4-MU-M10-100A-LD; *OU4-MU-M11-200A and OU4-MU-M11-200A-LD; *OU4-MU-M12-100A and OU4-MU-M12-100A-LD; *OU4-MU-M13-100A and OU4-MU-M13-100A-LD; OU4-LJ-M11-100A and *OU4-LJ-M11-100A-LD. The symbol (*) indicates samples that were not analyzed within this SDG.

The samples were collected by Tetra Tech NUS on August 29th, 2000 and were analyzed by Texas A&M University under NOAA Technical Memorandum NOS ORCA 130 Quality Assurance/Quality Control (QA/QC) criteria. All analyses and preparations were conducted using NOAA Technical Memorandum NOS ORCQ 130 (Program Mussel Watch) Methods.

The data were evaluated based on the following parameters:

*	Data Completeness
*	Holding Times
*	GC/MS Tuning and System Performance
	Initial / Continuing Calibration
*	Blank Contamination
	Surrogate / Internal Standard Recoveries
*	Matrix Spike / Matrix Spike Duplicate Results
	Blank Spike Results
	Lab Duplicate Results
*	Field Duplicate Results
*	Instrument Performance
*	Compound Identification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

CALIBRATION

The following table summarizes calibration noncompliances and corresponding validation actions. The key associated with this table is presented after the table.

Compound	CCV 10/25/00;(14:58)	CCV 10/25/00;(23:08)	CCV 10/26/00;(07:17)
Acenaphthene	X	X	
Anthracene	X		
Acenaphthylene	X	X	
Dibenzothiophene			X
Fluorene	X	X	X
Indeno(1,2,3-CD)perylene		X	
Phenanthrene			X
Samples Affected:	OU4-LJ-M09-100A OU4-LJ-M10-100A OU4-LJ-M11-100A OU4-LJ-M12-100A	OU4-LJ-M09-100A OU4-LJ-M10-100A OU4-LJ-M11-100A OU4-LJ-M12-100A OU4-LJ-M13-100A OU4-LJ-M14-100A OU4-LJ-R01-100A OU4-LJ-R02-100A OU4-LJ-R03-100A OU4-LJ-R04-100A OU4-MU-M10-100A-LD OU4-MU-M11-200A-LD OU4-MU-M12-100A-LD OU4-MU-M14-100A-LD	OU4-LJ-M13-100A OU4-LJ-M14-100A OU4-LJ-R01-100A OU4-LJ-R02-100A OU4-LJ-R03-100A OU4-LJ-R04-100A OU4-MU-M10-100A-LD OU4-MU-M11-200A-LD OU4-MU-M12-100A-LD OU4-MU-M14-100A-LD

Calibration Actions

X - Percent Difference (%D) greater than 15%. Qualify positive and nondetected results for the affected compounds as estimated (J) and (UJ) respectively.

SURROGATE/INTERNAL STANDARD RECOVERY

Recovery of surrogate d12-perylene fell below the 40-120% quality control limit in the laboratory method blank on 10/25/00. Since this surrogate has advisory quality control limits, no action was taken based on this noncompliance.

Recovery of surrogate d8-naphthalene fell below the 40-120% quality control limit in samples OU4-LJ-M12-100A, OU4-LJ-M13-100A, OU4-LJ-M14-100A and OU4-LJ-R04-100A. Only positive results were reported for the associated target compounds: 1-methylnaphthalene, 2-methylnaphthalene and naphthalene, therefore, in the aforementioned samples these were qualified as estimated (J).

STANDARD REFERENCE MATERIAL

Standard Reference Material (SRM) % recoveries of anthracene, acenaphthylene and naphthalene failed to meet the quality control limit of ± 35% deviation from manufacturer certified concentrations. Only positive results were reported for the aforementioned compounds, and these were qualified as estimated (J) in all samples.

LAB DUPLICATE RESULTS

Relative percent differences (RPDs) greater than 50% were noted for several compounds in the laboratory duplicates. Positive results for compounds that exceeded the 50% RPD quality control limit were qualified as estimated (J) in the lab duplicate pair.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the reporting limit, RL, were qualified as estimated (J).

Samples were frozen from time of receipt at the laboratory to sample extraction. Therefore, holding time from sample collection to sample extraction is not an issue. No qualifiers were assigned on this basis.

Samples were reported on a dry weight basis. This is consistent with historical data from this site.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: The laboratory did not meet quality control criteria for continuing calibration of several compounds.

Standard Reference Material (SRM) % recoveries of several compounds failed to meet quality control limits.

Other Factors Affecting Data Quality: Laboratory duplicate RPDs exceeded 50%.

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Douglas S. Schloer
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

		PORTSMOUTH NAVAL SHIPYARD LABORATORY DUPLICATES											
SDG		T1173		T1174				T1172		T1174			
FRACTION	COMPOUND	OU4-MU-M10-100A		OU4-MU-M10-100A-LD		RPD		OU4-MU-M11-200A		OU4-MU-M11-200A-LD		RPD	
		RESULT ng/g		RESULT ng/g				RESULT ng/g		RESULT ng/g			
PAH													
	1,6,7-Trimethylnaphthalene	1.38	J	1.92	J	-32.7		3.4	J	2.06	J	49.1	
	1-Methylnaphthalene	1.31	J	2.67	J	-68.3		9		2.68	J	108.2	
	1-Methylphenanthrene	1.66	J	2.6	J	-44.1		4.9	J	2.01	J	83.6	
	2,6-Dimethylnaphthalene	1.28	J	2.22	J	-53.7		3.4	J	2.19	J	43.3	
	2-Methylnaphthalene	2.27	J	4.44		-64.7		11.5		4.65		84.8	
	Acenaphthene	1.56	J	3.62	J	-79.5		8.2	J	5.98	J	31.3	
	Acenaphthylene	3.25	J	8.02		-84.6		16.7		11.05		40.7	
	Anthracene	6.6		13.98		-71.7		24.6		19.53		23.0	
	Benzo(A)anthracene	9.54		13.27		-32.7		15.8		14.44		9.0	
	Benzo(A)pyrene	10.26		13.73		-28.9		10.3		9.16		11.7	
	Benzo(B)fluoranthene	17		20.39		-18.1		21.2		22.83		-7.4	
	Benzo(E)pyrene	13.4		18.25		-30.6		27.2		21.12		25.2	
	Benzo(G,H,I)perylene	7.79		12.45		-46.0		11.5		10.48		9.3	
	Benzo(K)fluoranthene	6.27		11		-54.8		7.6		9.39		-21.1	
	Biphenyl	1.58	J	1.88	J	-17.3		3.3	J	1.63	J	67.7	
	C1-Chrysenes	7.4	J	10.14	J	-31.2		21		12.04	J	54.2	
	C1-Dibenzothiophenes	1.31	J	1.65	J	-23.0		3	J	1.31	J	78.4	
	C1-Fluoranthenes/Pyrenes	11.24		15.52		-32.0		27.7		19.58		34.3	
	C1-Fluorenes	11.87	J	8.6	J	31.9		21.7		14.13	J	42.3	
	C1-Naphthalenes	3.58	J	7.11	J	-66.0		20.6		7.33	J	95.0	
	C1-Phenanthrenes/Anthracenes	8.15	J	12.83		-44.6		16.4		11.85		32.2	
	C2-Chrysenes	5.41	J	7.58	J	-33.4		1	J	7.47	J	-152.8	
	C2-Dibenzothiophenes	1.7	J	3.13	J	-59.2		4.5	J	2.51	J	56.8	
	C2-Fluorenes	7.84	J	11.81	J	-40.4		15.5	J	13.22	J	15.9	
	C2-Naphthalenes	3.07	J	5.22	J	-51.9		20.3		6.45	J	103.6	
	C2-Phenanthrenes/Anthracenes	8.24	J	12.88		-43.9		26.3		14.93		55.2	
	C3-Chrysenes	0.06	J	0.05	J	18.2		0.3	J	0.07	J	124.3	
	C3-Dibenzothiophenes	1.8	J	2.56	J	-34.9		8.6		3.45	J	85.5	
	C3-Fluorenes	11.46	J	15.82	J	-32.0		36.2		15.35	J	80.9	
	C3-Naphthalenes	4.71	J	5.07	J	-7.4		26		7.14	J	113.8	
	C3-Phenanthrenes/Anthracenes	6.51	J	8.59	J	-27.5		23.5		9.23	J	87.2	
	C4-Chrysenes	0.05	J	0.06	J	-18.2		0.2	J	0.05	J	120.0	
	C4-Naphthalenes	3.34	J	7.4	J	-75.6		22		8.01	J	93.2	
	C4-Phenanthrenes/Anthracenes	3.36	J	4.65	J	-32.2		16.8		6.15	J	92.8	
	Chrysene	14.89		20.99		-34.0		25		22.21		11.8	
	Dibenzo(a,h)anthracene	1.44	J	1.8	J	-22.2		0.9	J	1.44	J	-46.2	
	Dibenzothiophene	0.83	J	1.07	J	-25.3		0.8	J	0.67	J	17.7	
	Fluoranthene	25.57		42.26		-49.2		39.8		35.65		11.0	
	Fluorene	2.64	J	5.85	J	-75.6		7.1	J	4.86	J	37.5	
	Indeno(1,2,3-c,d)pyrene	6.78		9.83		-36.7		6.6		7.18		-8.4	
	Naphthalene	3.04	J	5.46	J	-56.9		17.9		6.28	J	96.1	
	Perylene	5.75		8.1		-33.9		18.7		9.69		63.5	
	Phenanthrene	10.85		15.74		-36.8		8.5		9.47		-10.8	
	Pyrene	23.32		37.5		-46.6		38.3		32.17		17.4	

ND - Compound not detected.
NC - RPD not calculated.

		PORTSMOUTH NAVAL SHIPYARD LABORATORY DUPLICATES											
SDG		T1172		T1174				T1173		T1174			
FRACTION	COMPOUND	OU4-MU-M12-100A		OU4-MU-M12-100A-LD		RPD		OU4-MU-M13-100A		OU4-MU-M13-100A-LD		RPD	
		RESULT ng/g		RESULT ng/g				RESULT ng/g		RESULT ng/g			
PAH													
	1,6,7-Trimethylnaphthalene	10.5		5.68	J	59.6		104.94		94.14		10.8	
	1-Methylnaphthalene	45.3		22.05		69.0		109.31		88.74		20.8	
	1-Methylphenanthrene	71.8		30.68		80.2		553.46		456.91		19.1	
	2,6-Dimethylnaphthalene	19.4		11.83		48.5		153.61		129.71		16.9	
	2-Methylnaphthalene	64.1		34.03		61.3		161.08		129.54		21.7	
	Acenaphthene	389.8		212.52		58.9		1268.5		1092.93		14.9	
	Acenaphthylene	87.9		27.28		105.3		179.69		288.89		-46.6	
	Anthracene	498		195.21		87.4		1995.59		2021.77		-1.3	
	Benzo(A)anthracene	565.7		196.12		97.0		4332.69		3539.64		20.1	
	Benzo(A)pyrene	514.3		162.4		104.0		3461.4		2835.32		19.9	
	Benzo(B)fluoranthene	751.8		246.49		101.2		4478.56		3622.17		21.1	
	Benzo(E)pyrene	372.4		130.67		96.1		2075.4		1680.71		21.0	
	Benzo(G,H,I)perylene	273.4		86.67		103.7		907.47		792.52		13.5	
	Benzo(K)fluoranthene	274.8		101.03		92.5		131.22		1198.18		-160.5	
	Biphenyl	18.6		11.17		49.9		86.89		72.73		17.7	
	C1-Chrysenes	228.5		69.05		107.2		2070.74		1661.31		21.9	
	C1-Dibenzothiophenes	27.3		9.77		94.6		112.86		87.27		25.6	
	C1-Fluoranthenes/Pyrenes	449.7		145.11		102.4		2923.63		2473.64		16.7	
	C1-Fluorenes	76.5		43.74		54.5		577.86		556.04		3.8	
	C1-Naphthalenes	109.4		56.08		64.4		270.39		218.28		21.3	
	C1-Phenanthrenes/Anthracenes	283.4		108.16		89.5		1767.42		1522.01		14.9	
	C2-Chrysenes	120.5		23.13		135.6		499.83		341.21		37.7	
	C2-Dibenzothiophenes	22.3		5.61		119.6		67.86		57.77		16.1	
	C2-Fluorenes	37.7		21.31		55.5		235.64		226.26		4.1	
	C2-Naphthalenes	93.9		26.67		111.5		300.65		239.62		22.6	
	C2-Phenanthrenes/Anthracenes	155.2		47.64		106.1		694.33		569.44		19.8	
	C3-Chrysenes	0.1	J	0.14	J	-33.3		12.86		6.98	J	59.3	
	C3-Dibenzothiophenes	22		6.28		111.2		37.9		29.48		25.0	
	C3-Fluorenes	56.9		25.58		75.9		128.96		122.25		5.3	
	C3-Naphthalenes	59.2		14.53		121.2		224.82		190		16.8	
	C3-Phenanthrenes/Anthracenes	70.7		22.45		103.6		283.59		241.56		16.0	
	C4-Chrysenes	9.2	J	1.5	J	143.9		111.98		37		100.7	
	C4-Naphthalenes	41.1		9.98	J	121.8		104.5		97.98		6.4	
	C4-Phenanthrenes/Anthracenes	24.1		6.08	J	119.4		88.2		66.95		27.4	
	Chrysene	686.1		262.6		89.3		4976.02		4491.28		10.2	
	Dibenzo(a,h)anthracene	52.7		16.74		103.6		353.26		273.22		25.6	
	Dibenzothiophene	63.3		25.22		86.0		239.41		199.38		18.2	
	Fluoranthene	1884.1		768.06		84.2		8955.26		7958.28		11.8	
	Fluorene	275.5		157.93		54.3		1870.26		1667.85		11.4	
	Indeno(1,2,3-c,d)pyrene	325.6		96.86		108.3		1207.45		985.14		20.3	
	Naphthalene	140.1		70.3		66.3		127.54		103.91		20.4	
	Perylene	104.3		46.93		75.9		563.28		522.44		7.5	
	Phenanthrene	1226.8		559.27		74.7		6561.27		5222.3		22.7	
	Pyrene	1435		556.22		88.3		5747.47		5245.82		9.1	

ND - Compound not detected.
NC - RPD not calculated.

		PORTSMOUTH NAVAL SHIPYARD LAB DUPLICATES											
SDG		T1173		T1173				T1174		T1173			
FRACTION	COMPOUND	OU4-LJ-M01-100A		OU4-LJ-M01-100A-LD		RPD		OU4-LJ-M11-100-A		OU4-LJ-M11-100A-LD		RPD	
		RESULT ng/g		RESULT ng/g				RESULT ng/g		RESULT ng/g			
PAH													
	1,6,7-Trimethylnaphthalene	1.06	J	0.98	J	7.8		0.81	J	0.71	J	13.2	
	1-Methylnaphthalene	3.3	J	3.43	J	-3.9		2.98	J	1.94	J	42.3	
	1-Methylphenanthrene	1.12	J	0.89	J	22.9		0.52	J	0.5	J	3.9	
	2,6-Dimethylnaphthalene	1.16	J	1.03	J	11.9		1.63	J	0.96	J	51.7	
	2-Methylnaphthalene	4.98	J	4.34	J	13.7		3.67	J	2.74	J	29.0	
	Acenaphthene	1.74	J	1.48	J	16.1		0.65	J	0.35	J	60.0	
	Acenaphthylene	0.78	J	0.92	J	-16.5		0.56	J	0.47	J	17.5	
	Anthracene	2.61	J	2.16	J	18.9		0.61	J	0.68	J	-10.9	
	Benzo(A)anthracene	6.13	J	5.73	J	6.7		1.46	J	1.74	J	-17.5	
	Benzo(A)pyrene	7.31	J	5.47	J	28.8		1.88	J	0.92	J	68.6	
	Benzo(B)fluoranthene	8.17		7.14		13.5		1.9	J	3.13	J	-48.9	
	Benzo(E)pyrene	4.94	J	5.17	J	-4.5		3.11	J	3.07	J	1.3	
	Benzo(G,H,I)perylene	3.74	J	3.85	J	-2.9		2.63	J	3.02	J	-13.8	
	Benzo(K)fluoranthene	4.11	J	3.83	J	7.1		1.4	J	5.15	J	-114.5	
	Biphenyl	1.9	J	1.75	J	8.2		2.07	J	1.57	J	27.5	
	C1-Chrysenes	3.2	J	3.56	J	-10.7		0.1	J	1.86	J	-179.6	
	C1-Dibenzothiophenes	0.91	J	1.26	J	-32.3		0.74	J	0.06	J	170.0	
	C1-Fluoranthenes/Pyrenes	5.15	J	5.11	J	0.8		3.58	J	2.48	J	36.3	
	C1-Fluorenes	3.79	J	3.95	J	-4.1		3.61	J	4.44	J	-20.6	
	C1-Naphthalenes	8.28	J	7.77	J	6.4		6.65	J	4.68	J	34.8	
	C1-Phenanthrenes/Anthracenes	4.46	J	3.63	J	20.5		3.22	J	4.41	J	-31.2	
	C2-Chrysenes	1.55	J	1.13	J	31.3		0.07	J	0.09	J	-25.0	
	C2-Dibenzothiophenes	0.11	J	0.02	J	138.5		0.02	J	0.02	J	0.0	
	C2-Fluorenes	3.57	J	0.49	J	151.7		2.38	J	1.78	J	28.8	
	C2-Naphthalenes	4.12	J	3.1	J	28.3		3.55	J	3	J	16.8	
	C2-Phenanthrenes/Anthracenes	3.45	J	3.55	J	-2.9		2.13	J	2.93	J	-31.6	
	C3-Chrysenes	0.27	J	0.07	J	117.6		0.17	J	0.11	J	42.9	
	C3-Dibenzothiophenes	0.05	J	0.03	J	50.0		0.05	J	0.06	J	-18.2	
	C3-Fluorenes	0.55	J	1.62	J	-98.6		0.09	J	0.39	J	-125.0	
	C3-Naphthalenes	3.12	J	2.48	J	22.9		1.82	J	2.82	J	-43.1	
	C3-Phenanthrenes/Anthracenes	1.72	J	0.3	J	140.6		0.08	J	0.24	J	-100.0	
	C4-Chrysenes	0.62	J	0.12	J	135.1		0.02	J	0.22	J	-166.7	
	C4-Naphthalenes	0.3	J	3.98	J	-172.0		0.11	J	2.05	J	-179.6	
	C4-Phenanthrenes/Anthracenes	0.46	J	0.06	J	153.8		0.04	J	0.11	J	-93.3	
	Chrysene	11.32		9.37	J	18.8		3.05	J	4.82	J	-45.0	
	Dibenzo(a,h)anthracene	0.27	J	0.36	J	-28.6		0.09	J	0.23	J	-87.5	
	Dibenzothiophene	0.57	J	0.61	J	-6.8		0.44	J	0.3	J	37.8	
	Fluoranthene	17.57		16.59		5.7		6.42	J	6.96	J	-8.1	
	Fluorene	2.78	J	2	J	32.6		1.93	J	1.17	J	49.0	
	Indeno(1,2,3-c,d)pyrene	3.31	J	3.26	J	1.5		1.39	J	1.9	J	-31.0	
	Naphthalene	7.3	J	5.99	J	19.7		5.09	J	4.68	J	8.4	
	Perylene	3.57	J	4.14	J	-14.8		3.25	J	2.66	J	20.0	
	Phenanthrene	8.36	J	7.3	J	13.5		2.73	J	2.86	J	-4.7	
	Pyrene	14.24		13.14	J	8.0		5.06	J	5.6	J	-10.1	

ND - Compound not detected.

NC - RPD not calculated.

APPENDIX A

QUALIFIED LABORATORY RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO20 . PORTSMOUTH
SOIL DATA
GERG
SDG: T1174

SAMPLE NUMBER:	OU4-LJ-M09-100A			OU4-LJ-M10-100A			OU4-LJ-M11-100A			OU4-LJ-M12-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36928			C36929			C36930			C36931		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.5 %			20.7 %			19.9 %			20.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	1.49	J	P	1.57	J	P	0.81	J	P	1.09	J	P
1-METHYLNAPHTHALENE	3.35	J	P	4.73	J	P	2.98	J	P	7.78	J	R
1-METHYLPHENANTHRENE	1.23	J	P	1.40	J	P	0.52	J	P	1.16	J	P
2,6-DIMETHYLNAPHTHALENE	1.57	J	P	2.04	J	P	1.63	J	GP	1.84	J	P
2-METHYLNAPHTHALENE	4.77	J	P	5.51	J	P	3.67	J	P	9.88	J	R
ACENAPHTHENE	1.48	J	CP	1.14	J	CP	0.65	J	CG	2.30	J	CP
ACENAPHTHYLENE	0.25	J	CEP	0.73	J	P	0.56	J	CEP	1.02	J	CEP
ANTHRACENE	2.08	J	CEP	2.09	J	CE	0.61	J	CEP	2.15	J	CEP
BENZO(A)ANTHRACENE	13.0			6.45	J	CE	1.46	J	P	2.79	J	P
BENZO(A)PYRENE	23.6			14.1			1.88	J	GP	2.48	J	P
BENZO(B)FLUORANTHENE	21.9			10.3			1.90	J	P	3.55	J	P
BENZO(E)PYRENE	14.5			7.12			3.11	J	P	1.93	J	P
BENZO(G,H,I)PERYLENE	10.3			6.60			2.63	J	P	1.60	J	P
BENZO(K)FLUORANTHENE	11.7			4.01	J	P	1.40	J	GP	0.87	J	P
BIPHENYL	1.74	J	P	1.83	J	P	2.07	J	P	1.84	J	P
C1-CHRYSENES	5.22	J	P	2.98	J	P	0.10	J	GP	1.54	J	P
C1-DIBENZOTHIOPHENES	1.19	J	P	0.70	J	P	0.74	J	GP	0.97	J	P
C1-FLUORANTHENES/PYRENES	9.03	J	P	6.10	J	P	3.58	J	P	3.67	J	P
C1-FLUORENES	3.69	J	P	5.23	J	P	3.61	J	P	5.61	J	P
C1-NAPHTHALENES	8.12	J	P	10.2	J	P	6.65	J	P	17.7		
C1-PHENANTHRENES/ANTHRACENES	4.02	J	P	4.53	J	P	3.22	J	P	3.64	J	P
C2-CHRYSENES	1.52	J	P	1.22	J	P	0.07	J	P	0.02	J	P
C2-DIBENZOTHIOPHENES	0.02	J	P	0.03	J	P	0.02	J	P	0.02	J	P
C2-FLUORENES	4.29	J	P	2.99	J	P	2.38	J	P	3.97	J	P
C2-NAPHTHALENES	3.91	J	P	5.69	J	P	3.55	J	P	10.9	J	P
C2-PHENANTHRENES/ANTHRACENES	3.64	J	P	3.29	J	P	2.13	J	P	2.29	J	P
C3-CHRYSENES	0.05	J	P	0.05	J	P	0.17	J	P	0.24	J	P
C3-DIBENZOTHIOPHENES	0.04	J	P	0.03	J	P	0.05	J	P	0.03	J	P
C3-FLUORENES	0.15	J	P	0.04	J	P	0.09	J	GP	0.49	J	P
C3-NAPHTHALENES	2.56	J	P	4.08	J	P	1.82	J	P	7.24	J	P
C3-PHENANTHRENES/ANTHRACENES	1.38	J	P	1.11	J	P	0.08	J	GP	0.06	J	P
C4-CHRYSENES	0.03	J	P	0.06	J	P	0.02	J	GP	0.07	J	P
C4-NAPHTHALENES	0.22	J	P	0.11	J	P	0.11	J	GP	0.19	J	P

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1174

SAMPLE NUMBER:	OU4-LJ-M09-100A	OU4-LJ-M10-100A	OU4-LJ-M11-100A	OU4-LJ-M12-100A
SAMPLE DATE:	09/07/00	09/07/00	09/07/00	09/07/00
LABORATORY ID:	C36928	C36929	C36930	C36931
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	21.5 %	20.7 %	19.9 %	20.5 %
UNITS:	NG/G	NG/G	NG/G	NG/G
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	0.01	J	P	0.06	J	P	0.04	J	GP	0.06	J	P
CHRYSENE	22.3			11.4			3.05	J	P	4.87	J	P
DIBENZO(A,H)ANTHRACENE	0.34	J	P	0.27	J	P	0.09	J	GP	0.07	J	P
DIBENZOTHIOPHENE	0.72	J	P	0.46	J	P	0.44	J	P	0.86	J	P
FLUORANTHENE	23.6			19.4			6.42	J	P	19.9		
FLUORENE	2.31	J	CP	2.20	J	CP	1.93	J	CP	3.72	J	CP
INDENO(1,2,3-CD)PYRENE	14.4	J	C	6.70	J	C	1.39	J	CP	1.28	J	CP
NAPHTHALENE	7.21	J	EP	8.15	J	EP	5.09	J	EP	10.2	J	CEPR
PERYLENE	9.92			5.05	J	P	3.25	J	P	1.35	J	P
PHENANTHRENE	6.15	J	P	4.97	J	P	2.73	J	P	8.77	J	P
PYRENE	22.7			15.2			5.06	J	P	11.6		

SAMPLE NUMBER:	OU4-LJ-M13-100A			OU4-LJ-M14-100A			OU4-LJ-R01-100A			OU4-LJ-R02-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36932			C36933			C36934			C36935		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.4 %			21.3 %			22.4 %			21.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	1.94	J	P	1.63	J	P	0.72	J	P	1.07	J	P
1-METHYLNAPHTHALENE	10.2	J	R	13.0	J	R	5.81	J	P	4.22	J	P
1-METHYLPHENANTHRENE	6.24	J	P	2.68	J	P	0.60	J	P	1.18	J	P
2,6-DIMETHYLNAPHTHALENE	2.76	J	P	2.32	J	P	2.20	J	P	1.71	J	P
2-METHYLNAPHTHALENE	14.5	J	R	18.3	J	R	7.27			6.23	J	P
ACENAPHTHENE	6.71	J	CP	4.00	J	CP	1.16	J	CP	1.02	J	CP
ACENAPHTHYLENE	1.11	J	CEP	2.61	J	CEP	0.84	J	CEP	0.74	J	CEP
ANTHRACENE	10.8	J	CEP	6.55	J	CEP	0.81	J	EP	1.22	J	EP
BENZO(A)ANTHRACENE	33.3			12.4			1.70	J	P	4.73	J	P
BENZO(A)PYRENE	16.2			17.3			2.14	J	P	8.32		
BENZO(B)FLUORANTHENE	28.6			15.6			3.09	J	P	10.1		
BENZO(E)PYRENE	15.3			9.83			3.03	J	P	7.01		
BENZO(G,H,I)PERYLENE	5.60			6.28			1.85	J	P	3.56	J	P
BENZO(K)FLUORANTHENE	9.63			7.54			2.31	J	P	3.98	J	P
BIPHENYL	2.21	J	P	2.81	J	P	2.12	J	P	2.03	J	P
C1-CHRYSENES	11.3	J	P	8.05	J	P	0.11	J	P	4.06	J	P
C1-DIBENZOTHIOPHENES	1.94	J	P	1.05	J	P	0.81	J	P	0.52	J	P
C1-FLUORANTHENES/PYRENES	26.6			11.9	J	P	4.67	J	P	8.81	J	P
C1-FLUORENES	7.36	J	P	4.90	J	P	4.15	J	P	4.21	J	P
C1-NAPHTHALENES	24.7			31.3			13.1			10.5	J	P
C1-PHENANTHRENES/ANTHRACENES	21.5			8.66	J	P	2.97	J	P	4.38	J	P
C2-CHRYSENES	3.99	J	P	4.27	J	P	0.20	J	P	1.80	J	P
C2-DIBENZOTHIOPHENES	1.38	J	P	0.04	J	P	0.03	J	P	0.30	J	P
C2-FLUORENES	0.14	J	P	6.25	J	P	2.46	J	P	2.36	J	P
C2-NAPHTHALENES	18.1	J	P	18.6	J	P	5.52	J	P	4.23	J	P
C2-PHENANTHRENES/ANTHRACENES	10.7	J	P	5.48	J	P	3.22	J	P	3.85	J	P
C3-CHRYSENES	0.09	J	P	0.03	J	P	0.15	J	P	0.03	J	P
C3-DIBENZOTHIOPHENES	1.56	J	P	0.06	J	P	0.03	J	P	0.16	J	P
C3-FLUORENES	0.49	J	P	0.62	J	P	0.97	J	P	0.30	J	P
C3-NAPHTHALENES	11.6	J	P	8.57	J	P	4.71	J	P	3.06	J	P
C3-PHENANTHRENES/ANTHRACENES	5.22	J	P	1.83	J	P	0.99	J	P	1.20	J	P
C4-CHRYSENES	0.06	J	P	0.06	J	P	0.06	J	P	0.11	J	P
C4-NAPHTHALENES	5.89	J	P	1.58	J	P	1.74	J	P	1.79	J	P

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1174

SAMPLE NUMBER:	OU4-LJ-M13-100A			OU4-LJ-M14-100A			OU4-LJ-R01-100A			OU4-LJ-R02-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36932			C36933			C36934			C36935		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.4 %			21.3 %			22.4 %			21.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	0.12	J	P	0.03	J	P	0.08	J	P	0.05	J	P
CHRYSENE	41.4			19.4			5.16	J	P	15.1		
DIBENZO(A,H)ANTHRACENE	0.70	J	P	0.23	J	P	0.07	J	P	0.24	J	P
DIBENZOTHIOPHENE	3.06	J	CP	1.71	J	CP	0.38	J	CP	0.35	J	CP
FLUORANTHENE	127			37.9			11.4			20.7		
FLUORENE	10.8	J	CP	8.22	J	CP	1.78	J	CP	1.76	J	CP
INDENO(1,2,3-CD)PYRENE	8.12	J	C	5.78	J	C	0.71	J	CP	3.42	J	C
NAPHTHALENE	15.4	J	EPR	16.3	J	EPR	7.86	J	EP	8.48	J	EP
PERYLENE	9.55			6.24			3.55	J	P	4.51	J	P
PHENANTHRENE	62.5	J	C	24.5	J	C	3.05	J	CP	3.43	J	CP
PYRENE	89.0			34.4			10.3			18.6		

SAMPLE NUMBER:	OU4-LJ-R03-100A			OU4-LJ-R04-100A			OU4-MU-M10-100A-LD			OU4-MU-M11-200A-LD		
SAMPLE DATE:	09/07/00			09/07/00			08/29/00			08/29/00		
LABORATORY ID:	C36936			C36937			C36940			C36943		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.3 %			21.3 %			11.6 %			11.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	1.15	J	P	1.52	J	P	1.92	J	P	2.06	J	P
1-METHYLNAPHTHALENE	3.40	J	P	9.13	J	R	2.67	J	GP	2.68	J	GP
1-METHYLPHENANTHRENE	1.50	J	P	0.62	J	P	2.60	J	P	2.01	J	GP
2,6-DIMETHYLNAPHTHALENE	1.53	J	P	1.63	J	P	2.22	J	GP	2.19	J	P
2-METHYLNAPHTHALENE	4.95	J	P	10.2	J	R	4.44			4.65	J	G
ACENAPHTHENE	0.72	J	CP	0.71	J	CP	3.62	J	CGP	5.98	J	CP
ACENAPHTHYLENE	0.67	J	CEP	0.64	J	CEP	8.02	J	CEG	11.1	J	CE
ANTHRACENE	1.39	J	EP	0.84	J	EP	14.0	J	CEG	19.5	J	CE
BENZO(A)ANTHRACENE	4.94	J	P	1.17	J	P	13.3			14.4		
BENZO(A)PYRENE	8.07			1.63	J	P	13.7			9.16		
BENZO(B)FLUORANTHENE	7.25			2.75	J	P	20.4			22.8		
BENZO(E)PYRENE	4.95	J	P	1.80	J	P	18.3			21.1		
BENZO(G,H,I)PERYLENE	2.80	J	P	0.73	J	P	12.5			10.5		
BENZO(K)FLUORANTHENE	4.67	J	P	2.31	J	P	11.0	J	G	9.39		
BIPHENYL	1.82	J	P	1.34	J	P	1.88	J	P	1.63	J	GP
C1-CHRYSENES	2.72	J	P	0.13	J	P	10.1	J	P	12.0	J	GP
C1-DIBENZOTHIOPHENES	0.89	J	P	0.28	J	P	1.65	J	P	1.31	J	GP
C1-FLUORANTHENES/PYRENES	5.98	J	P	3.19	J	P	15.5			19.6		
C1-FLUORENES	3.86	J	P	5.27	J	P	8.60	J	P	14.1	J	P
C1-NAPHTHALENES	8.35	J	P	19.3			7.11	J	GP	7.33	J	GP
C1-PHENANTHRENES/ANTHRACENES	5.36	J	P	3.21	J	P	12.8			11.9		
C2-CHRYSENES	0.83	J	P	0.13	J	P	7.58	J	P	7.47	J	GP
C2-DIBENZOTHIOPHENES	0.03	J	P	0.03	J	P	3.13	J	GP	2.51	J	GP
C2-FLUORENES	3.38	J	P	3.81	J	P	11.8	J	P	13.2	J	P
C2-NAPHTHALENES	3.85	J	P	13.0	J	P	5.22	J	GP	6.45	J	GP
C2-PHENANTHRENES/ANTHRACENES	4.30	J	P	2.90	J	P	12.9			14.9	J	G
C3-CHRYSENES	0.08	J	P	0.18	J	P	0.05	J	P	0.07	J	GP
C3-DIBENZOTHIOPHENES	0.09	J	P	0.03	J	P	2.56	J	P	3.45	J	GP
C3-FLUORENES	0.27	J	P	0.24	J	P	15.8	J	P	15.4	J	GP
C3-NAPHTHALENES	3.19	J	P	10.2	J	P	5.07	J	P	7.14	J	GP
C3-PHENANTHRENES/ANTHRACENES	0.06	J	P	0.04	J	P	8.59	J	P	9.23	J	GP
C4-CHRYSENES	0.08	J	P	0.13	J	P	0.06	J	P	0.05	J	GP
C4-NAPHTHALENES	0.13	J	P	0.16	J	P	7.40	J	GP	8.01	J	GP

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1174

SAMPLE NUMBER:	OU4-LJ-R03-100A			OU4-LJ-R04-100A			OU4-MU-M10-100A-LD			OU4-MU-M11-200A-LD		
SAMPLE DATE:	09/07/00			09/07/00			08/29/00			08/29/00		
LABORATORY ID:	C36936			C36937			C36940			C36943		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.3 %			21.3 %			11.6 %			11.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	0.05	J	P	0.03	J	P	4.65	J	P	6.15	J	GP
CHRYSENE	11.2			4.83	J	P	21.0			22.2		
DIBENZO(A,H)ANTHRACENE	0.07	J	P	0.08	J	P	1.80	J	P	1.44	J	P
DIBENZOTHIOPHENE	0.40	J	CP	0.36	J	CP	1.07	J	CP	0.67	J	CP
FLUORANTHENE	16.5			9.78			42.3			35.7		
FLUORENE	1.91	J	CP	2.15	J	CP	5.85	J	CGP	4.86	J	CP
INDENO(1,2,3-CD)PYRENE	2.72	J	CP	0.73	J	CP	9.83	J	C	7.18	J	C
NAPHTHALENE	6.15	J	EP	9.05	J	EPR	5.46	J	EGP	6.28	J	EGP
PERYLENE	4.14	J	P	1.97	J	P	8.10			9.69	J	G
PHENANTHRENE	4.11	J	C	3.99	J	CP	15.7	J	C	9.47	J	C
PYRENE	14.3			7.84			37.5			32.2		

SAMPLE NUMBER:	OU4-MU-M12-100A-LD			OU4-MU-M13-100A-LD								
SAMPLE DATE:	08/29/00			08/29/00			/ /			/ /		
LABORATORY ID:	C36941			C36942								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	11.5 %			13.0 %			100.0 %			100.0 %		
UNITS:	NG/G			NG/G								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	5.68	J	GP	94.1								
1-METHYLNAPHTHALENE	22.1	J	G	88.7								
1-METHYLPHENANTHRENE	30.7	J	G	457								
2,6-DIMETHYLNAPHTHALENE	11.8			130								
2-METHYLNAPHTHALENE	34.0	J	G	130								
ACENAPHTHENE	213	J	CG	1093	J	C						
ACENAPHTHYLENE	27.3	J	CEG	289	J	CE						
ANTHRACENE	195	J	G	2022	J	E						
BENZO(A)ANTHRACENE	196	J	G	3540								
BENZO(A)PYRENE	162	J	G	2835								
BENZO(B)FLUORANTHENE	246	J	G	3622								
BENZO(E)PYRENE	131	J	G	1681								
BENZO(G,H,I)PERYLENE	86.7	J	G	793								
BENZO(K)FLUORANTHENE	101	J	G	1198	J	G						
BIPHENYL	11.2			72.7								
C1-CHRYSENES	69.1	J	G	1661								
C1-DIBENZOTHIOPHENES	9.77	J	G	87.3								
C1-FLUORANTHENES/PYRENES	145	J	G	2474								
C1-FLUORENES	43.7	J	G	556								
C1-NAPHTHALENES	56.1	J	G	218								
C1-PHENANTHRENES/ANTHRACENES	108	J	G	1522								
C2-CHRYSENES	23.1	J	G	341								
C2-DIBENZOTHIOPHENES	5.61	J	G	57.8								
C2-FLUORENES	21.3	J	G	226								
C2-NAPHTHALENES	26.7	J	G	240								
C2-PHENANTHRENES/ANTHRACENES	47.6	J	G	569								
C3-CHRYSENES	0.14	J	P	6.98	J	GP						
C3-DIBENZOTHIOPHENES	6.28	J	G	29.5								
C3-FLUORENES	25.6	J	G	122								
C3-NAPHTHALENES	14.5	J	G	190								
C3-PHENANTHRENES/ANTHRACENES	22.5	J	G	242								
C4-CHRYSENES	1.50	J	GP	37.0	J	G						
C4-NAPHTHALENES	9.98	J	GP	98.0								

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1174

SAMPLE NUMBER:	OU4-MU-M12-100A-LD	OU4-MU-M13-100A-LD		
SAMPLE DATE:	08/29/00	08/29/00	/ /	/ /
LABORATORY ID:	C36941	C36942		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	11.5 %	13.0 %	100.0 %	100.0 %
UNITS:	NG/G	NG/G		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	6.08	J	GP	67.0								
CHRYSENE	263	J	G	4491								
DIBENZO(A,H)ANTHRACENE	16.7	J	G	273								
DIBENZOTHIOPHENE	25.2	J	CG	199	J	C						
FLUORANTHENE	768	J	G	7958								
FLUORENE	158	J	CG	1668	J	C						
INDENO(1,2,3-CD)PYRENE	96.9	J	CG	985	J	C						
NAPHTHALENE	70.3	J	EG	104	J	E						
PERYLENE	46.9	J	G	522								
PHENANTHRENE	559	J	CG	5222	J	C						
PYRENE	556	J	G	5246								

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 12, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PCBs and PESTICIDES**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – T1174

SAMPLES: 14/Tissue/

OU4-LJ-M09-100A	OU4-LJ-M10-100A	OU4-LJ-M11-100A
OU4-LJ-M12-100A	OU4-LJ-M13-100A	OU4-LJ-M14-100A
OU4-LJ-R01-100A	OU4-LJ-R02-100A	OU4-LJ-R03-100A
OU4-LJ-R04-100A	OU4-MU-M10-100A-LD	OU4-MU-M11-200A-LD
OU4-MU-M12-100A-LD	OU4-MU-M13-100A-LD	

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG T1174 consisting of fourteen (14) tissue samples were included in this SDG. Samples were analyzed for pesticides and PCBs. Several field duplicates were included in this SDG: OU4-MU-M10-100A-LD and OU4-MU-M10-100A (in SDG T1173); OU4-MU-M11-200A-LD and OU4-MU-M11-200A (in SDG T1172); OU4-MU-M12-100A-LD and OU4-MU-M12-100A (in SDG T1172); and OU4-MU-M13-100A-LD and OU4-MU-M13-100A (in SDG T1173).

The samples were collected by Tetra Tech NUS on August 28-30, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using GERG SOP 9810 and 9805 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * Calibration
- Method Blank Results
- * Surrogate Standard Recoveries
- * Instrument Performance
- * Compound Identification
- Compound Quantitation
- Matrix Spike/Matrix Spike Duplicate Results
- Standard Reference Materials
- Field Duplicate Results

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANKS

The maximum concentration of contaminants found in the laboratory method blank analysis is summarized below.

Compound	Maximum Concentration	Sediment Action Level
Tetrachlorobenzene, 1245-	0.11 ng/g	0.55 ng/g
Pentachlorobenzene	3.06 ng/g	15.3 ng/g
Pentachloroanisole	0.17 ng/g	0.85 ng/g
PCB 28	0.44 ng/g	2.2 ng/g
PCB 44	0.25 ng/g	1.25 ng/g
PCB 153/132	0.51 ng/g	2.55 ng/g
PCB 138/160	0.39 ng/g	1.95 ng/g
PCB180	0.25 ng/g	1.25 ng/g
PCB170/190	0.38 ng/g	1.9 ng/g
PCB 77	0.02 ng/g	0.1 ng/g

Samples Affected: All

Blank Actions:

Dilution factors, percent solids, and sample aliquot used for analysis were taken into consideration prior to the application of all action levels. Positive results for all compounds below the blank action level were qualified at the reported concentration.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike duplicate (MSD) recovery of Endosulfan II fell below the lower quality control limit. No qualifiers were assigned on this basis.

STANDARD REFERENCE MATERIAL RESULTS

Recovery of PCB 180 exceeded the upper quality control limit. Positive results for this compound were qualified as estimated, J, in all samples. Recoveries of Dieldrin, 2,4-DDE, and 4,4'-DDT fell below the lower quality control limit. Positive and nondetected results were qualified as estimated, J and UJ, in all samples.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

FIELD DUPLICATE RESULTS

Several results exceeded the 50% relative percent difference (RPD) criteria in the field duplicate pair OU4-MU-M10-100A and OU4-MU-M10-100A-LD. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-MU-M11-200A and OU4-MU-M11-200A-LD. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-MU-M12-100A and OU4-MU-M12-100A-LD. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-MU-M13-100A and OU4-MU-M13-100A-LD. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses. Standard reference material recoveries were outside the quality control limits for several compounds.

Other Factors Affecting Data Quality: Field duplicate results exceeded the 50% RPD criteria.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

	OU4-MU-M10-100A SDG T1173	OU4-MU-M10-100A-LD SDG T1174	RPD
1,2,3,4-Tetrachlorobenzene	0.22 J	0.39	-56
1,2,4,5-Tetrachlorobenzene	0.26 J	2.64 U*	NC
2,4'-DDD	4.73	5.31	-12
2,4'-DDE	0.49	0.56	-13
2,4'-DDT	9.26	9.57	-3
4,4'-DDD	7.14	6.52	9
4,4'-DDE	8.39	10.67	-24
4,4'-DDT	15.48	19.18	-21
Aldrin	0.4 U	0.09 J	NC
a-BHC	0.28 U	0.41	200
a-Chlordane	2.3	3.26	-35
b-BHC	0.92	28.21	-187
Chlorpyrifos	2.64 U	2.83 U	NA
cis-Nonachlor	0.08 J	0.45	-140
d-BHC	0.16 U	0.05 J	NC
Dieldrin	0.5	0.47	6
Endosulfan II	0.16 J	0.32 U	NC
Endrin	0.83 U	0.89 U	NA
g-BHC	0.25 U	0.14 J	NC
g-Chlordane	1.79	2.41	-30
Heptachlor	0.23 J	0.25 J	-8
Heptachlor epoxide	0.32 U	0.34 U	NA
Hexachlorobenzene	0.05 J	0.38 J	-153
Mirex	0.73 U	0.79 U	NA
Oxychlordane	0.34 U	0.36 U	NA
PCB-101/90	4.13	4.48	-8
PCB-105	1.44	1.2	18
PCB-114	1.12 U	1.2 U	NA
PCB-118	3.82	4.75	-22
PCB-126	1.12 U	1.2 U	NA
PCB-128	0.91	1.2	-27
PCB-138/160	5.59 U*	7.13 U*	NA
PCB-149/123	3.28	3.6	-9
PCB-153/132	7.6 U*	9.64 U*	NA
PCB-156	0.5 J	0.71 J	-35
PCB-167	0.4 J	0.66 J	-49
PCB-169	1.12 U	1.2 U	NA
PCB-170/190	0.22 U*	0.27 U*	NA
PCB-18/17	2.94 U	3.15 U	NA
PCB-180	2.72 U*	3.36 U*	NA
PCB-187	2.49	3.02	-19
PCB-189	1.12 U	1.2 U	NA
PCB-195/208	0.93 U	1 U	NA
PCB-206	0.97 U	1.04 U	NA
PCB-209	1.26 U	1.36 U	NA
PCB-28	0.37 J	0.68 U*	NC
PCB-44	0.41 U*	0.68 U*	NA
PCB-52	1.31	1.86	-35
PCB-66	0.37 J	0.23 J	47
PCB-77	1.12 U	1.2 U	NA
PCB-8/5	7.68	3.2	82
PCB-81	1.12 U	1.2 U	NA
Pentachloroanisole	1.54 U*	0.63 U*	NA
Pentachlorobenzene	0.57 U*	2.35 U*	NA
trans-Nonachlor	1.34	1.66	-21
PCB-201/157/173	0.86 U	0.93 U	NA

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-M11-200A SDG T1172	OU4-M11-200A-LD SDG T1174	RPD
1,2,3,4-Tetrachlorobenzene	0.19 U*	0.46	200
1,2,4,5-Tetrachlorobenzene	0.64 U*	3.85 U*	NA
2,4'-DDD	2.28	2.48	-8
2,4'-DDE	0.43 U	0.72	200
2,4'-DDT	2.88	2.19	27
4,4'-DDD	3.13	2.74	13
4,4'-DDE	10.19	7.25	34
4,4'-DDT	1.14	1.15	-1
Aldrin	0.49 U	0.17 J	NC
a-BHC	0.38	0.39	-3
a-Chlordane	1.28	1.2	6
b-BHC	3.36 U*	8.68	200
Chlorpyrifos	3.2 U	2.88 U	NA
cis-Nonachlor	3	3.18	-6
d-BHC	0.2 U	0.14 J	NC
Dieldrin	1.56	0.98	46
Endosulfan II	0.93	0.98	-5
Endrin	1.01 U	0.91 U	NA
g-BHC	0.14 J	0.15 J	-7
g-Chlordane	0.51	0.57	-11
Heptachlor	0.56 U	0.14 J	NC
Heptachlor epoxide	0.39 U	0.35 U	NA
Hexachlorobenzene	0.32 J	0.39 J	-20
Mirex	0.89 U	0.8 U	NA
Oxychlordane	0.41 U	0.37 U	NA
PCB-101/90	35.62	27.96	24
PCB-105	15.3	5.79	90
PCB-114	1.36 U	1.22 U	NA
PCB-118	32.95	25.53	25
PCB-126	1.36 U	1.22 U	NA
PCB-128	9.86	7.6	26
PCB-138/160	46.35	36.02	25
PCB-149/123	23.91	15.29	44
PCB-153/132	44.85	35.99	22
PCB-156	2.84	5.08	-57
PCB-167	3.28	2.72	19
PCB-169	0.38 U*	1.22 U	NA
PCB-170/190	0.74 U*	1 U*	NA
PCB-18/17	3.56 U	3.21 U	NA
PCB-180	9.97	6.37 U*	200
PCB-187	8.5	6.1	33
PCB-189	1.36 U	1.22 U	NA
PCB-195/208	1.13 U	1.02 U	NA
PCB-206	1.18 U	1.06 U	NA
PCB-209	1.54 U	1.38 U	NA
PCB-28	1.11	1.07 U*	200
PCB-44	1.96 U*	1.94 U*	NA
PCB-52	6.08	4.19	37
PCB-66	2.32	1.14 J	68
PCB-77	1.08 J	1.22 U	NC
PCB-8/5	7.95	0.6 J	172
PCB-81	0.74 J	1.22 U	NC
Pentachloroanisole	1.66 U*	0.88 U*	NA
Pentachlorobenzene	1.3 U*	2.49 U*	NA
trans-Nonachlor	1.39	1.07	26
PCB-201/157/173	1.05 U	0.98	NC

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-MU-M12-100A SDG T1172	OU4-MU-M12-100A-LD SDG T1174	RPD
1,2,3,4-Tetrachlorobenzene	0.18 U*	0.5	200
1,2,4,5-Tetrachlorobenzene	0.79 U*	1.63 U*	NA
2,4'-DDD	23.42	2.1	167
2,4'-DDE	0.43 U	0.25 J	NC
2,4'-DDT	2.48	1.16	73
4,4'-DDD	4.97	1.87	91
4,4'-DDE	9.33	5.51	51
4,4'-DDT	1.21	0.82	38
Aldrin	0.5 U	0.13 J	NC
a-BHC	0.51	0.76	-39
a-Chlordane	1.41	1.69	-18
b-BHC	1.5 U*	5.4	200
Chlorpyrifos	3.25 U	2.82 U	NA
cis-Nonachlor	2.01	1.25	47
d-BHC	0.2 U	0.17 U	NA
Dieldrin	1.48	0.51	97
Endosulfan II	1.38	0.32 U	200
Endrin	1.03 U	0.89 U	NA
g-BHC	0.31 U	0.11 J	NC
g-Chlordane	0.41	0.62	-41
Heptachlor	0.56 U	0.24 J	NC
Heptachlor epoxide	0.4 U	0.34 U	NA
Hexachlorobenzene	0.23 J	0.25 J	-8
Mirex	0.91 U	0.78 U	NA
Oxychlordane	0.42 U	0.36 U	NA
PCB-101/90	19.36	12.3	45
PCB-105	8.82	2.78	104
PCB-114	1.38 U	1.2 U	NA
PCB-118	17.1	9.68	55
PCB-126	1.38 U	1.2 U	NA
PCB-128	4.38	2.75	46
PCB-138/160	30.29	19.32	44
PCB-149/123	21.12	11.16	62
PCB-153/132	42.42	27.77	42
PCB-156	2.84	1.27	76
PCB-167	2.65	1.45	59
PCB-169	1.38 U	1.2 U	NA
PCB-170/190	2.34 U*	1.03 U*	NA
PCB-18/17	4.97	3.14 U	200
PCB-180	12.65	6.95 U*	200
PCB-187	21.36	12.74	51
PCB-189	1.38 U	1.2 U	NA
PCB-195/208	0.28 J	0.12 J	80
PCB-206	1.19 U	1.03 U	NA
PCB-209	1.56 U	0.89 J	NC
PCB-28	3.5	2.67 U*	200
PCB-44	4.05 U*	3.26 U*	NA
PCB-52	7.03	4.67	40
PCB-66	6.3	3.2	65
PCB-77	2.78	1.2 U	200
PCB-8/5	6.11	2.27	92
PCB-81	0.26 J	0.11 J	81
Pentachloroanisole	0.88 U*	0.46 U*	NA
Pentachlorobenzene	0.78 U*	2.84 U*	NA
trans-Nonachlor	0.95	1.21	-24
PCB-201/157/173	1.98	1.73	13

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-MU-M13-100A SDG T1173	OU4-MU-M13-100A-LD SDG T1174	RPD
1,2,3,4-Tetrachlorobenzene	0.52	0.48	8
1,2,4,5-Tetrachlorobenzene	0.31 J	4.75 U*	NC
2,4'-DDD	364 JU	1.43	198
2,4'-DDE	0.34	0.6	-55
2,4'-DDT	0.33	1.39	-123
4,4'-DDD	4.28	3.54	19
4,4'-DDE	11.06	8.04	32
4,4'-DDT	3.52	1.32	91
Aldrin	0.39 U	0.59	200
a-BHC	2.01	1.67	18
a-Chlordane	3.18	1.73	59
b-BHC	6.25	8.02	-25
Chlorpyrifos	2.56 U	2.53 U	NA
cis-Nonachlor	2.02	2.09	-3
d-BHC	0.15 U	0.03 J	NC
Dieldrin	0.3 U	0.3 U	NA
Endosulfan II	6.28	1.39	128
Endrin	0.81 U	0.8 U	NA
g-BHC	0.24 U	0.18 J	NC
g-Chlordane	0.31 U	0.82	200
Heptachlor	0.44 U	0.31 J	NC
Heptachlor epoxide	0.31 U	0.31 U	NA
Hexachlorobenzene	0.63	0.13 J	132
Mirex	0.71 U	0.06 J	NC
Oxychlordane	18.9	1.46	171
PCB-101/90	15.53	10.49	39
PCB-105	6.46	2.37	93
PCB-114	1.08 U	1.07 U	NA
PCB-118	24.11	11.7	69
PCB-126	1.08 U	1.07 U	NA
PCB-128	3.07	2.85	7
PCB-138/160	20.6	17.23	18
PCB-149/123	10.52	10.44	1
PCB-153/132	25.72	23.46	9
PCB-156	1.66	2.15	-26
PCB-167	5.85	2.72	73
PCB-169	1.08 U	1.07 U	NA
PCB-170/190	49.45	16.04	102
PCB-18/17	38.34	2.82 U	200
PCB-180	10.68	8.03 U*	200
PCB-187	10.71	8.32	25
PCB-189	1.08 U	0.72 J	NC
PCB-195/208	1.12	0.65 J	53
PCB-206	0.94 U	0.93 U	NA
PCB-209	1.22 U	1.21 U	NA
PCB-28	3.65	5.17 U*	NC
PCB-44	2.44 U*	2.21 U*	NA
PCB-52	4.84	8.79	-58
PCB-66	6.19	2.65	80
PCB-77	0.53 U*	1.07 U	NA
PCB-8/5	36.29	1.74 U	200
PCB-81	0.25 J	0.17 J	38
Pentachloroanisole	3.1 U*	0.85 U*	NA
Pentachlorobenzene	0.86 U*	2.77 U*	NA
trans-Nonachlor	1.47	1.21	19
PCB-201/157/173	1.12	2.16	-63

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1174

SAMPLE NUMBER:	OU4-LJ-M09-100A			OU4-LJ-M10-100A			OU4-LJ-M11-100A			OU4-LJ-M12-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36928			C36929			C36930			C36931		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.5 %			20.7 %			19.9 %			20.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	6.9			9.4			3.5			6.2		
1,2,4,5-TETRACHLOROBENZENE	0.93	U	A	0.14	U	A	1.5	U	A	0.68	U	A
2,4'-DDD	0.43	U		0.42	U		0.44	U		0.45	U	
2,4'-DDE	0.60	UJ	E	0.59	UJ	E	0.61	UJ	E	0.63	UJ	E
2,4'-DDT	0.55	U		0.54	U		0.56	U		0.58	U	
4,4'-DDD	0.52	U		0.51	U		0.53	U		0.55	U	
4,4'-DDE	1.5			1.3			1.8			0.87		
4,4'-DDT	0.80	UJ	E	0.78	UJ	E	0.81	UJ	E	0.83	UJ	E
ALDRIN	0.69	U		0.68	U		0.70	U		0.72	U	
ALPHA-BHC	0.49	U		0.48	U		1.0			0.51	U	
ALPHA-CHLORDANE	0.52	U		0.51	U		0.53	U		0.55	U	
BETA-BHC	0.44	U		0.44	U		0.22	J	P	0.47	U	
CHLORPYRIFOS	4.5	U		4.4	U		4.6	U		4.7	U	
CIS-NONACHLOR	0.47	U		0.47	U		0.48	U		0.50	U	
DELTA-BHC	0.28	U		0.27	U		0.28	U		0.29	U	
DIELDRIN	1.2	J	E	1.2	J	E	1.1	J	E	1.2	J	E
ENDOSULFAN II	0.52	U		0.51	U		0.53	U		0.55	U	
ENDRIN	1.4	U		1.4	U		1.5	U		1.5	U	
GAMMA-BHC (LINDANE)	0.43	U		0.42	U		0.44	U		0.080	J	P
GAMMA-CHLORDANE	0.55	U		0.54	U		0.56	U		0.58	U	
HEPTACHLOR	0.78	U		0.77	U		0.80	U		0.82	U	
HEPTACHLOR EPOXIDE	0.55	U		0.54	U		0.56	U		0.58	U	
HEXACHLOROBENZENE	0.18	J	P	0.18	J	P	0.32	J	P	0.19	J	P
MIREX	1.3	U		1.2	U		1.3	U		1.3	U	
OXYCHLORDANE	0.27	J	P	0.35	J	P	0.83			0.25	J	P
PCB-101/90	0.48	J	P	1.4	J	P	1.7	U		1.7	U	
PCB-105	0.43	J	P	0.42	J	P	0.43	J	P	0.23	J	P
PCB-114	1.9	U		1.9	U		1.9	U		2.0	U	
PCB-118	1.9	J	P	1.8	J	P	2.4	J	P	1.1	J	P
PCB-126	1.9	U		1.9	U		1.9	U		2.0	U	
PCB-128	0.34	J	P	0.37	J	P	0.48	J	P	1.5	U	
PCB-1[illegible]	2.5	U	A	2[illegible]	U	A	3.1	U	A	1.7	U	A
PCB-14[illegible]23	0.13	J	P	[illegible]	J	P	0.10	J	P	0.070	J	P

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SAMPLE NUMBER:	OU4-LJ-M09-100A			OU4-LJ-M10-100A			OU4-LJ-M11-100A			OU4-LJ-M12-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36928			C36929			C36930			C36931		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.5 %			20.7 %			19.9 %			20.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	3.4	U	A	3.6	U	A	4.4	U	A	2.2	U	A
PCB-156	1.9	U		1.9	U		1.9	U		2.0	U	
PCB-167	1.9	U		1.9	U		0.35	J	P	2.0	U	
PCB-169	1.9	U		1.9	U		1.9	U		0.030	J	P
PCB-170/190	0.57	U	A	1.4	U	A	0.80	U	A	0.99	U	A
PCB-18/17	1.6	J	P	0.63	J	P	5.1	U		0.34	J	P
PCB-180	1.1	U	A	1.0	U	A	1.0	U	A	0.58	U	A
PCB-187	1.2	J	P	1.0	J	P	1.4			0.57	J	P
PCB-189	1.9	U		1.9	U		1.9	U		2.0	U	
PCB-195/208	1.6	U		1.6	U		1.6	U		1.7	U	
PCB-201/157/173	1.5	U		1.4	U		1.5	U		1.5	U	
PCB-206	1.7	U		1.6	U		1.7	U		1.7	U	
PCB-209	0.16	J	P	2.1	U		2.2	U		2.3	U	
PCB-28	0.44	U	A	0.50	U	A	0.61	U	A	0.56	U	A
PCB-44	1.1	U		1.1	U		1.1	U		1.2	U	
PCB-52	1.3	U		1.3	U		1.3	U		1.4	U	
PCB-66	1.8	U		1.8	U		0.39	J	P	0.14	J	P
PCB-77	1.9	U		1.9	U		1.9	U		2.0	U	
PCB-8/5	3.0	J	P	1.6	J	P	3.1	J	P	0.51	J	P
PCB-81	1.9	U		1.9	U		1.9	U		2.0	U	
PENTACHLOROANISOLE	0.26	U	A	0.26	U	A	0.24	U	A	0.27	U	A
PENTACHLOROBENZENE	3.0	U	A	3.2	U	A	4.0	U	A	4.5	U	A
TRANS-NONACHLOR	0.10	J	P	0.14	J	P	0.11	J	P	0.10	J	P

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SAMPLE NUMBER:	OU4-LJ-M13-100A			OU4-LJ-M14-100A			OU4-LJ-R01-100A			OU4-LJ-R02-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36932			C36933			C36934			C36935		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.4 %			21.3 %			22.4 %			21.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	9.2			1.9			7.1			3.9		
1,2,4,5-TETRACHLOROBENZENE	0.58	U	A	0.84	U	A	0.73	U	A	0.48	U	A
2,4'-DDD	0.67			0.44	U		0.41	U		0.41	U	
2,4'-DDE	0.59	UJ	E	0.62	UJ	E	0.58	UJ	E	0.57	UJ	E
2,4'-DDT	0.54	U		0.57	U		0.53	U		0.19	J	P
4,4'-DDD	0.51	U		0.070	J	P	0.50	U		0.49	U	
4,4'-DDE	2.4			2.0			2.0			3.9		
4,4'-DDT	0.78	UJ	E	0.83	UJ	E	0.77	UJ	E	0.76	UJ	E
ALDRIN	0.68	U		0.71	U		0.67	U		0.65	U	
ALPHA-BHC	0.48	U		0.51	U		0.47	U		0.46	U	
ALPHA-CHLORDANE	0.51	U		0.23	J	P	0.21	J	P	0.49	U	
BETA-BHC	0.44	U		0.46	U		0.43	U		0.42	U	
CHLORPYRIFOS	4.4	U		4.7	U		4.3	U		4.3	U	
CIS-NONACHLOR	0.47	U		0.49	U		0.46	U		0.10	J	P
DELTA-BHC	0.27	U		0.29	U		0.27	U		0.26	U	
DIELDRIN	1.7	J	E	1.3	J	E	1.4	J	E	1.8	J	E
ENDOSULFAN II	0.51	U		0.54	U		0.50	U		0.49	U	
ENDRIN	1.4	U		1.5	U		1.4	U		1.4	U	
GAMMA-BHC (LINDANE)	0.050	J	P	0.44	U		0.41	U		0.41	U	
GAMMA-CHLORDANE	0.54	U		0.57	U		0.53	U		0.52	U	
HEPTACHLOR	0.77	U		0.81	U		0.75	U		0.74	U	
HEPTACHLOR EPOXIDE	0.54	U		0.57	U		0.53	U		0.52	U	
HEXACHLOROBENZENE	0.25	J	P	0.19	J	P	0.17	J	P	0.27	J	P
MIREX	1.2	U		1.3	U		1.2	U		1.2	U	
OXYCHLORDANE	0.11	J	P	0.49	J	P	0.61			0.86		
PCB-101/90	0.63	J	P	0.53	J	P	0.90	J	P	0.42	J	P
PCB-105	0.75	J	P	0.52	J	P	0.56	J	P	1.2	J	P
PCB-114	1.9	U		2.0	U		1.8	U		1.8	U	
PCB-118	3.2			2.7	J	P	2.6	J	P	5.0		
PCB-126	1.9	U		2.0	U		1.8	U		1.8	U	
PCB-128	0.58	J	P	0.44	J	P	0.45	J	P	0.91	J	P
PCB-1[illegible]	3.8	U	A	[illegible]	U	A	3.4	U	A	5.6	U	A
PCB-14[illegible],[illegible]23	0.25	J	P	[illegible]	J	P	0.25	J	P	0.15	J	P

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SAMPLE NUMBER:	OU4-LJ-M13-100A			OU4-LJ-M14-100A			OU4-LJ-R01-100A			OU4-LJ-R02-100A		
SAMPLE DATE:	09/07/00			09/07/00			09/07/00			09/07/00		
LABORATORY ID:	C36932			C36933			C36934			C36935		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.4 %			21.3 %			22.4 %			21.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	5.8	U	A	4.0	U	A	4.5	U	A	7.4	U	A
PCB-156	1.9	U		2.0	U		1.8	U		1.8	U	
PCB-167	1.9	U		2.0	U		1.8	U		0.55	J	P
PCB-169	1.9	U		2.0	U		1.8	U		0.050	J	P
PCB-170/190	1.5	U	A	0.64	U	A	0.93	U	A	0.82	U	A
PCB-18/17	0.84	J	P	5.2	U		4.8	U		0.88	J	P
PCB-180	2.8	U	A	0.99	U	A	1.3	U	A	1.8	U	A
PCB-187	8.1			1.0	J	P	1.9			2.4		
PCB-189	1.9	U		2.0	U		1.8	U		1.8	U	
PCB-195/208	8.1			1.7	U		1.5	U		0.16	J	P
PCB-201/157/173	1.5	U		1.5	U		1.4	U		1.4	U	
PCB-206	19			1.7	U		1.6	U		0.070	J	P
PCB-209	4.2			2.2	U		2.1	U		2.0	U	
PCB-28	0.81	U	A	0.61	U	A	0.59	U	A	0.050	U	A
PCB-44	0.27	J	P	1.2	U		0.15	J	P	0.63	J	P
PCB-52	1.3	U		1.4	U		1.3	U		1.2	U	
PCB-66	0.63	J	P	0.45	J	P	0.44	J	P	0.81	J	P
PCB-77	1.9	U		0.41	J	P	0.080	J	P	1.8	U	
PCB-8/5	0.54	J	P	2.2	J	P	1.8	J	P	1.4	J	P
PCB-81	1.9	U		0.25	J	P	1.8	U		1.8	U	
PENTACHLOROANISOLE	0.27	U	A	0.30	U	A	0.29	U	A	0.24	U	A
PENTACHLOROBENZENE	3.9	U	A	3.9	U	A	5.0	U	A	2.5	U	A
TRANS-NONACHLOR	0.33	U		0.20	J	P	0.16	J	P	0.18	J	P

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SAMPLE NUMBER:	OU4-LJ-R03-100A			OU4-LJ-R04-100A			OU4-MU-M10-100A-LD			OU4-MU-M11-200A-LD		
SAMPLE DATE:	09/07/00			09/07/00			08/29/00			08/29/00		
LABORATORY ID:	C36936			C36937			C36940			C36943		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.3 %			21.3 %			11.6 %			11.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	13			13			0.39	J	G	0.46	J	G
1,2,4,5-TETRACHLOROBENZENE	0.71	U	A	0.70	U	A	2.6	U	A	3.9	U	A
2,4'-DDD	0.41	U		0.42	U		5.3			2.5		
2,4'-DDE	0.58	UJ	E	0.59	UJ	E	0.56	J	E	0.72	J	EQ
2,4'-DDT	0.53	U		0.54	U		9.6			2.2		
4,4'-DDD	0.50	U		0.51	U		6.5			2.7		
4,4'-DDE	1.8			3.4			11			7.3		
4,4'-DDT	0.77	UJ	E	0.78	UJ	E	19	J	E	1.2	J	E
ALDRIN	0.67	U		0.68	U		0.090	J	P	0.17	J	P
ALPHA-BHC	0.47	U		0.48	U		0.41	J	G	0.39		
ALPHA-CHLORDANE	0.50	U		0.21	J	P	3.3			1.2		
BETA-BHC	0.43	U		0.44	U		28	J	G	8.7	J	G
CHLORPYRIFOS	4.3	U		4.4	U		2.8	U		2.9	U	
CIS-NONACHLOR	0.13	J	P	0.47	U		0.45	J	G	3.2		
DELTA-BHC	0.27	U		0.27	U		0.050	J	P	0.14	J	P
DIELDRIN	1.4	J	E	1.3	J	E	0.47	J	E	0.98	J	E
ENDOSULFAN II	0.50	U		0.51	U		0.33	U		0.98		
ENDRIN	1.4	U		1.4	U		0.90	U		0.91	U	
GAMMA-BHC (LINDANE)	0.41	U		0.42	U		0.14	J	P	0.15	J	P
GAMMA-CHLORDANE	0.53	U		0.54	U		2.4			0.57		
HEPTACHLOR	0.75	U		0.77	U		0.25	J	P	0.14	J	P
HEPTACHLOR EPOXIDE	0.53	U		0.54	U		0.35	U		0.35	U	
HEXACHLOROBENZENE	0.15	J	P	0.25	J	P	0.38	J	GP	0.39	J	P
MIREX	1.2	U		1.2	U		0.79	U		0.81	U	
OXYCHLORDANE	1.6			0.69			0.37	U		0.37	U	
PCB-101/90	0.38	J	P	0.48	J	P	4.5			28		
PCB-105	0.54	J	P	1.1	J	P	1.2			5.8	J	G
PCB-114	1.8	U		1.9	U		1.2	U		1.2	U	
PCB-118	1.7	J	P	3.9			4.8			26		
PCB-126	1.8	U		1.9	U		1.2	U		1.2	U	
PCB-12[illegible]	0.37	J	P	0.68	J	P	1.2			7.6		
PCB-1[illegible]0	2.2	U	A	[illegible]	U	A	7.1	U	A	36		
PCB-149/123	0.12	J	P	0.[illegible]	J	P	3.6			15		

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SAMPLE NUMBER:	OU4-LJ-R03-100A			OU4-LJ-R04-100A			OU4-MU-M10-100A-LD			OU4-MU-M11-200A-LD		
SAMPLE DATE:	09/07/00			09/07/00			08/29/00			08/29/00		
LABORATORY ID:	C36936			C36937			C36940			C36943		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	21.3 %			21.3 %			11.6 %			11.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	0.29	U	A	5.6	U	A	9.6	U	A	36		
PCB-156	0.32	J	P	0.59	J	P	0.71	J	P	5.1	J	G
PCB-167	1.8	U		0.32	J	P	0.66	J	P	2.7		
PCB-169	1.8	U		1.9	U		1.2	U		1.2	U	
PCB-170/190	0.64	U	A	0.88	U	A	0.27	U	A	1.0	U	A
PCB-18/17	4.8	U		4.9	U		3.2	U		3.2	U	
PCB-180	0.81	U	A	1.3	U	A	3.4	U	A	6.4	U	AG
PCB-187	1.0	J	P	1.6			3.0			6.1		
PCB-189	1.8	U		1.9	U		1.2	U		1.2	U	
PCB-195/208	1.5	U		0.14	J	P	1.0	U		1.0	U	
PCB-201/157/173	1.4	U		1.4	U		0.93	U		0.98		
PCB-206	1.6	U		0.12	J	P	1.0	U		1.1	U	
PCB-209	2.1	U		2.1	U		1.4	U		1.4	U	
PCB-28	0.52	U	A	0.50	U	A	0.68	U	A	1.1	U	AG
PCB-44	0.080	U	A	1.1	U		0.68	U	A	1.9	U	A
PCB-52	1.3	U		1.3	U		1.9			4.2		
PCB-66	0.32	J	P	0.53	J	P	0.23	J	P	1.1	J	GP
PCB-77	1.8	U		1.9	U		1.2	U		1.2	U	
PCB-8/5	0.52	J	P	0.87	J	P	3.2	J	G	0.060	J	GP
PCB-81	1.8	U		1.9	U		1.2	U		1.2	U	
PENTACHLOROANISOLE	0.25	U	A	0.23	U	A	0.63	U	A	0.88	U	A
PENTACHLOROBENZENE	4.1	U	A	2.7	U	A	2.4	U	A	2.5	U	A
TRANS-NONACHLOR	0.22	J	P	0.20	J	P	1.7			1.1		

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SAMPLE NUMBER:	OU4-MU-M12-100A-LD			OU4-MU-M13-100A-LD								
SAMPLE DATE:	08/29/00			08/29/00			/ /			/ /		
LABORATORY ID:	C36941			C36942								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	11.5 %			13.0 %			100.0 %			100.0 %		
UNITS:	NG/G			NG/G								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.50	J	G	0.48								
1,2,4,5-TETRACHLOROBENZENE	1.6	U	A	4.8	U	A						
2,4'-DDD	2.1	J	G	1.4	J	G						
2,4'-DDE	0.25	J	P	0.60	J	G						
2,4'-DDT	1.2	J	G	1.4	J	G						
4,4'-DDD	1.9	J	G	3.5								
4,4'-DDE	5.5	J	G	8.0								
4,4'-DDT	0.82			1.3	J	G						
ALDRIN	0.13	J	P	0.59	J	G						
ALPHA-BHC	0.76			1.7								
ALPHA-CHLORDANE	1.7			1.7	J	G						
BETA-BHC	5.4	J	G	8.0								
CHLORPYRIFOS	2.8	U		2.5	U							
CIS-NONACHLOR	1.3			2.1								
DELTA-BHC	0.17	U		0.030	J	P						
DIELDRIN	0.51	J	G	0.30	U							
ENDOSULFAN II	0.33	UJ	G	1.4	J	G						
ENDRIN	0.89	U		0.80	U							
GAMMA-BHC (LINDANE)	0.11	J	P	0.18	J	P						
GAMMA-CHLORDANE	0.62			0.82	J	G						
HEPTACHLOR	0.24	J	P	0.31	J	P						
HEPTACHLOR EPOXIDE	0.35	U		0.31	U							
HEXACHLOROBENZENE	0.25	J	P	0.13	J	GP						
MIREX	0.79	U		0.060	J	P						
OXYCHLORDANE	0.36	U		1.5	J	G						
PCB-101/90	12			10								
PCB-105	2.8	J	G	2.4	J	G						
PCB-114	1.2	U		1.1	U							
PCB-118	9.7	J	G	12	J	G						
PCB-126	1.2	U		1.1	U							
PCB-128	2.8			2.9								
PCB-1[illegible]	19			[illegible]								
PCB-149/123	11	J	G	1[illegible]								

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: T1174

SAMPLE NUMBER:	OU4-MU-M12-100A-LD	OU4-MU-M13-100A-LD		
SAMPLE DATE:	08/29/00	08/29/00	/ /	/ /
LABORATORY ID:	C36941	C36942		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	11.5 %	13.0 %	100.0 %	100.0 %
UNITS:	NG/G	NG/G		
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	28			23								
PCB-156	1.3	J	G	2.2								
PCB-167	1.5	J	G	2.7	J	G						
PCB-169	1.2	U		1.1	U							
PCB-170/190	1.0	U	A	16	J	G						
PCB-18/17	3.1	UJ	G	2.8	UJ	G						
PCB-180	7.0	U	AG	8.0	U	AG						
PCB-187	13	J	G	8.3								
PCB-189	1.2	U		0.72	J	GP						
PCB-195/208	0.12	J	GP	0.65	J	P						
PCB-201/157/173	1.7			2.2	J	G						
PCB-206	1.0	U		0.93	U							
PCB-209	0.89	J	P	1.2	U							
PCB-28	2.7	U	AG	5.2	U	A						
PCB-44	3.3	U	A	2.2	U	A						
PCB-52	4.7			8.8	J	G						
PCB-66	3.2	J	G	2.7	J	G						
PCB-77	1.2	UJ	G	1.1	U							
PCB-8/5	2.3	J	G	1.7	UJ	G						
PCB-81	0.11	J	GP	0.17	J	P						
PENTACHLOROANISOLE	0.46	U	A	0.85	U	A						
PENTACHLOROBENZENE	2.8	U	A	2.8	U	A						
TRANS-NONACHLOR	1.2			1.2								

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 8, 2000**

FROM: **DOUGLAS S. SCHLOER** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYNUCLEAR AROMATIC HYDROCARBONS**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – M3021

SAMPLES: 20 / Sediments / PAH

OU4-FD-002-000A	OU4-SD-M03-100A	OU4-SD-M03-200A	OU4-SD-M03-300A
OU4-SD-M04-100A	OU4-SD-M04-200A	OU4-SD-M04-300A	OU4-SD-M05-100A
OU4-SD-M05-200A	OU4-SD-M05-300A	OU4-SD-M06-200A	OU4-SD-M06-300A
OU4-SD-M07-200A	OU4-SD-M07-300A	OU4-SD-M08-200A	OU4-SD-M09-300A
OU4-SD-R01-100A	OU4-SD-R01-400A	OU4-SD-R03-100A	OU4-SD-R04-100A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine; SDG M3021 consists of twenty (20) sediment samples. The samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). Two field duplicate pairs were included in this SDG: OU4-SD-M05-100A and OU4-FD-002-000A; OU4-SD-M09-300A and *OU4-FD-004-000A. The symbol (*) Indicates samples that were not analyzed within this SDG.

The samples were collected by Tetra Tech NUS on August 27th, 2000 and were analyzed by Texas A&M University under NOAA Technical Memorandum NOS ORCA 130 Quality Assurance/Quality Control (QA/QC) criteria. All analyses and preparations were conducted using NOAA Technical Memorandum NOS ORCQ 130 (Program Mussel Watch) Methods.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * GC/MS Tuning and System Performance
- Initial / Continuing Calibration
- Blank Contamination
- * Surrogate / Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate Results
- Blank Spike Results
- * Lab Duplicate Results
- Field Duplicate Results
- * Instrument Performance
- * Compound Identification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

CALIBRATION

The following table summarizes calibration noncompliances and corresponding validation actions. The key associated with this table is presented after the table.

Compound	CCV 09/29/00; (21:13)	CCV 09/30/00; (05:13)	CCV 09/30/00; (13:14)	CCV 09/30/00; (18:20)
1-Methylnaphthalene		X	X	X
2-Methylnaphthalene		X	X	X
Acenaphthene	X			X
Benzo(G,H,I)perylene	X			
Biphenyl		X		
Dibenzo(A,H)anthracene	X			
Fluoranthene				
Indeno(1,2,3-CD)pyrene	X			
Fluoranthene	X			
Fluorene		X		
Samples Affected:	OU4-SD-M03-100A OU4-SD-M03-200A OU4-SD-M03-300A OU4-SD-M04-100A	OU4-SD-M03-100A OU4-SD-M03-200A OU4-SD-M03-300A OU4-SD-M04-100A OU4-SD-M04-200A OU4-SD-M04-300A OU4-SD-M05-100A OU4-SD-M05-200A OU4-FD-M05-300A OU4-FD-M06-200A OU4-FD-M06-300A OU4-SD-M07-200A OU4-SD-M07-300A OU4-SD-M08-200A	OU4-SD-M04-200A OU4-SD-M04-300A OU4-SD-M05-100A OU4-SD-M05-200A OU4-FD-M05-300A OU4-FD-M06-200A OU4-FD-M06-300A OU4-SD-M07-200A OU4-SD-M07-300A OU4-SD-M08-200A OU4-SD-M09-300A OU4-SD-R01-100A OU4-SD-R01-400A OU4-SD-R03-300A OU4-SD-R04-100A OU4-FD-002-000A	OU4-SD-M09-300A OU4-SD-R01-100A OU4-SD-R01-400A OU4-SD-R03-100A OU4-SD-R04-100A OU4-FD-002-000A

Calibration Actions

X - Percent Difference (%D) greater than 15%. Qualify positive and nondetected results for the affected compounds as estimated (J) and (UJ) respectively.

BLANKS

The maximum concentration of contaminants found in associated laboratory method blank and/or field quality control blanks are summarized below:

Compound	Maximum Concentration (Ng/g)	Blank Action Level (Ng/g)
C1-Dibenzothiophenes	0.86	4.3

Samples Affected: All
Blank Actions:

- Value < Contract Required Quantitation Limit (CRQL); report CRQL followed by a U.
- Value > CRQL and < action level; report value followed by a U.
- Value > CRQL and > action level; report value unqualified.

Dilution factors, % solids*, and sample aliquots used for analysis were taken into consideration prior to the application of blank action levels. Positive results less than the blank action level for the aforementioned compounds were qualified as nondetected (U) in the affected samples. Field quality control blanks were not qualified due to method blank contamination.

* Sample results are calculated on a dry weight basis, therefore, the ratios of method blank to sample dry weights were taken into consideration when applying the blank action level. As a result of this adjustment, % solids are accounted for.

FIELD DUPLICATE RESULTS

Relative percent differences (RPDs) greater than 50% were noted for several compounds in the field duplicates. Positive results for compounds that exceeded the 50% RPD quality control limit were qualified as estimated (J) in the field duplicate pair.

STANDARD REFERENCE MATERIAL

Standard Reference Material (SRM) % recoveries of anthracene and benzo(A)pyrene failed to meet the quality control limit of ± 35% deviation from certified concentrations. Only positive results were reported for the aforementioned compounds, and these were qualified as estimated (J) in all samples.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

% Recoveries of all Matrix Spike compounds were not compliant with the 40%-120% quality control limit except for 1-methylnaphthalene, 2-methylnaphthalene, 1,6,7-trimethylnaphthalene, 2,6-dimethylnaphthalene, biphenyl, acenaphthylene and fluorene, which were within quality control limits.

% Recoveries of all Matrix Spike Duplicate compounds were not compliant with the 40%-120% quality control limit except for 1,6,7-trimethylnaphthalene, 1-methylphenanthrene and biphenyl which were within quality control limits.

MS / MSD Relative Percent Differences (RPDs) for all compounds exceeded the 25% quality control limit except for biphenyl. The unspiked sample OU4-SD-M09-300A contained significant concentrations of the spiked compounds, which, in light of this fact may not warrant action based on % recovery noncompliance, however, since the laboratory could not demonstrate acceptable MS / MSD precision, all parameters except biphenyl were qualified as estimated (J) in the unspiked sample. Biphenyl was not qualified in this manner since the % recovery and RPD of this compound were compliant.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the reporting limit, (RL), were qualified as estimated (J).

Samples were frozen from time of receipt at the laboratory to sample extraction, therefore, holding time from sample collection to sample extraction is not an issue.

Samples were reported on a dry weight basis. This is consistent with historical data from this site.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: The laboratory was not able to meet quality control criteria for the continuing calibration of several compounds.

Standard Reference Material (SRM) % recoveries of anthracene and benzo(A)pyrene were not within quality control limits.

Other Factors Affecting Data Quality: Field duplicate RPDs exceeded 50% for several compounds.

MS / MSD % recoveries and Relative Percent Differences (RPDs) of several compounds were not compliant with quality control limits.

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Douglas S. Schloer
Tetra Tech NUS

Douglas S. Schloer
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

		PORTSMOUTH NAVAL SHIPYARD FIELD DUPLICATES									
SDG		M3021		M3023				M3023		M3024		
FRACTION	COMPOUND	OU4-SD-M09-300A RESULT ng/g		OU4-FD-004-000A RESULT ng/g		RPD		OU4-SD-M01-300A RESULT ng/g		OU4-FD-001-000A RESULT ng/g		RPD
PAH												
	1,6,7-Trimethylnaphthalene	14.42		16.74		-14.9		32.21		22.13		37.1
	1-Methylnaphthalene	32.86		34.39		-4.6		97.16		47.36		68.9
	1-Methylphenanthrene	44.8		56.21		-22.6		233.57		215.68		8.0
	2,6-Dimethylnaphthalene	21.41		24.74		-14.4		47.16		28.81		48.3
	2-Methylnaphthalene	49.19		51.7		-5.0		126.06		92.65		30.6
	Acenaphthene	76.75		91.5		-17.5		84.18		64.61		26.3
	Acenaphthylene	101.33		125.21		-21.1		448.67		453.39		-1.0
	Anthracene	223.93		290.73		-26.0		846.45		384.83		75.0
	Benzo(A)anthracene	478.92		655.07		-31.1		1200.08		1549.24		-25.4
	Benzo(A)pyrene	101.88		274.28		-91.7		2040.78		2071.06		-1.5
	Benzo(B)fluoranthene	802.53		1023.24		-24.2		1291.37		2441.58		-61.6
	Benzo(E)pyrene	421.46		522.07		-21.3		1243.34		2062.36		-49.6
	Benzo(G,H,I)perylene	418.01		538.43		-25.2		1152.88		1713.31		-39.1
	Benzo(K)fluoranthene	270.58		347.45		-24.9		489.57		416.86		16.0
	Biphenyl	10.91		12.36		-12.5		34.8		25.3		31.6
	C1-Chrysenes	364.88		475.86		-26.4		1660.59		2386.1		-35.9
	C1-Dibenzothiophenes	24.98		29.71		-17.3		54.73		44		21.7
	C1-Fluoranthenes/Pyrenes	541.69		655.49		-19.0		3363.68		2720.21		21.2
	C1-Fluorenes	45.54		57.06		-22.5		249.38		349.08		-33.3
	C1-Naphthalenes	82.05		86.09		-4.8		223.22		140.01		45.8
	C1-Phenanthrenes/Anthracenes	230.86		287.38		-21.8		931.57		670.26		32.6
	C2-Chrysenes	134.49		196.31		-37.4		769.28		892.83		-14.9
	C2-Dibenzothiophenes	30.53		37.02		-19.2		114.14		122.79		-7.3
	C2-Fluorenes	71.61		59.22		18.9		285.13		343.79		-18.7
	C2-Naphthalenes	84.28		53.56		44.6		283.06		151.62		60.8
	C2-Phenanthrenes/Anthracenes	152.13		187.43		-20.8		1062.04		1088.17		-2.4
	C3-Chrysenes	10.01		11.64		-15.1		12.85	J	0.27	J	191.8
	C3-Dibenzothiophenes	27.73		30.14		-8.3		139.57		160.58		-14.0
	C3-Fluorenes	21		49.89		-81.5		314.93		387.66		-20.7
	C3-Naphthalenes	82.43		77.14		6.6		214.69		146.27		37.9
	C3-Phenanthrenes/Anthracenes	85.59		103.15		-18.6		824.29		888.42		-7.5
	C4-Chrysenes	11.56		13.1		-12.5		18.16		8.31		74.4
	C4-Naphthalenes	34.65		39.07		-12.0		157.38		130.26		18.9
	C4-Phenanthrenes/Anthracenes	63.6		101.83		-46.2		431.51		415.04		3.9
	Chrysene	548.19		658.92		-18.3		1280.25		1501.55		-15.9
	Dibenzo(a,h)anthracene	109.74		124.42		-12.5		196.33		391.93		-66.5
	Dibenzothiophene	30.25		32.71		-7.8		40.37		26.93		39.9
	Fluoranthene	1024.45		1216.08		-17.1		1825.31		1294.51		34.0
	Fluorene	87.92		113.7		-25.6		215.19		133.16		47.1
	Indeno(1,2,3-c,d)pyrene	465.92		547.76		-16.1		808.98		1370.81		-51.5
	Naphthalene	77.25		71.95		7.1		157.57		167.74		-6.3
	Perylene	205.61		212.76		-3.4		354.49		218.34		47.5
	Phenanthrene	497.42		604.15		-19.4		1100.58		514.13		72.6
	Pyrene	947.48		1128.65		-17.5		2840.21		2433.29		15.4

ND - Compound not detected.
NC - RPD not calculated.

		PORTSMOUTH NAVAL SHIPYARD FIELD DUPLICATES										
SDG		M3021		M3021				M3024		M3025		
FRACTION	COMPOUND	OU4-SD-M05-100A RESULT ng/g		OU4-FD-002-000A RESULT ng/g		RPD		OU4-SD-M12-200A RESULT ng/g		OU4-FD-006-000A RESULT ng/g		RPD
PAH												
	1,6,7-Trimethylnaphthalene	6.47		13.37		-69.6		32.12		35.49		-10.0
	1-Methylnaphthalene	12.72		25.37		-66.4		118.3		115.38		2.5
	1-Methylphenanthrene	22.47		36.29		-47.0		265.74		346.28		-26.3
	2,6-Dimethylnaphthalene	8.44		15.89		-61.2		59.33	J	60.72		-2.3
	2-Methylnaphthalene	19.69		38.18		-63.9		153.31		153.37		0.0
	Acenaphthene	13.85		26.48		-62.6		1239.02		1032.17		18.2
	Acenaphthylene	46.16		107.28		-79.7		190.95		242.22		-23.7
	Anthracene	62.91		175.25		-94.3		1031.43		1074.55		-4.1
	Benzo(A)anthracene	180.8		365.03		-67.5		3619.98		3230.13		11.4
	Benzo(A)pyrene	209.33		105.85		65.7		4054.8		3903.25		3.8
	Benzo(B)fluoranthene	302.97		573.82		-61.8		4172.34		4334.29		-3.8
	Benzo(E)pyrene	172.87		290.41		-50.7		2126.36		1978.35		7.2
	Benzo(G,H,I)perylene	155.94		284.54		-58.4		2123.25		1874.81		12.4
	Benzo(K)fluoranthene	112.64		209.24		-60.0		1852.14		1363.96		30.4
	Biphenyl	5.01		8.19		-48.2		42.63		40.99		3.9
	C1-Chrysenes	150.31		285.05		-61.9		1288.26		1606.49		-22.0
	C1-Dibenzothiophenes	10.04		20.3		-67.6		116.31		117.09		-0.7
	C1-Fluoranthenes/Pyrenes	169.48		430.58		-87.0		1931.4		2006.55		-3.8
	C1-Fluorenes	18.09		36.93		-68.5		318.19		269.49		16.6
	C1-Naphthalenes	32.41		63.55		-64.9		271.61		268.75		1.1
	C1-Phenanthrenes/Anthracenes	89.1		170.75		-62.8		1106.65		1230.64		-10.6
	C2-Chrysenes	52.43		112.52		-72.9		362.23		404.49		-11.0
	C2-Dibenzothiophenes	14.49		31.79		-74.8		52.56		57.43		-8.9
	C2-Fluorenes	20.05		54.6		-92.6		122.42		179.72		-37.9
	C2-Naphthalenes	29.21		65.32		-76.4		163.66		251.7		-42.4
	C2-Phenanthrenes/Anthracenes	65.23		137.44		-71.3		465.26		565.9		-19.5
	C3-Chrysenes	5.22		7.54		-36.4		16.77	J	9.14		58.9
	C3-Dibenzothiophenes	9.76		28.94		-99.1		37.44	J	36.97		1.3
	C3-Fluorenes	10.81		35.49		-106.6		77.26		154.82		-66.8
	C3-Naphthalenes	23.75		71.18		-99.9		113.75		129.1		-12.6
	C3-Phenanthrenes/Anthracenes	31.39		115.06		-114.3		183.47		208.82		-12.9
	C4-Chrysenes	6.61		7.72		-15.5		4.82	J	109.23		-183.1
	C4-Naphthalenes	11.15		38.75		-110.6		47.49		60.08		-23.4
	C4-Phenanthrenes/Anthracenes	14.77		71.53		-131.5		46.97	J	66.96		-35.1
	Chrysene	139.99		376.73		-91.6		3317.36		3310.36		0.2
	Dibenzo(a,h)anthracene	33.71		73.7		-74.5		539.87		474.84		12.8
	Dibenzothiophene	8.37		17.46		-70.4		278.99		276.13		1.0
	Fluoranthene	351.25		730.97		-70.2		8199.58		8279.87		-1.0
	Fluorene	18.71		42.78		-78.3		1057.01		1055.22		0.2
	Indeno(1,2,3-c,d)pyrene	157.61		326.49		-69.8		2233.75		2322.06		-3.9
	Naphthalene	40.16		57.43		-35.4		354.22		327.39		7.9
	Perylene	54.38		136.94		-86.3		847.66		653.07		25.9
	Phenanthrene	145.24		294.42		-67.9		5882.69		5510.96		6.5
	Pyrene	310.65		666.71		-72.9		6639.18		6640.66		0.0

ND - Compound not detected.
NC - RPD not calculated.

APPENDIX A

QUALIFIED LABORATORY RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-FD-002-000A			OU4-SD-M03-100A			OU4-SD-M03-200A			OU4-SD-M03-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36610			C36515			C36520			C36525		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	39.8 %			41.2 %			75.1 %			56.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M05-100A											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	13.4	J	G	10.7			6.61			10.5		
1-METHYLNAPHTHALENE	25.4	J	CG	27.1	J	C	16.8	J	C	27.3	J	C
1-METHYLPHENANTHRENE	36.3			41.3			33.7			59.0		
2,6-DIMETHYLNAPHTHALENE	15.9	J	G	16.8			13.1			13.5		
2-METHYLNAPHTHALENE	38.2	J	CG	42.1	J	C	32.6	J	C	38.1	J	C
ACENAPHTHENE	26.5	J	CG	46.3	J	C	22.1	J	C	65.3	J	C
ACENAPHTHYLENE	107	J	G	153			63.2			62.0		
ANTHRACENE	175	J	EG	274	J	E	126	J	E	182	J	E
BENZO(A)ANTHRACENE	365	J	G	408			273			298		
BENZO(A)PYRENE	106	J	EG	96.9	J	E	228	J	E	142	J	E
BENZO(B)FLUORANTHENE	574	J	G	814			536			445		
BENZO(E)PYRENE	290	J	G	420			297			214		
BENZO(G,H,I)PERYLENE	285	J	G	386	J	C	338	J	C	210	J	C
BENZO(K)FLUORANTHENE	209	J	G	214			162			127		
BIPHENYL	8.19			8.71	J	C	6.48	J	C	7.58	J	C
C1-CHRYSENES	285	J	G	370			168			242		
C1-DIBENZOTHIOPHENES	20.3	J	G	20.0			15.9			19.0		
C1-FLUORANTHENES/PYRENES	431	J	G	537			293			393		
C1-FLUORENES	36.9	J	G	40.7			21.9			37.3		
C1-NAPHTHALENES	63.6	J	G	69.2			49.5			65.4		
C1-PHENANTHRENES/ANTHRACENES	171	J	G	182			111			190		
C2-CHRYSENES	113	J	G	151			68.9			87.0		
C2-DIBENZOTHIOPHENES	31.8	J	G	32.3			19.5			21.6		
C2-FLUORENES	54.6	J	G	56.0			32.9			41.7		
C2-NAPHTHALENES	65.3	J	G	67.5			43.1			52.2		
C2-PHENANTHRENES/ANTHRACENES	137	J	G	127			69.7			136		
C3-CHRYSENES	7.54			15.0			8.64			5.69		
C3-DIBENZOTHIOPHENES	28.9	J	G	38.4			20.2			16.0		
C3-FLUORENES	35.5	J	G	28.2			18.8			24.2		
C3-NAPHTHALENES	71.2	J	G	52.3			41.7			56.6		
C3-PHENANTHRENES/ANTHRACENES	115	J	G	90.4			48.2			80.2		
C4-CHRYSENES	7.72			38.2			7.16			4.00		
C4-NAPHTHALENES	38.8	J	G	34.7			20.4			26.0		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-FD-002-000A			OU4-SD-M03-100A			OU4-SD-M03-200A			OU4-SD-M03-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36610			C36515			C36520			C36525		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	39.8 %			41.2 %			75.1 %			56.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M05-100A											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	71.5	J	G	78.0			47.9			41.0		
CHRYSENE	377	J	G	611			304			272		
DIBENZO(A,H)ANTHRACENE	73.7	J	G	94.4	J	C	77.4	J	C	56.0	J	C
DIBENZOTHIOPHENE	17.5	J	G	20.4			12.3			17.6		
FLUORANTHENE	731	J	G	1089	J	C	468	J	C	591	J	C
FLUORENE	42.8	J	G	62.0	J	C	33.5	J	C	73.1	J	C
INDENO(1,2,3-CD)PYRENE	326	J	G	454	J	C	370	J	C	228	J	C
NAPHTHALENE	57.4			63.0			37.2			82.7		
PERYLENE	137	J	G	122			91.0			102		
PHENANTHRENE	294	J	G	343			196			336		
PYRENE	667	J	G	1023			491			550		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M04-100A			OU4-SD-M04-200A			OU4-SD-M04-300A			OU4-SD-M05-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36530			C36535			C36540			C36545		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	72.3 %			46.8 %			78.9 %			39.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	21.4			10.1			1.73			6.47	J	G
1-METHYLNAPHTHALENE	48.7	J	C	15.2	J	C	3.00	J	C	12.7	J	CG
1-METHYLPHENANTHRENE	148			26.6			9.88			22.5		
2,6-DIMETHYLNAPHTHALENE	38.0			12.8			2.33			8.44	J	G
2-METHYLNAPHTHALENE	90.6	J	C	23.6	J	C	4.95	J	C	19.7	J	CG
ACENAPHTHENE	77.4	J	C	18.0			2.53			13.9	J	G
ACENAPHTHYLENE	216			78.1			17.8			46.2	J	G
ANTHRACENE	621	J	E	123	J	E	28.5	J	E	62.9	J	EG
BENZO(A)ANTHRACENE	1430			236			181			181	J	G
BENZO(A)PYRENE	1874	J	E	131	J	E	32.9	J	E	209	J	EG
BENZO(B)FLUORANTHENE	2182			386			284			303	J	G
BENZO(E)PYRENE	1054			201			146			173	J	G
BENZO(G,H,I)PERYLENE	1047	J	C	209			149			156	J	G
BENZO(K)FLUORANTHENE	686			103			94.4			113	J	G
BIPHENYL	13.3	J	C	5.67	J	C	1.41	J	C	5.01	J	C
C1-CHRYSENES	712			227			93.2			150	J	G
C1-DIBENZOTHIOPHENES	46.9			16.1			4.64	U	A	10.0	J	G
C1-FLUORANTHENES/PYRENES	1002			313			127			169	J	G
C1-FLUORENES	64.9			29.7			5.66			18.1	J	G
C1-NAPHTHALENES	139			38.8			7.95			32.4	J	G
C1-PHENANTHRENES/ANTHRACENES	479			134			45.5			89.1	J	G
C2-CHRYSENES	224			99.9			28.7			52.4		
C2-DIBENZOTHIOPHENES	51.8			19.6			5.93			14.5	J	G
C2-FLUORENES	75.2			33.4			9.65			20.1	J	G
C2-NAPHTHALENES	161			44.6			11.2			29.2	J	G
C2-PHENANTHRENES/ANTHRACENES	271			94.3			32.6			65.2	J	G
C3-CHRYSENES	26.8			6.35			2.63			5.22	J	G
C3-DIBENZOTHIOPHENES	35.1			18.2			4.95			9.76	J	G
C3-FLUORENES	35.2			20.7			7.60			10.8	J	G
C3-NAPHTHALENES	139			53.0			9.42			23.8	J	G
C3-PHENANTHRENES/ANTHRACENES	133			60.2			15.5			31.4	J	G
C4-CHRYSENES	28.9			5.14			4.83			6.61		
[illegible]	56.5			26.5			6.84			11.2	J	G

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M04-100A			OU4-SD-M04-200A			OU4-SD-M04-300A			OU4-SD-M05-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36530			C36535			C36540			C36545		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	72.3 %			46.8 %			78.9 %			39.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	106			44.4			17.7			14.8	J	G
CHRYSENE	1251			243			196			140	J	G
DIBENZO(A,H)ANTHRACENE	334	J	C	53.4			40.8			33.7	J	G
DIBENZOTHIOPHENE	47.7			12.7			2.49			8.37	J	G
FLUORANTHENE	2632	J	C	415			339			351	J	G
FLUORENE	137	J	C	32.2			5.04			18.7	J	G
INDENO(1,2,3-CD)PYRENE	277	J	C	228			170			158	J	G
NAPHTHALENE	129			37.1			6.87			40.2		
PERYLENE	154			93.1			54.2			54.4	J	G
PHENANTHRENE	1030			179			55.1			145	J	G
PYRENE	2009			394			318			311	J	G

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M05-200A			OU4-SD-M05-300A			OU4-SD-M06-200A			OU4-SD-M06-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36550			C36555			C36560			C36565		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	37.8 %			70.8 %			37.1 %			72.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	12.7			8.31			13.0			0.60		
1-METHYLNAPHTHALENE	26.4	J	C	15.8	J	C	20.8	J	C	0.85	J	CP
1-METHYLPHENANTHRENE	48.8			29.1			53.3			1.43		
2,6-DIMETHYLNAPHTHALENE	15.4			9.63			17.9			0.68	J	P
2-METHYLNAPHTHALENE	37.7	J	C	21.2	J	C	33.1	J	C	1.33	J	CP
ACENAPHTHENE	17.1			16.1			19.4			0.56		
ACENAPHTHYLENE	103			70.9			116			4.58		
ANTHRACENE	173	J	E	99.3	J	E	192	J	E	5.55	J	E
BENZO(A)ANTHRACENE	315			242			375			10.9		
BENZO(A)PYRENE	149	J	E	202	J	E	86.6	J	E	16.3	J	E
BENZO(B)FLUORANTHENE	493			343			525			15.8		
BENZO(E)PYRENE	264			183			310			10.4		
BENZO(G,H,I)PERYLENE	267			194			327			11.0		
BENZO(K)FLUORANTHENE	162			129			142			6.69		
BIPHENYL	7.33	J	C	4.35	J	C	8.12	J	C	0.75	J	CP
C1-CHRYSENES	246			174			342			8.82		
C1-DIBENZOTHIOPHENES	17.7			12.6			22.3			0.96	U	A
C1-FLUORANTHENES/PYRENES	372			293			525			17.7		
C1-FLUORENES	34.5			25.2			42.9			1.97		
C1-NAPHTHALENES	64.2			37.0			53.9			2.18		
C1-PHENANTHRENES/ANTHRACENES	152			117			201			6.84		
C2-CHRYSENES	103			66.5			142			3.66		
C2-DIBENZOTHIOPHENES	25.1			16.3			32.9			1.39		
C2-FLUORENES	45.5			33.1			46.2			2.90		
C2-NAPHTHALENES	77.7			50.0			68.7			3.14		
C2-PHENANTHRENES/ANTHRACENES	118			91.4			164			4.52		
C3-CHRYSENES	7.86			5.92			8.50			1.58		
C3-DIBENZOTHIOPHENES	21.0			12.1			27.7			1.23		
C3-FLUORENES	24.7			15.6			45.9			0.94	J	P
C3-NAPHTHALENES	73.7			49.8			67.1			3.49		
C3-PHENANTHRENES/ANTHRACENES	72.1			49.9			107			6.52		
C4-CHRYSENES	6.44			6.08			9.20			2.89		
C4-NAPHTHALENES	32.2			21.1			31.6			1.48		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M05-200A			OU4-SD-M05-300A			OU4-SD-M06-200A			OU4-SD-M06-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36550			C36555			C36560			C36565		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	37.8 %			70.8 %			37.1 %			72.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	66.0			15.9			73.9			4.04		
CHRYSENE	306			228			398			11.6		
DIBENZO(A,H)ANTHRACENE	64.9			51.1			80.0			2.12		
DIBENZOTHIOPHENE	14.1			11.0			15.3			0.59		
FLUORANTHENE	544			403			603			20.4		
FLUORENE	41.0	J	C	31.0	J	C	44.7	J	C	1.41	J	C
INDENO(1,2,3-CD)PYRENE	289			211			345			10.9		
NAPHTHALENE	55.7			32.8			48.2			2.14	J	P
PERYLENE	114			75.7			140			3.38		
PHENANTHRENE	203			179			228			7.73		
PYRENE	512			398			628			17.6		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M07-200A			OU4-SD-M07-300A			OU4-SD-M08-200A			OU4-SD-M09-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36570			C36575			C36580			C36585		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	44.1 %			47.4 %			49.1 %			36.6 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	12.5			12.4			12.1			14.4	J	D
1-METHYLNAPHTHALENE	18.0	J	C	16.0	J	C	21.4	J	C	32.9	J	C
1-METHYLPHENANTHRENE	62.2			33.3			55.7			44.8	J	D
2,6-DIMETHYLNAPHTHALENE	18.2			13.9			16.9			21.4	J	D
2-METHYLNAPHTHALENE	27.3	J	C	24.2	J	C	33.5	J	C	49.2	J	CD
ACENAPHTHENE	32.0			19.8			31.3			76.8	J	CD
ACENAPHTHYLENE	94.4			60.5			87.3			101	J	D
ANTHRACENE	169	J	E	95.3	J	E	180	J	E	224	J	DE
BENZO(A)ANTHRACENE	340			216			327			479	J	D
BENZO(A)PYRENE	339	J	E	118	J	E	157	J	E	102	J	DEG
BENZO(B)FLUORANTHENE	669			355			507			803	J	D
BENZO(E)PYRENE	223			167			258			421	J	D
BENZO(G,H,I)PERYLENE	274			170			269			418	J	D
BENZO(K)FLUORANTHENE	76.4			99.0			159			271	J	D
BIPHENYL	8.19	J	C	5.81	J	C	7.60	J	C	10.9		
C1-CHRYSENES	14.1			233			243			365		
C1-DIBENZOTHIOPHENES	25.4			18.6			19.7			25.0		
C1-FLUORANTHENES/PYRENES	182			371			412			542		
C1-FLUORENES	43.6			35.1			34.2			45.5		
C1-NAPHTHALENES	45.3			40.2			54.9			82.1		
C1-PHENANTHRENES/ANTHRACENES	161			165			188			231		
C2-CHRYSENES	18.8			102			95.5			134		
C2-DIBENZOTHIOPHENES	33.0			28.6			25.2			30.5		
C2-FLUORENES	60.5			54.0			36.8			71.6		
C2-NAPHTHALENES	32.4			43.6			57.5			84.3		
C2-PHENANTHRENES/ANTHRACENES	145			152			137			152		
C3-CHRYSENES	1.33	J	P	7.84			6.45			10.0		
C3-DIBENZOTHIOPHENES	25.5			24.0			31.4			27.7		
C3-FLUORENES	59.2			25.4			21.1			21.0	J	G
C3-NAPHTHALENES	33.4			64.1			65.5			82.4		
C3-PHENANTHRENES/ANTHRACENES	96.7			93.8			67.5			85.6		
C4-CHRYSENES	6.91			7.75			10.0			11.6		
C4-NAPHTHALENES	18.8			31.6			24.2			34.7		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M07-200A			OU4-SD-M07-300A			OU4-SD-M08-200A			OU4-SD-M09-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36570			C36575			C36580			C36585		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	44.1 %			47.4 %			49.1 %			36.6 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	145			45.9			37.7			63.6		
CHRYSENE	353			243			344			548	J	D
DIBENZO(A,H)ANTHRACENE	86.2			44.2			71.1			110	J	D
DIBENZOTHIOPHENE	17.6			12.6			17.6			30.3	J	D
FLUORANTHENE	649			412			663			1024	J	D
FLUORENE	89.9	J	C	33.4	J	C	50.0	J	C	87.9	J	D
INDENO(1,2,3-CD)PYRENE	73.0			190			296			466	J	D
NAPHTHALENE	49.4			38.7			48.1			77.3	J	D
PERYLENE	246			82.6			135			206	J	D
PHENANTHRENE	282			189			292			497	J	D
PYRENE	608			390			611			947	J	D

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-R01-100A			OU4-SD-R01-400A			OU4-SD-R03-100A			OU4-SD-R04-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36590			C36595			C36600			C36605		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	33.9 %			74.0 %			28.5 %			65.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	9.06			2.72			8.78			1.80		
1-METHYLNAPHTHALENE	18.3	J	C	4.77	J	C	13.6	J	C	3.34	J	C
1-METHYLPHENANTHRENE	61.9			13.1			65.6			7.49		
2,6-DIMETHYLNAPHTHALENE	13.4			3.35			9.69			3.16		
2-METHYLNAPHTHALENE	30.8	J	C	7.34	J	C	16.3	J	C	4.66	J	CP
ACENAPHTHENE	20.4	J	C	3.85	J	C	79.8	J	C	3.88	J	C
ACENAPHTHYLENE	155			34.6			65.1			16.1		
ANTHRACENE	146	J	E	35.7	J	E	136	J	E	22.4	J	E
BENZO(A)ANTHRACENE	407			92.3			700			53.9		
BENZO(A)PYRENE	127	J	E	104	J	E	429	J	E	71.7	J	E
BENZO(B)FLUORANTHENE	551			128			1281			93.0		
BENZO(E)PYRENE	329			70.5			616			47.0		
BENZO(G,H,I)PERYLENE	317			70.0			578			47.1		
BENZO(K)FLUORANTHENE	214			40.0			318			29.4		
BIPHENYL	9.27			2.23			5.27			1.68		
C1-CHRYSENES	347			75.8			388			39.6		
C1-DIBENZOTHIOPHENES	29.6			4.78	U	A	24.1			3.30	U	A
C1-FLUORANTHENES/PYRENES	586			113			196			57.6		
C1-FLUORENES	40.6			7.57			47.9			6.89		
C1-NAPHTHALENES	49.1			12.1			29.9			8.00		
C1-PHENANTHRENES/ANTHRACENES	191			36.7			243			26.5		
C2-CHRYSENES	105			28.1			108			15.9		
C2-DIBENZOTHIOPHENES	50.9			8.36			21.6			3.73		
C2-FLUORENES	47.8			11.8			46.0			12.2		
C2-NAPHTHALENES	43.7			14.2			43.2			8.34		
C2-PHENANTHRENES/ANTHRACENES	150			36.8			141			18.6		
C3-CHRYSENES	6.21			2.29			10.8			2.25		
C3-DIBENZOTHIOPHENES	31.1			6.53			15.9			2.79		
C3-FLUORENES	27.2			9.08			27.2			4.90		
C3-NAPHTHALENES	51.1			14.1			44.2			7.87		
C3-PHENANTHRENES/ANTHRACENES	87.7			24.4			63.6			11.1		
C4-CHRYSENES	12.8			1.62			12.1			1.15	J	P
C4-NAPHTHALENES	22.9			7.72			18.9			6.25		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-R01-100A	OU4-SD-R01-400A	OU4-SD-R03-100A	OU4-SD-R04-100A
SAMPLE DATE:	08/27/00	08/27/00	08/27/00	08/27/00
LABORATORY ID:	C36590	C36595	C36600	C36605
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	33.9 %	74.0 %	28.5 %	65.8 %
UNITS:	NG/G	NG/G	NG/G	NG/G
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	48.0			13.4			160			10.4		
CHRYSENE	415			93.3			809			59.2		
DIBENZO(A,H)ANTHRACENE	77.8			16.6			141			10.8		
DIBENZOTHIOPHENE	17.0			2.82			36.3			2.44		
FLUORANTHENE	566			121			1669			102		
FLUORENE	40.1			7.45			99.8			6.61		
INDENO(1,2,3-CD)PYRENE	346			76.5			692			55.6		
NAPHTHALENE	58.1			13.2			26.3			7.78		
PERYLENE	91.0			29.8			185			15.4		
PHENANTHRENE	183			37.4			691			45.8		
PYRENE	634			127			1357			95.4		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 12, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PCBs and PESTICIDES**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – M3021

SAMPLES: 20/Sediment/

OU4-FD-002-000A	OU4-SD-M03-100A	OU4-SD-M03-200A
OU4-SD-M03-300A	OU4-SD-M04-100A	OU4-SD-M04-200A
OU4-SD-M04-300A	OU4-SD-M05-100A	OU4-SD-M05-200A
OU4-SD-M05-300A	OU4-SD-M06-200A	OU4-SD-M06-300A
OU4-SD-M07-200A	OU4-SD-M07-300A	OU4-SD-M08-200A
OU4-SD-M09-300A	OU4-SD-R01-100A	OU4-SD-R01-400A
OU4-SD-R03-100A	OU4-SD-R04-100A	

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG M3021 consisting of twenty (20) sediment samples were included in this SDG. Samples were analyzed for pesticides and PCBs. Several field duplicates were included in this SDG: OU4-FD-002-000A and OU4-SD-M05-100A; and OU4-FD-004-000A (in SDG M3023) and OU4-SD-M09-300A.

The samples were collected by Tetra Tech NUS on August 27-30, 2000 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using GERG SOP 9810 and 9805 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * Calibration
- Method Blank Results
- * Surrogate Standard Recoveries
- * Instrument Performance
- * Compound Identification
- Compound Quantitation
- Matrix Spike/Matrix Spike Duplicate Results
- Standard Reference Materials
- Field Duplicate Results

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANKS

The maximum concentration of contaminants found in the laboratory method blank analysis is summarized below.

Compound	Maximum Concentration	Sediment Action Level
Tetrachlorobenzene, 1245-	0.44 ng/g	2.2 ng/g
Tetrachlorobenzene, 1234-	0.09 ng/g	0.45 ng/g
Pentachlorobenzene	0.05 ng/g	0.25 ng/g
Pentachloroanisole	0.04 ng/g	0.20 ng/g
Chlorpyrifos	0.65 ng/g	3.25 ng/g
PCB 28	0.05 ng/g	0.25 ng/g
PCB 153/132	0.07 ng/g	0.35 ng/g
PCB 138/160	0.06 ng/g	0.30 ng/g
PCB 81	0.05 ng/g	0.25 ng/g
PCB 126	0.34 ng/g	0.15 ng/g
PCB 169	0.02 ng/g	0.10 ng/g

Samples Affected: All

Blank Actions:

Dilution factors, percent solids, and sample aliquot used for analysis were taken into consideration prior to the application of all action levels. Positive results for all compounds below the blank action level were qualified at the reported concentration. The blank had a dry weight of 10.26 g. Sample aliquots ranged from ~5 to 16 g dry weight.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike and/or matrix spike duplicate recoveries fell below the lower quality control limit and/or fell below 10% Positive results for PCB 206 were qualified as estimated, J, in the unspiked sample, OU4-SD-M09-300A. No qualifiers were assigned to chlorpyrifos on this basis since the compound was qualified as nondetected due to blank contamination. Relative percent differences (RPDs) exceeded the upper quality control limit for both compounds. No qualifiers were assigned on this basis.

STANDARD REFERENCE MATERIAL RESULTS

Recovery of PCB 170/190 and 105 exceeded the upper quality control limit. Interference with quantitation of this PCB was noted on the Form 1s. Positive results for this compound were qualified as estimated, J, in all samples.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

PCB 201/157/173 was present on the Form 1s but not on the electronic data deliverable. The reviewer amended the EDD to include these results.

Interference was noted for PCB 170/190 in all samples due to co-elution with other target compounds.

Positive and nondetected results for sample OU4-SD-R03-100A were qualified as estimated, J and UJ, due to percent solids less than 30%. This accounts for the elevated reporting limits for this sample.

Sample OU4-SD-M03-100A was re-analyzed at a 5X dilution factor due to the presence of 4,4'-DDD, PC 153/132, PCB 180, and PCB 138/160 above the linear calibration range of the instrument. The laboratory reported the diluted results for these compounds only on the Form 1s.

Sample OU4-SD-M03-200A was re-analyzed at a 5X dilution factor due to the presence of PCB 153/132, PCB 180, and PCB 138/160 above the linear calibration range of the instrument. The laboratory reported the diluted results for these compounds only on the Form 1s.

Samples OU4-SD-M04-100A and OU4-SD-M04-300A were re-analyzed at a 10X dilution factor due to the presence of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and 2,4-DDT above the linear calibration range of the instrument. The laboratory reported the diluted results for these compounds only on the Form 1s.

FIELD DUPLICATE RESULTS

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-FD-002-000A and OU4-SD-M05-100A. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-FD-004-000A and OU4-SD-M09-300A. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses. An interference was noted for the analysis of PCB 170/190.

Other Factors Affecting Data Quality: Field duplicate results exceeded the 50% RPD criteria.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

	OU4-FD-002-000A SDG M3021	OU4-SD-M05-100A SDG M3021	RPD
1,2,3,4-Tetrachlorobenzene	0.46 U*	0.09 U*	NA
1,2,4,5-Tetrachlorobenzene	1 U*	1.17 U*	NA
2,4'-DDD	2.6	1.27	69
2,4'-DDE	0.46	0.14	107
2,4'-DDT	0.18	0.08	77
4,4'-DDD	2.16	1.26	53
4,4'-DDE	2.25	1.21	60
4,4'-DDT	0.71	1.28	-57
Aldrin	0.05 J	0.02 J	86
a-BHC	0.17	0.06 J	96
a-Chlordane	0.41	0.19	73
b-BHC	0.34 U	0.34 U	NA
Chlorpyrifos	0.48 U	1.38 U*	NA
cis-Nonachlor	0.32	0.29	10
d-BHC	0.08 U	0.04 J	NC
Dieldrin	0.1 J	0.06 J	50
Endosulfan II	0.65	0.62	5
Endrin	0.23 U	0.23 U	NA
g-BHC	0.4 U	0.14 J	NC
g-Chlordane	0.09 J	0.11 U	NC
Heptachlor	0.48	0.29 U	200
Heptachlor epoxide	0.05 U	0.05 U	NA
Hexachlorobenzene	0.08 U	0.08 U	NA
Mirex	0.05 U	0.05 U	NA
Oxychlordane	0.08	0.02 J	120
PCB-101/90	2.05	0.99	70
PCB-105	0.71 J	0.38 J	61
PCB-114	0.3 U	0.3 U	NA
PCB-118	1.74	0.99	55
PCB-126	0.3 U	0.15 U*	NA
PCB-128	0.69	0.37	60
PCB-138/160	2.49	1.46	52
PCB-149/123	1.7	0.73	80
PCB-153/132	3.29	1.53	73
PCB-156	0.34	0.41	-19
PCB-167	1.65	0.13 J	171
PCB-169	0.3	0.4 J	-29
PCB-170/190	1.72	0.68 J	87
PCB-18/17	1	0.15 U	200
PCB-180	1.13	0.78	37
PCB-187	0.92	0.44	71
PCB-189	0.41	0.26 J	45
PCB-195/208	0.49	0.28	55
PCB-206	0.58	0.28	70
PCB-209	1.07	0.41	89
PCB-28	0.85	0.51 U*	200
PCB-44	0.2 J	0.27	-30
PCB-52	1.05	0.6	55
PCB-66	0.44	0.19 J	79
PCB-77	0.12 J	0.04 J	100
PCB-8/5	0.9	0.16 J	140
PCB-81	0.03 U*	0.3 U	NA
Pentachloroanisole	0.18 U*	0.1 U*	NA
Pentachlorobenzene	0.24 U*	0.22 U*	NA
trans-Nonachlor	0.54	0.13	122
PCB-201/157/173	0.21	0.3	-35

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-FD-004-000A SDG M3023	OU4-SD-M09-300A SDG M3021	RPD
1,2,3,4-Tetrachlorobenzene	0.44 U*	0.24 U*	NA
1,2,4,5-Tetrachlorobenzene	1.25	1.82 U*	NC
2,4'-DDD	4.32	3.13	32
2,4'-DDE	0.33	0.3	10
2,4'-DDT	0.98	0.38	88
4,4'-DDD	4.44	3.35	28
4,4'-DDE	3.03	3.28	-8
4,4'-DDT	3.37	2.25	40
Aldrin	0.11 U	0.11 U	NA
a-BHC	0.1 J	0.24	-82
a-Chlordane	0.73	0.7	4
b-BHC	1.38	0.37 U	200
Chlorpyrifos	4.16	1.55 U*	200
cis-Nonachlor	0.25	0.35	-33
d-BHC	0.21	0.14	40
Dieldrin	0.12 U	0.12 U	NA
Endosulfan II	1.49	1.95	-27
Endrin	0.24 U	0.25 U	NA
g-BHC	0.43 U	0.44 U	NA
g-Chlordane	0.33	0.39	-17
Heptachlor	0.31 U	0.32 U	NA
Heptachlor epoxide	0.05 U	0.06 U	NA
Hexachlorobenzene	0.34	0.24	34
Mirex	0.05 U	0.06 U	NA
Oxychlordane	0.08	0.24	-100
PCB-101/90	4.27	3.71	14
PCB-105	2.45	1.51	47
PCB-114	0.32 U	0.33 U	NA
PCB-118	2.85	4.01	-34
PCB-126	0.32 U	0.33 U	NA
PCB-128	1.19	1.5	-23
PCB-138/160	6.38	7.21	-12
PCB-149/123	4.86	4.02	19
PCB-153/132	5.81	7.26	-22
PCB-156	16.2	1.94	157
PCB-167	2.32	0.42	139
PCB-169	0.32 U	0.05 U*	NA
PCB-170/190	21.58	1.1 J	181
PCB-18/17	0.64	1.19	-60
PCB-180	4.64	5.69	-20
PCB-187	3.71	4.12	-10
PCB-189	0.37	0.63	-52
PCB-195/208	2.49	4.31	-54
PCB-206	5.19	11.94 J	-79
PCB-209	1.75	4.3	-84
PCB-28	2.63	2.05	25
PCB-44	5.18	1.26	122
PCB-52	2.73	3.16	-15
PCB-66	1.51	1.2	23
PCB-77	0.16 U*	0.05 J	NC
PCB-8/5	1.34	0.58 J	79
PCB-81	0.13 J	0.1 U*	200
Pentachloroanisole	0.25 U*	0.25 U*	NA
Pentachlorobenzene	0.49 U*	0.48 U*	NA
trans-Nonachlor	0.4	0.33	19
PCB-201/157/173	0.82	1.45	-56

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-FD-002-000A			OU4-SD-M03-100A			OU4-SD-M03-200A			OU4-SD-M03-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36610			C36515			C36520			C36525		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	39.8 %			41.2 %			75.1 %			56.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M05-100A											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.46	U	A	0.44	U	A	0.20	U	A	0.14	U	A
1,2,4,5-TETRACHLOROBENZENE	1.0	U	A	3.0	U	A	1.2	U	A	1.1	U	A
2,4'-DDD	2.6	J	G	11			1.9			2.0		
2,4'-DDE	0.46	J	G	0.23			0.10			0.096	U	
2,4'-DDT	0.18	J	G	1.1			0.75			0.13		
4,4'-DDD	2.2	J	G	24			3.7			1.5		
4,4'-DDE	2.3	J	G	6.9			1.9			0.93		
4,4'-DDT	0.71	J	G	4.0			1.7			0.66		
ALDRIN	0.050	J	GP	0.050	J	P	0.010	J	P	0.020	J	P
ALPHA-BHC	0.17	J	G	0.18			0.10			0.040	J	P
ALPHA-CHLORDANE	0.41	J	G	0.66			0.98			0.22		
BETA-BHC	0.34	U		1.3			0.18	U		0.24	U	
CHLORPYRIFOS	0.48	U		1.2	U	A	3.2	U	A	0.31	U	A
CIS-NONACHLOR	0.32			0.97			0.41			0.21		
DELTA-BHC	0.075	U		0.070	J	P	0.039	U		0.030	J	P
DIELDRIN	0.10	J	P	2.6			1.0			0.10		
ENDOSULFAN II	0.65			1.2			0.68			1.2		
ENDRIN	0.23	U		0.21	U		0.12	U		0.16	U	
GAMMA-BHC (LINDANE)	0.40	U		0.38	U		0.21	U		0.28	U	
GAMMA-CHLORDANE	0.090	J	P	0.11	U		0.059	U		0.078	U	
HEPTACHLOR	0.48	J	G	0.97			0.37			0.20	U	
HEPTACHLOR EPOXIDE	0.050	U		0.047	U		0.026	U		0.035	U	
HEXACHLOROBENZENE	0.075	U		8.5			0.050			0.052	U	
MIREX	0.050	U		0.047	U		0.026	U		0.035	U	
OXYCHLORDANE	0.080	J	G	0.040			0.013	U		0.070		
PCB-101/90	2.1	J	G	10			5.5			2.4		
PCB-105	0.71	J	GP	4.9			2.7			1.3		
PCB-114	0.30	UJ	G	0.28	U		0.16	U		0.21	U	
PCB-118	1.7			2.6			1.8			2.2		
PCB-126	0.30	U		3.9			0.16	U		0.21	U	
PCB-128	0.69	J	G	2.9			1.3			0.94		
PCB-138/160	2.5	J	G	26			10.0			5.1		
PCB-14[illegible]	1.7	J	G	20			8.2			2.3		

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-FD-002-000A			OU4-SD-M03-100A			OU4-SD-M03-200A			OU4-SD-M03-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36610			C36515			C36520			C36525		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	39.8 %			41.2 %			75.1 %			56.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M05-100A											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	3.3	J	G	30			12			4.0		
PCB-156	0.34			4.1			1.5			0.92		
PCB-167	1.7	J	G	1.6			0.62			0.23		
PCB-169	0.30	U		0.23	U	A	0.040	U	A	0.060	U	A
PCB-170/190	1.7	UJ	G	6.1	J	EQ	2.6	J	EQ	1.1	J	EPQ
PCB-18/17	1.0	J	G	0.86			0.078	U		0.65		
PCB-180	1.1			26			10			3.1		
PCB-187	0.92	J	G	19			11			1.6		
PCB-189	0.41			0.93			0.33			0.23		
PCB-195/208	0.49	J	G	4.9			2.6			0.55		
PCB-201/157/173	0.21			2.89			1.11			0.32		
PCB-206	0.58	J	G	4.5			3.5			0.69		
PCB-209	1.1	J	G	2.5			1.2			0.83		
PCB-28	0.85	J	G	0.96			0.43			0.57		
PCB-44	0.20	J	P	0.67			0.23			0.47		
PCB-52	1.1	J	G	0.21	U		2.0			1.6		
PCB-66	0.44	J	G	2.1			0.47			0.48		
PCB-77	0.12	J	GP	0.14	J	P	0.16	U		0.060	J	P
PCB-8/5	0.90	J	G	0.52	U		0.12	J	P	0.38	U	
PCB-81	0.030	U	A	1.8			1.5			0.11	U	A
PENTACHLOROANISOLE	0.18	U	A	0.16	U	A	0.16	U	A	0.11	U	A
PENTACHLOROBENZENE	0.24	U	A	0.24	U	A	0.12	U	A	0.087	U	
TRANS-NONACHLOR	0.54	J	G	0.27			0.12			0.060		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M04-100A			OU4-SD-M04-200A			OU4-SD-M04-300A			OU4-SD-M05-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36530			C36535			C36540			C36545		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	72.3 %			46.8 %			78.9 %			39.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.49	U	A	0.12	U	A	0.35	U	A	0.090	U	A
1,2,4,5-TETRACHLOROBENZENE	1.2	U	A	1.3	U	A	0.86	U	A	1.2	U	A
2,4'-DDD	9.5			1.4			12			1.3	J	G
2,4'-DDE	0.81			0.15			1.9			0.14	J	G
2,4'-DDT	23			0.050			18			0.080	J	G
4,4'-DDD	30			1.3			41			1.3	J	G
4,4'-DDE	20			1.1			114			1.2	J	G
4,4'-DDT	104			0.74			77			1.3	J	G
ALDRIN	0.055	U		0.050	J	P	0.049	U		0.020	J	GP
ALPHA-BHC	0.12			0.14			0.050	J	P	0.060	J	GP
ALPHA-CHLORDANE	1.2			0.42			0.24			0.19	J	G
BETA-BHC	0.19	U		0.29	U		0.17	U		0.34	U	
CHLORPYRIFOS	0.59	U	A	1.8	U	A	0.37	U	A	1.4	U	A
CIS-NONACHLOR	0.41			0.23			1.1			0.29		
DELTA-BHC	0.042	U		0.090			0.050			0.040	J	P
DIELDRIN	4.2			0.040	J	P	0.20			0.060	J	P
ENDOSULFAN II	2.2			0.69			0.37			0.62		
ENDRIN	0.12	U		0.19	U		0.11	U		0.23	U	
GAMMA-BHC (LINDANE)	0.22	U		0.35			0.070	J	P	0.14	J	P
GAMMA-CHLORDANE	0.062	U		0.096	U		0.055	U		0.11	U	
HEPTACHLOR	0.63			0.25	U		0.14	U		0.29	UJ	G
HEPTACHLOR EPOXIDE	0.028	U		0.043	U		0.025	U		0.051	U	
HEXACHLOROBENZENE	0.12			0.16			0.050			0.076	U	
MIREX	0.16			0.043	U		0.060			0.051	U	
OXYCHLORDANE	0.080			0.070			0.030			0.020	J	GP
PCB-101/90	5.6			1.3			0.99			0.99	J	G
PCB-105	0.71	J	P	0.44	J	P	0.48	J	P	0.38	J	GP
PCB-114	0.17	U		0.26	U		0.15	U		0.30	U	
PCB-118	2.0			1.7			0.45			0.99	J	G
PCB-126	6.5			0.26	U		0.34	J	P	0.15	U	A
PCB-128	1.7			0.55			1.1			0.37	J	G
PCB-138/160	19			3.0			7.7			1.5	J	G
PCB-14[illegible]	6.3			1.[illegible]			4.9			0.73	J	G

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M04-100A			OU4-SD-M04-200A			OU4-SD-M04-300A			OU4-SD-M05-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36530			C36535			C36540			C36545		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	72.3 %			46.8 %			78.9 %			39.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	11			2.9			9.7			1.5	J	G
PCB-156	1.5			0.59			0.92			0.41		
PCB-167	0.77			0.21	J	P	0.49			0.13	J	GP
PCB-169	0.030	U	A	0.17	U	A	0.070	U	A	0.40	J	P
PCB-170/190	2.3	J	EQ	0.98	J	EPQ	3.9	J	EQ	0.68	J	EGPQ
PCB-18/17	0.083	U		1.1			0.074	U		0.15	UJ	G
PCB-180	11			2.2			9.1			0.78		
PCB-187	11			1.2			5.4			0.44	J	G
PCB-189	0.45			0.29			0.42			0.26	J	P
PCB-195/208	5.1			0.48			1.5			0.28	J	G
PCB-201/157/173	1.34			0.44			0.68			0.3		
PCB-206	8.9			0.59			1.7			0.28	J	G
PCB-209	11			0.80			0.74			0.41	J	G
PCB-28	0.21	U	A	0.53	U	A	0.28	U	A	0.51	U	AG
PCB-44	0.11	J	P	0.49			0.14			0.27		
PCB-52	5.4			1.6			0.43			0.60	J	G
PCB-66	0.12	U		0.22			0.060	J	P	0.19	J	GP
PCB-77	0.15	J	P	0.060	J	P	0.030	J	P	0.040	J	GP
PCB-8/5	0.31	U		0.40	J	P	0.32			0.16	J	GP
PCB-81	3.6			0.26	U		0.14	U	A	0.30	U	
PENTACHLOROANISOLE	0.20	U	A	0.12	U	A	0.070	U	A	0.10	U	A
PENTACHLOROBENZENE	0.20	U	A	0.24	U	A	0.10	U	A	0.22	U	A
TRANS-NONACHLOR	0.060			0.050	J	P	0.16			0.13	J	G

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M05-200A			OU4-SD-M05-300A			OU4-SD-M06-200A			OU4-SD-M06-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36550			C36555			C36560			C36565		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	37.8 %			70.8 %			37.1 %			72.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.070	U	A	0.070	U	A	0.010	U	A	0.22	U	A
1,2,4,5-TETRACHLOROBENZENE	1.5	U	A	0.57	U	A	0.87	U	A	0.080	U	A
2,4'-DDD	1.5			1.3			2.1			0.090		
2,4'-DDE	0.31			0.060	J	P	0.28			0.075	U	
2,4'-DDT	0.040			0.13			0.030	J	P	0.040		
4,4'-DDD	1.6			1.3			2.1			0.13		
4,4'-DDE	1.0			1.1			1.3			0.83		
4,4'-DDT	0.88			0.53			0.91			0.030	J	P
ALDRIN	0.050	J	P	0.010	J	P	0.020	J	P	0.054	U	
ALPHA-BHC	0.14			0.050	J	P	0.16			0.030	J	P
ALPHA-CHLORDANE	0.33			0.22			0.15			0.061	U	
BETA-BHC	0.36	U		0.19	U		0.36	U		0.18	U	
CHLORPYRIFOS	1.5	U	A	0.62	U	A	0.75	U	A	1.8	U	A
CIS-NONACHLOR	0.17			0.10			0.090			0.080		
DELTA-BHC	0.079	U		0.020	J	P	0.19			0.030	J	P
DIELDRIN	0.040	J	P	0.030	J	P	0.060	J	P	0.061	U	
ENDOSULFAN II	0.95			0.42			0.24			0.010	J	P
ENDRIN	0.24	U		0.13	U		0.24	U		0.12	U	
GAMMA-BHC (LINDANE)	0.42	U		0.23	U		0.42	U		0.13	J	P
GAMMA-CHLORDANE	0.12	U		0.064	U		0.15			0.061	U	
HEPTACHLOR	0.30	U		0.16	U		0.040	J	P	0.040	J	P
HEPTACHLOR EPOXIDE	0.053	U		0.028	U		0.053	U		0.027	U	
HEXACHLOROBENZENE	0.24			0.042	U		0.18			0.041	U	
MIREX	0.053	U		0.028	U		0.053	U		0.030		
OXYCHLORDANE	0.14			0.030			0.080			0.014	U	
PCB-101/90	1.6			0.49			1.1			0.090		
PCB-105	0.67	J	P	0.22	J	P	0.63	J	P	0.10	J	P
PCB-114	0.32	U		0.17	U		0.32	U		0.16	U	
PCB-118	1.6			0.48			1.7			0.17		
PCB-126	0.32	U		0.17	U		0.32	U		0.16	U	
PCB-128	0.58			0.090			0.97			0.18		
PCB-138/160	2.5			1.2			2.2			0.29	U	A
PCB-14	1.2			0			1.1			0.18		

CTO2[illegible] PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M05-200A			OU4-SD-M05-300A			OU4-SD-M06-200A			OU4-SD-M06-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36550			C36555			C36560			C36565		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	37.8 %			70.8 %			37.1 %			72.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	2.4			1.2			2.4			0.36	U	A
PCB-156	0.57			0.28			0.65			0.12	J	P
PCB-167	0.23	J	P	0.020	J	P	0.070	J	P	0.11	J	P
PCB-169	0.32	U		0.020	U	A	0.070	U	A	0.080	U	A
PCB-170/190	1.1	J	EPQ	0.97	U		1.8	U		0.93	U	
PCB-18/17	0.59			0.085	U		0.16	U		0.51		
PCB-180	1.9			0.60			1.4			0.25		
PCB-187	1.1			0.58			0.98			0.16	U	
PCB-189	0.37			0.050	J	P	0.26	J	P	0.010	J	P
PCB-195/208	0.47			0.23			0.35			0.040	J	P
PCB-201/157/173	0.48			0.21			0.44			0.14		
PCB-206	0.39			0.24			0.50			0.075	U	
PCB-209	0.82			0.59			0.85			0.030	J	P
PCB-28	0.49	U	A	0.45			0.43	U	A	0.18	U	P
PCB-44	0.66			0.10	J	P	0.52			0.66		
PCB-52	0.95			0.32			0.95			0.12	J	P
PCB-66	0.36			0.080	J	P	0.49			0.040	J	P
PCB-77	0.020	J	P	0.030	J	P	0.090	J	P	0.010	J	P
PCB-8/5	0.95			0.070	J	P	0.71			0.050	J	P
PCB-81	0.32	U		0.070	U	A	0.32	U		0.16	U	
PENTACHLOROANISOLE	0.19	U	A	0.030	U	A	0.22	U	A	0.050	U	A
PENTACHLOROBENZENE	0.22	U	A	0.060	U	A	0.30	U	A	0.10	U	A
TRANS-NONACHLOR	0.14			0.010	J	P	0.14			0.034	U	

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M07-200A			OU4-SD-M07-300A			OU4-SD-M08-200A			OU4-SD-M09-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36570			C36575			C36580			C36585		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	44.1 %			47.4 %			49.1 %			36.6 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.32	U	A	0.42	U	A	0.28	U	A	0.24	U	A
1,2,4,5-TETRACHLOROBENZENE	1.9	U	A	1.4	U	A	1.2	U	A	1.8	U	AG
2,4'-DDD	1.9			1.7			3.7			3.1		
2,4'-DDE	0.19			0.11	J	P	0.19			0.30		
2,4'-DDT	0.10			0.040			0.17			0.38	J	G
4,4'-DDD	2.5			1.6			5.6			3.4		
4,4'-DDE	1.7			1.0			2.4			3.3		
4,4'-DDT	1.1			0.50			2.0			2.3		
ALDRIN	0.089	U		0.083	U		0.070	J	P	0.11	U	
ALPHA-BHC	0.11			0.12			0.070	J	P	0.24	J	G
ALPHA-CHLORDANE	0.39			0.52			0.49			0.70		
BETA-BHC	0.30	U		0.28	U		0.27	U		0.37	UJ	G
CHLORPYRIFOS	1.2	U	A	0.47	U	A	0.87	U	A	1.6	U	AG
CIS-NONACHLOR	0.35			0.14			0.35			0.35		
DELTA-BHC	0.11			0.050	J	P	0.050	J	P	0.14		
DIELDRIN	0.100	U		0.093	U		0.13			0.12	U	
ENDOSULFAN II	1.2			0.76			1.1			2.0		
ENDRIN	0.20	U		0.19	U		0.18	U		0.25	U	
GAMMA-BHC (LINDANE)	0.35	U		0.33	U		0.33	U		0.44	U	
GAMMA-CHLORDANE	0.100	U		0.13			0.17			0.39		
HEPTACHLOR	0.25	U		0.24	U		0.23	U		0.32	U	
HEPTACHLOR EPOXIDE	0.044	U		0.041	U		0.041	U		0.055	U	
HEXACHLOROBENZENE	0.020	J	P	0.062	U		0.11			0.24		
MIREX	0.044	U		0.041	U		0.041	U		0.055	UJ	G
OXYCHLORDANE	0.10			0.040			0.080			0.24		
PCB-101/90	1.6			1.1			2.1			3.7		
PCB-105	0.78	J	P	0.59	J	P	1.2			1.5		
PCB-114	0.27	U		0.25	U		0.24	U		0.33	U	
PCB-118	2.2			1.3			2.3			4.0		
PCB-126	0.27	U		0.25	U		0.24	U		0.33	U	
PCB-128	0.72			0.52			0.85			1.5		
PCB-138/160	3.2			2.2			4.3			7.2		
PCB-14[illegible]	1.4			0.[illegible]			2.4			4.0		

CTO2[illegible]PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-M07-200A			OU4-SD-M07-300A			OU4-SD-M08-200A			OU4-SD-M09-300A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36570			C36575			C36580			C36585		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	44.1 %			47.4 %			49.1 %			36.6 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	2.4			1.6			3.6			7.3		
PCB-156	0.60			0.53			0.98			1.9	J	G
PCB-167	0.22	J	P	0.24	J	P	2.0			0.42	J	G
PCB-169	0.16	U	A	0.060	U	A	0.060	U	A	0.050	U	A
PCB-170/190	1.5	U		1.4	U		1.4	U		1.1	J	GEPQ
PCB-18/17	0.70			0.78			1.4			1.2	J	G
PCB-180	1.5			1.2			3.4			5.7		
PCB-187	1.3			0.80			2.4			4.1		
PCB-189	0.42			0.19	J	P	0.22	J	P	0.63	J	G
PCB-195/208	0.67			0.42			1.5			4.3	J	G
PCB-201/157/173	0.6			0.69			0.69			1.45	J	G
PCB-206	1.2			0.59			2.7			12	J	DG
PCB-209	1.1			0.82			1.7			4.3	J	G
PCB-28	0.87			0.93			0.98			2.1		
PCB-44	0.48			0.34			0.48			1.3	J	G
PCB-52	0.84			0.79			1.6			3.2		
PCB-66	0.44			0.30			0.42			1.2		
PCB-77	0.030	J	P	0.010	J	P	0.050	J	P	0.050	J	P
PCB-8/5	0.35	J	P	0.44	J	P	0.45	U		0.58	J	GP
PCB-81	0.27	U		0.25	U		0.24	U		0.10	U	AG
PENTACHLOROANISOLE	0.14	U	A	0.10	U	A	0.14	U	A	0.25	U	A
PENTACHLOROBENZENE	0.31	U	A	0.13	U	A	0.15	U	A	0.48	U	A
TRANS-NONACHLOR	0.23			0.12			0.22			0.33		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3021

SAMPLE NUMBER:	OU4-SD-R01-100A			OU4-SD-R01-400A			OU4-SD-R03-100A			OU4-SD-R04-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36590			C36595			C36600			C36605		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	33.9 %			74.0 %			28.5 %			65.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.42	U		0.010	U	A	0.64	U	A	0.43	U	A
1,2,4,5-TETRACHLOROBENZENE	1.0	U	A	0.43	U	A	4.3	U	A	2.8	U	A
2,4'-DDD	2.2			0.48			5.2	J	Y	0.40		
2,4'-DDE	0.070	J	P	0.080			0.80	J	Y	0.090		
2,4'-DDT	0.010	J	P	0.070			0.44	J	Y	0.30		
4,4'-DDD	0.77			0.31			4.0	J	Y	0.68		
4,4'-DDE	0.83			0.31			9.7	J	Y	1.3		
4,4'-DDT	1.2			0.13			2.1	J	Y	0.43		
ALDRIN	0.030	J	P	0.020	J	P	0.82	J	Y	0.18		
ALPHA-BHC	0.070	J	P	0.040	J	P	0.11	J	PY	0.030	J	P
ALPHA-CHLORDANE	0.33			0.20			0.76	J	Y	0.16		
BETA-BHC	0.40	U		0.18	U		0.46	UJ	Y	0.20	U	
CHLORPYRIFOS	1.2	U	A	0.30	U	A	2.8	U	A	1.1	U	A
CIS-NONACHLOR	0.21			0.12			2.0	J	Y	0.060		
DELTA-BHC	0.18			0.030	J	P	0.10	UJ	Y	0.045	U	
DIELDRIN	0.14			0.020	J	P	0.15	UJ	Y	0.067	U	
ENDOSULFAN II	0.80			0.19			2.3	J	Y	0.28		
ENDRIN	0.27	U		0.12	U		0.45	J	Y	0.13	U	
GAMMA-BHC (LINDANE)	0.39	J	P	0.22	U		0.78	J	Y	0.090	J	P
GAMMA-CHLORDANE	0.13	U		0.030	J	P	0.38	J	Y	0.020	J	P
HEPTACHLOR	0.34	U		0.040	J	P	0.17	J	PY	0.35		
HEPTACHLOR EPOXIDE	0.059	U		0.027	U		0.068	UJ	Y	0.030	U	
HEXACHLOROBENZENE	0.089	U		0.030	J	P	0.10	UJ	Y	0.045	U	
MIREX	0.059	U		0.027	U		0.51	J	Y	0.050		
OXYCHLORDANE	0.060			0.013	U		0.41	J	Y	0.015	U	
PCB-101/90	0.51			0.35			3.2	J	Y	0.73		
PCB-105	0.17	J	P	0.14	J	P	2.0	J	Y	0.28	J	P
PCB-114	0.36	U		0.16	U		0.41	UJ	Y	0.18	U	
PCB-118	0.59			0.36			4.0	J	Y	0.66		
PCB-126	0.36	U		0.16	U		0.41	UJ	Y	0.18	U	
PCB-128	0.030	J	P	0.060			3.2	J	Y	0.42		
PCB-138/160	0.62	U	A	0.76			2.6	J	Y	0.32	U	A
PCB-14[illegible]	0.38			0.[illegible]			2.5	J	Y	0.72		

SAMPLE NUMBER:	OU4-SD-R01-100A			OU4-SD-R01-400A			OU4-SD-R03-100A			OU4-SD-R04-100A		
SAMPLE DATE:	08/27/00			08/27/00			08/27/00			08/27/00		
LABORATORY ID:	C36590			C36595			C36600			C36605		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	33.9 %			74.0 %			28.5 %			65.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	0.67	U	A	0.59			4.6	J	Y	0.99		
PCB-156	0.43			0.15	J	P	1.7	J	Y	0.12	J	P
PCB-167	3.1			0.70			1.2	J	Y	0.20		
PCB-169	0.080	U	A	0.040	U	A	0.11	U	A	0.18	U	
PCB-170/190	2.0	U		0.92	U		2.3	UJ	Y	1.0	U	
PCB-18/17	0.18	U		0.36			5.4	J	Y	1.3		
PCB-180	0.40			0.23			2.3	J	Y	0.41		
PCB-187	0.090	J	P	0.17			1.3	J	Y	0.15	J	P
PCB-189	0.36	J	P	0.11	J	P	0.45	J	Y	0.18	U	
PCB-195/208	0.32			0.090			1.2	J	Y	0.16		
PCB-201/157/173	0.59			0.09			1.41	J	Y	0.09		
PCB-206	0.36			0.050	J	P	0.44	J	Y	0.15		
PCB-209	0.77			0.34			0.78	J	Y	0.30		
PCB-28	0.70	U	A	0.19	U	A	0.95	J	Y	0.35	U	A
PCB-44	0.33			0.13	J	P	1.3	J	Y	0.53		
PCB-52	0.92			0.32			5.2	J	Y	0.78		
PCB-66	0.18	J	P	0.050	J	P	1.4	J	Y	0.20		
PCB-77	0.010	J	P	0.010	J	P	0.070	J	PY	0.010	J	P
PCB-8/5	0.65	U		0.11	J	P	2.4	J	Y	1.8		
PCB-81	0.36	U		0.16	U		0.41	UJ	Y	0.18	U	
PENTACHLOROANISOLE	0.12	U	A	0.080	U	A	0.52	U	A	0.080	U	A
PENTACHLOROBENZENE	0.080	U	A	0.060	U	A	0.62	U	A	0.29	U	A
TRANS-NONACHLOR	0.27			0.030	J	P	1.0	J	Y	0.78		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 8, 2000**

FROM: **DOUGLAS S. SCHLOER** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYNUCLEAR AROMATIC HYDROCARBONS**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – M3022

SAMPLES: 3 / Aqueous / PAH

OU4-RB-001-000A OU4-FB-001-000A OU4-RB-003-000A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine; SDG M3022 consists of two (2) rinsate blanks and one (1) field quality control blank. The samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). No field duplicate pairs were included in this SDG.

The samples were collected by Tetra Tech NUS on August 27th and 29th, 2000 and were analyzed by Texas A&M University under NOAA Technical Memorandum NOS ORCA 130 Quality Assurance/Quality Control (QA/QC) criteria. All analyses and preparations were conducted using NOAA Technical Memorandum NOS ORCQ 130 (Program Mussel Watch) Methods.

The data were evaluated based on the following parameters:

- * Data Completeness
- Holding Times
- * GC/MS Tuning and System Performance
- Initial / Continuing Calibration
- Blank Contamination
- * Surrogate / Internal Standard Recoveries
- * Matrix Spike / Matrix Spike Duplicate Results
- Blank Spike Results
- * Lab Duplicate Results
- * Field Duplicate Results
- * Instrument Performance
- * Compound Identification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

CALIBRATION

The following tables summarize calibration noncompliances and corresponding validation actions. The key associated with this table is presented after the tables.

Compound	CCV 10/06/00; (11:00)	CCV 10/06/00; (21:40)
Acenaphthylene		X
Benzo(B)fluoranthene	X	X
Chrysene	X	
Dibenzo(A,H)anthracene	X	X
Fluorene		X
Pyrene	X	X
Samples Affected:	OU4-RB-001-000A OU4-RB-003-000A OU4-FB-001-000A	OU4-RB-001-000A OU4-RB-001-000A OU4-RB-001-000A

Calibration Actions

X - Percent Difference (%D) greater than 15%. Qualify positive and nondetected results for the affected compounds as estimated (J) and (UJ) respectively.

BLANKS

Biphenyl and 2,6-dimethylnaphthalene were detected in the associated laboratory method blank. Field quality control blanks were not qualified based on method blank contamination.

SURROGATE / INTERNAL STANDARD RECOVERY

Surrogate d12-perylene recovery was not within the 40%-120% quality control limit for the associated method blank. No action was taken based on this noncompliance.

BLANK SPIKE / BLANK SPIKE DUPLICATE

Blank Spike / Blank Spike duplicate % recovery of benzo(B)fluoranthene failed to meet the 40%-120% quality control limit. Only positive results were reported for benzo(B)fluoranthene, and these were qualified as estimated (J) in all samples.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the reporting limit, (RL), were qualified as estimated (J).

Sample holding time was exceeded by 10 days, therefore, the positive results reported for all samples were qualified as estimated (J).

The text of this report has been formulated to address only those problem areas affecting data quality.

MEMO TO: **D. COHEN – PAGE 3**
DATE: **12/08/00 – SDG M3022**

OVERALL ASSESSMENT

Laboratory Performance: The laboratory was not able to meet quality control criteria for the continuing calibration of several compounds.

Blank Spike recoveries of several compounds failed to meet quality control limits.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Douglas S. Schloer
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED LABORATORY RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO201-PORTSMOUTH
WATER DATA
GERG
SDG: M3022

SAMPLE NUMBER:	OU4-FB-001-000A			OU4-RB-001-000A			OU4-RB-003-000A					
SAMPLE DATE:	08/27/00			08/27/00			08/29/00			/ /		
LABORATORY ID:	C36624			C36620			C36794					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	100.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	NG/L			NG/L			NG/L					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	3.81	J	HP	4.16	J	HP	2.43	J	HP			
1-METHYLNAPHTHALENE	4.40	J	HP	6.42	J	HP	3.73	J	HP			
1-METHYLPHENANTHRENE	0.89	J	HP	0.72	J	HP	0.95	J	HP			
2,6-DIMETHYLNAPHTHALENE	8.54	J	H	9.34	J	H	7.84	J	H			
2-METHYLNAPHTHALENE	8.00	J	HP	11.4	J	HP	6.64	J	HP			
ACENAPHTHENE	2.49	J	CHP	3.27	J	CHP	2.54	J	CHP			
ACENAPHTHYLENE	0.80	J	HP	1.17	J	HP	0.71	J	HP			
ANTHRACENE	0.56	J	HP	0.69	J	HP	0.91	J	HP			
BENZO(A)ANTHRACENE	0.51	J	HP	0.65	J	HP	1.41	J	HP			
BENZO(A)PYRENE	0.90	J	HP	1.78	J	HP	1.84	J	HP			
BENZO(B)FLUORANTHENE	0.46	J	CEHP	1.04	J	CEHP	1.58	J	CEHP			
BENZO(E)PYRENE	1.57	J	HP	1.87	J	HP	1.55	J	HP			
BENZO(G,H,I)PERYLENE	2.07	J	HP	1.78	J	HP	1.70	J	HP			
BENZO(K)FLUORANTHENE	0.10	J	HP	0.46	J	HP	0.71	J	HP			
BIPHENYL	6.05	J	H	5.39	J	H	4.69	J	H			
C1-CHRYSENES	0.05	J	HP	0.01	J	HP	1.28	J	HP			
C1-DIBENZOTHIOPHENES	0.04	J	HP	0.14	J	HP	0.24	J	HP			
C1-FLUORANTHENES/PYRENES	0.09	J	HP	0.02	J	HP	1.05	J	HP			
C1-FLUORENES	1.95	J	HP	0.40	J	HP	0.36	J	HP			
C1-NAPHTHALENES	12.4	J	HP	17.8	J	HP	10.4	J	HP			
C1-PHENANTHRENES/ANTHRACENES	2.65	J	HP	1.57	J	HP	2.98	J	HP			
C2-CHRYSENES	0.02	J	HP	0.05	J	HP	9.28	UJ	H			
C2-DIBENZOTHIOPHENES	0.03	J	HP	0.03	J	HP	0.03	J	HP			
C2-FLUORENES	2.65	J	HP	0.11	J	HP	0.31	J	HP			
C2-NAPHTHALENES	23.3	J	H	25.4	J	H	17.2	J	HP			
C2-PHENANTHRENES/ANTHRACENES	2.10	J	HP	1.68	J	HP	0.52	J	HP			
C3-CHRYSENES	0.01	J	HP	0.03	J	HP	0.01	J	HP			
C3-DIBENZOTHIOPHENES	0.10	J	HP	0.02	J	HP	0.01	J	HP			
C3-FLUORENES	0.31	J	HP	0.59	J	HP	0.32	J	HP			
C3-NAPHTHALENES	16.3	J	HP	12.8	J	HP	7.38	J	HP			
C3-PHE[illegible]NTHRENES/ANTHRACENES	0.13	J	HP	0.12	J	HP	0.35	J	HP			
C4-CH[illegible]ENES	0.08	J	HP	[illegible]	J	HP	0.07	J	HP			
[illegible]	9.10	J	HP	7.[illegible]	J	HP	1.42	J	HP			

CTO201-PORTSMOUTH
WATER DATA
GERG
SDG: M3022

SAMPLE NUMBER:	OU4-FB-001-000A	OU4-RB-001-000A	OU4-RB-003-000A	
SAMPLE DATE:	08/27/00	08/27/00	08/29/00	/ /
LABORATORY ID:	C36624	C36620	C36794	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	100.0 %	100.0 %	100.0 %	100.0 %
UNITS:	NG/L	NG/L	NG/L	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	0.07	J	HP	0.05	J	HP	0.12	J	HP			
CHRYSENE	1.23	J	CHP	1.81	J	CHP	4.25	J	CHP			
DIBENZO(A,H)ANTHRACENE	0.08	J	CHP	0.13	J	CHP	0.15	J	CHP			
DIBENZOTHIOPHENE	1.23	J	HP	1.43	J	HP	1.44	J	HP			
FLUORANTHENE	1.30	J	HP	3.02	J	HP	7.55	J	H			
FLUORENE	4.09	J	CH	4.57	J	CH	4.22	J	H			
INDENO(1,2,3-CD)PYRENE	0.21	J	HP	0.17	J	HP	0.57	J	CHP			
NAPHTHALENE	14.3	J	H	21.2	J	H	9.83	J	HP			
PERYLENE	0.38	J	HP	0.66	J	HP	0.63	J	HP			
PHENANTHRENE	7.39	J	H	9.98	J	H	13.9	J	H			
PYRENE	1.28	J	CHP	2.20	J	CHP	4.71	J	CHP			

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 12, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PCBs and PESTICIDES**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – M3022

SAMPLES: 3/Aqueous/

OU4-FB-001-000A OU4-RB-001-000A OU4-RB-003-000A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG M3024 consisting of three (2) aqueous field quality control samples were included in this SDG. Samples were analyzed for pesticides and PCBs.

The samples were collected by Tetra Tech NUS on August 27 and 29, 1999 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using GERG SOP 9810 and 9805 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- Data Completeness
- Holding Times
- * Calibration
- * Method Blank Results
- * Surrogate Standard Recoveries
- * Instrument Performance
- * Compound Identification
- * Compound Quantitation
- * Matrix Spike/Matrix Spike Duplicate Results
- * Standard Reference Materials
- * Field Duplicate Results

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

HOLDING TIMES

The samples were extracted 15 to 17 days after sample collection. Nondetected results were rejected, UR. Positive results were qualified as estimated, J.

BLANKS

The maximum concentration of contaminants found in the laboratory method blank and field quality control blank (*) analyses are summarized below.

Compound	Maximum Concentration	Blank Action Level
Pentachloroanisole*	0.22 ng/L	1.10 ng/L
2,4'-DDE*	0.94 ng/L	4.7 ng/L
PCB 18/17*	1.4 ng/L	7.0 ng/L
PCB 44*	0.37 ng/L	1.85 ng/L
PCB 153/132*	0.05 ng/L	0.25 ng/L
PCB 105	0.13 ng/L	0.65 ng/L
PCB 138/160*	14 ng/L	70 ng/L
PCB 187	0.27 ng/L	1.35 ng/L
PCB 180	0.7 ng/L	3.5 ng/L
1,2,3,4-Tetrachlorobenzene*	0.62 ng/L	3.1 ng/L
1,2,4,5-Tetrachlorobenzene*	1.4 ng/L	7.0 ng/L
4,4'-DDE*	0.01 ng/L	0.05 ng/L
a-BHC*	0.44 ng/L	2.2 ng/L
Mirex*	0.2 ng/L	1.0 ng/L
PCB 149/123*	0.37 ng/L	1.85 ng/L
PCB 167*	0.47 ng/L	2.35 ng/L
PCB 170/190*	0.91 ng/L	4.55 ng/L
PCB 28*	0.41 ng/L	2.05 ng/L
PCB 52*	1.5 ng/L	7.5 ng/L
PCB 8/5*	2.3 ng/L	11.5 ng/L
PCB 81*	0.08 ng/L	0.4 ng/L
Pentachlorobenzene*	0.57 ng/L	2.85 ng/L

Samples Affected: All

Blank Actions:

Field quality control blanks were not qualified on the basis of method blank contamination. No qualifiers were assigned on this basis.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses. Samples were extracted 15-17 days after sample collection.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
WATER DATA
GERG
SDG: M3022

SAMPLE NUMBER:	OU4-FB-001-000A	OU4-RB-001-000A	OU4-RB-003-000A	
SAMPLE DATE:	08/27/00	08/27/00	08/29/00	/ /
LABORATORY ID:	C36624	C36620	C36794	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	0.0 %	0.0 %	0.0 %	100.0 %
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
LIPID(NG/L)	0			0			0					

CTO201-PORTSMOUTH
WATER DATA
GERG
SDG: M3022

SAMPLE NUMBER:	OU4-FB-001-000A			OU4-RB-001-000A			OU4-RB-003-000A					
SAMPLE DATE:	08/27/00			08/27/00			08/29/00			/ /		
LABORATORY ID:	C36624			C36620			C36794					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	NG/L			NG/L			NG/L					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.39	J	HP	0.59	J	H	0.62	J	H			
1,2,4,5-TETRACHLOROBENZENE	0.42	UR	H	1.4	J	H	0.42	UR	H			
2,4'-DDD	0.43	UR	H	0.43	UR	H	0.43	UR	H			
2,4'-DDE	0.040	J	HP	0.49	J	HP	0.94	J	HP			
2,4'-DDT	1.7	UR	H	1.7	UR	H	1.7	UR	H			
4,4'-DDD	0.74	UR	H	0.74	UR	H	0.74	UR	H			
4,4'-DDE	0.38	UR	H	0.38	UR	H	0.010	J	HP			
4,4'-DDT	3.6	UR	H	3.6	UR	H	3.6	UR	H			
ALDRIN	0.22	UR	H	0.22	UR	H	0.22	UR	H			
ALPHA-BHC	0.28	J	HP	0.31	J	HP	0.44	J	H			
ALPHA-CHLORDANE	0.32	UR	H	0.32	UR	H	0.32	UR	H			
BETA-BHC	1.2	UR	H	1.2	UR	H	1.2	UR	H			
CHLORPYRIFOS	1.8	UR	H	1.8	UR	H	1.8	UR	H			
CIS-NONACHLOR	0.42	UR	H	0.42	UR	H	0.42	UR	H			
DELTA-BHC	0.32	UR	H	0.32	UR	H	0.32	UR	H			
DIELDRIN	0.39	UR	H	0.39	UR	H	0.39	UR	H			
ENDOSULFAN II	0.42	UR	H	0.42	UR	H	0.42	UR	H			
ENDRIN	0.70	UR	H	0.70	UR	H	0.70	UR	H			
GAMMA-BHC (LINDANE)	0.61	UR	H	0.61	UR	H	0.61	UR	H			
GAMMA-CHLORDANE	0.33	UR	H	0.33	UR	H	0.33	UR	H			
HEPTACHLOR	1.0	UR	H	1.0	UR	H	1.0	UR	H			
HEPTACHLOR EPOXIDE	0.55	UR	H	0.55	UR	H	0.55	UR	H			
HEXACHLOROBENZENE	0.26	UR	H	0.26	UR	H	0.26	UR	H			
MIREX	0.59	UR	H	0.20	J	HP	0.59	UR	H			
OXYCHLORDANE	0.50	UR	H	0.50	UR	H	0.50	UR	H			
PCB-101/90	0.44	UR	H	0.44	UR	H	0.44	UR	H			
PCB-105	0.40	UR	H	0.40	UR	H	0.40	UR	H			
PCB-110	0.36	UR	H	0.36	UR	H	0.36	UR	H			
PCB-114	1.0	UR	H	1.0	UR	H	1.0	UR	H			
PCB-118	0.62	UR	H	0.62	UR	H	0.62	UR	H			
PCB-126	1.0	UR	H	1.0	UR	H	1.0	UR	H			
PCB-1[illegible]	0.84	UR	H	[illegible]	UR	H	0.84	UR	H			
PCB-13[illegible]0	14	J	H	1[illegible]	J	H	8.4	J	H			

CTO201-PORTSMOUTH
WATER DATA
GERG
SDG: M3022

SAMPLE NUMBER:	OU4-FB-001-000A			OU4-RB-001-000A			OU4-RB-003-000A					
SAMPLE DATE:	08/27/00			08/27/00			08/29/00			/ /		
LABORATORY ID:	C36624			C36620			C36794					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	NG/L			NG/L			NG/L					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-149/123	0.20	J	HP	0.35	J	HP	0.37	J	HP			
PCB-153/132	0.030	J	HP	0.050	J	HP	0.030	J	HP			
PCB-156	1.0	UR	H	1.0	UR	H	1.0	UR	H			
PCB-167	1.0	UR	H	0.47	J	HP	1.0	UR	H			
PCB-169	1.0	UR	H	1.0	UR	H	1.0	UR	H			
PCB-170/190	0.53	J	HP	0.50	J	HP	0.91	J	HP			
PCB-18/17	2.6	UR	H	1.4	J	HP	2.6	UR	H			
PCB-180	0.73	UR	H	0.26	J	HP	0.73	UR	H			
PCB-187	0.45	UR	H	0.45	UR	H	0.45	UR	H			
PCB-189	1.0	UR	H	1.0	UR	H	1.0	UR	H			
PCB-195/208	0.63	UR	H	0.63	UR	H	0.63	UR	H			
PCB-201/157/173	1.7	UR	H	1.7	UR	H	1.7	UR	H			
PCB-206	0.64	UR	H	0.64	UR	H	0.64	UR	H			
PCB-209	1.4	UR	H	1.4	UR	H	1.4	UR	H			
PCB-28	0.30	J	HP	0.41	J	HP	1.1	UR	H			
PCB-44	0.37	J	HP	0.33	J	HP	0.29	J	HP			
PCB-52	0.44	J	H	0.44	J	H	1.5	J	H			
PCB-66	0.39	UR	H	0.39	UR	H	0.39	UR	H			
PCB-77	1.0	UR	H	1.0	UR	H	1.0	UR	H			
PCB-8/5	0.75	J	H	1.6	J	H	2.3	J	H			
PCB-81	1.0	UR	H	1.0	UR	H	0.080	J	HP			
PENTACHLOROANISOLE	0.13	J	HP	0.15	J	HP	0.22	J	HP			
PENTACHLOROBENZENE	0.57	J	H	0.31	J	HP	0.17	J	HP			
TRANS-NONACHLOR	0.47	UR	H	0.47	UR	H	0.47	UR	H			

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 8, 2000**

FROM: **DOUGLAS S. SCHLOER** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYNUCLEAR AROMATIC HYDROCARBONS**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – M3023

SAMPLES: 20 / Sediments / PAH

OU4-FD-004-000A	OU4-SD-M01-100A	OU4-SD-M01-200A	OU4-SD-M01-300A
OU4-SD-M02-100A	OU4-SD-M02-200A	OU4-SD-M02-300A	OU4-SD-M06-100A
OU4-SD-M07-100A	OU4-SD-M08-100A	OU4-SD-M08-300A	OU4-SD-M09-200A
OU4-SD-M10-100A	OU4-SD-M10-200A	OU4-SD-M10-300A	OU4-SD-M13-100A
OU4-SD-M13-200A	OU4-SD-M13-300A	OU4-SD-M14-100A	OU4-SD-M14-200A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine; SDG M3023 consists of twenty (20) sediment samples. The samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). Two field duplicate pairs were included in this SDG: OU4-SD-M01-300A and *OU4-FD-001-000A; *OU4-SD-M09-300A and OU4-FD-004-000A. The symbol (*) indicates samples that were not analyzed within this SDG.

The samples were collected by Tetra Tech NUS on August 27th, 28th and 29th, 2000 and were analyzed by Texas A&M University under NOAA Technical Memorandum NOS ORCA 130 Quality Assurance/Quality Control (QA/QC) criteria. All analyses and preparations were conducted using NOAA Technical Memorandum NOS ORCQ 130 (Program Mussel Watch) Methods.

The data were evaluated based on the following parameters:

- * Data Completeness
- Holding Times
- * GC/MS Tuning and System Performance
- Initial / Continuing Calibration
- Blank Contamination
- Surrogate / Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate Results
- Blank Spike Results
- * Lab Duplicate Results
- Field Duplicate Results
- * Instrument Performance
- * Compound Identification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

CALIBRATION

The following tables summarize calibration noncompliances and corresponding validation actions. The key associated with this table is presented after the tables.

Compound	CCV 10/04/00; (21:25)	CCV 10/05/00; (05:26)	CCV 10/05/00; (13:27)	CCV 10/05/00; (18:35)
1-Methylnaphthalene		X	X	
Acenaphthene			X	X
Benzo(G,H,I)perylene	X		X	
Benzo(B)fluoranthene			X	
Benzo(A)pyrene		X	X	
Biphenyl		X		
Dibenzo(A,H)anthracene	X			
Indeno(1,2,3-CD)pyrene	X			
Pyrene	X	X	X	X
Samples Affected:	OU4-FD-004-000A OU4-SD-M01-200A	OU4-FD-004-000A OU4-SD-M01-200A OU4-SD-M02-100A OU4-SD-M02-200A OU4-SD-M02-300A OU4-SD-M06-100A OU4-SD-M07-100A OU4-SD-M08-100A OU4-SD-M08-300A OU4-SD-M09-200A OU4-SD-M10-100A OU4-SD-M10-200A	OU4-MU-M02-100A OU4-MU-M02-200A OU4-MU-M02-300A OU4-MU-M06-100A OU4-MU-M07-100A OU4-MU-R04-300A OU4-MU-M08-100A OU4-MU-M09-200A OU4-MU-M10-100A OU4-MU-M10-200A OU4-MU-M13-200A OU4-MU-M13-300A OU4-MU-M14-100A OU4-MU-M14-200A	OU4-MU-M10-200A OU4-MU-M13-200A OU4-MU-M13-300A OU4-MU-M14-100A OU4-MU-M14-200A

Compound	CCV 10/27/00; (13:31)	CCV 10/27/00; (17:10)
Benzo(G,H,I)perylene	X	
Benzo(K)fluoranthene	X	X
Benzo(A)pyrene	X	
Benzo(E)pyrene	X	
Chrysene	X	
Samples Affected:	OU4-SD-M01-100A OU4-SD-M01-300A OU4-SD-M13-100A	OU4-SD-M01-100A OU4-SD-M01-300A OU4-SD-M13-100A

Calibration Actions

X - Percent Difference (%D) greater than 15%. Qualify positive and nondetected results for the affected compounds as estimated (J) and (UJ) respectively.

BLANKS

The maximum concentration of contaminants found in associated laboratory method blank and/or field quality control blanks are summarized below:

Compound	Maximum Concentration (Ng/g)	Blank Action Level (Ng/g)
Benzo(A)pyrene	1.38	6.9
Benzo(E)pyrene	1.61	8.05
Benzo(G,H,I)perylene	2.91	14.55
C1-fluorenes	2.88	14.4
C3-fluorenes	1.80	9.0
C3-naphthalenes	1.28	6.4
C4-naphthalenes	1.72	8.6
Fluoranthene	2.72	13.6
Pyrene	9.89	49.45

Samples Affected: All
Blank Actions:

- Value < Contract Required Quantitation Limit (CRQL); report CRQL followed by a U.
- Value > CRQL and < action level; report value followed by a U.
- Value > CRQL and > action level; report value unqualified.

Dilution factors, % solids*, and sample aliquots used for analysis were taken into consideration prior to the application of blank action levels. Positive results less than the blank action level for the aforementioned compounds were qualified as nondetected (U) in the affected samples. Field quality control blanks were not qualified due to method blank contamination.

* Sample results are calculated on a dry weight basis, therefore, the ratios of method blank to sample dry weights were taken into consideration when applying the blank action level. As a result of this adjustment, % solids are accounted for.

SURROGATE / INTERNAL STANDARD RECOVERY

Surrogate recovery was not within the 40%-120% quality control limit for samples OU4-SD-M01-100A, OU4-SD-M01-300A and OU4-SD-M13-100A. Since the samples required dilution for analysis, no action was taken based on this noncompliance.

Recovery of surrogate d8-naphthalene fell below the 40%-120% (but >10%) quality control limit in the following samples:

OU4-SD-M02-200A	OU4-SD-M08-300A	OU4-SD-M09-200A	OU4-SD-M10-100A
OU4-SD-M10-300A	OU4-SD-M13-200A	OU4-SD-M13-300A	OU4-SD-M14-100A
OU4-SD-M14-200A			

Only positive results were reported for target compounds associated with d8-naphthalene, and these were qualified as estimated (J) in the aforementioned samples.

Recovery of surrogate d12-perylene fell below the 40%-120% (but >10%) quality control limit in sample OU4-SD-M08-300A. Only positive results were reported for target compounds associated with d8-naphthalene, and these were qualified as estimated (J) in the sample mentioned above.

Recovery of surrogate d12-chrysene fell below the 40%-120% (but >10%) quality control limit in sample OU4-SD-M10-300A. Only positive results were reported for the associated target compounds quantitated based on d12-chrysene recovery, and these were qualified as estimated (J) in the aforementioned sample.

Recovery of surrogate d8-naphthalene fell below the 40%-120% (but >10%) quality control limit in the associated laboratory method blank and Standard Reference Material (SRM) Q18958. No action was taken based on this noncompliance.

STANDARD REFERENCE MATERIAL

Standard Reference Material (SRM) % recoveries of dibenzo(A,H)anthracene, benzo(B)fluoranthene, benzo(A)pyrene, 1-methylnaphthalene and 2-methylnaphthalene failed to meet the quality control limit of ± 35% deviation from manufacturer certified concentrations. Only positive results were reported for the aforementioned compounds, and these were qualified as estimated (J) in all samples.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

% Recoveries of all Matrix Spike compounds were not compliant with the 40%-120% quality control limit except for 2,6-dimethylnaphthalene, 1,6,7-trimethylnaphthalene and 1-methylphenanthrene, which were within quality control limits.

% Recoveries of all Matrix Spike Duplicate compounds were not compliant with the 40%-120% quality control limit except for biphenyl, acenaphthene, fluorene, 2,6-dimethylnaphthalene, 1,6,7-trimethylnaphthalene and 1-methylnaphthalene, which were within quality control limits.

MS / MSD Relative Percent Differences (RPDs) for all compounds exceeded the 25% quality control limit except for biphenyl, dibenzothiophene, benzo(K)fluoranthene, 2,6-dimethylnaphthalene and 1,6,7-trimethylnaphthalene. The unspiked sample OU4-SD-M08-100A contained significant concentrations of the spiked compounds, which, in light of this fact may not warrant action based on % recovery noncompliance. However, since the laboratory could not demonstrate acceptable MS / MSD precision, all parameters except 2,6-dimethylnaphthalene and 1,6,7-trimethylnaphthalene were qualified as estimated (J) in the unspiked sample. Additionally, 2,6-dimethylnaphthalene and 1,6,7-trimethylnaphthalene were not qualified in this manner since the % recovery and RPD of these compounds were compliant.

FIELD DUPLICATE RESULTS

Relative percent differences (RPDs) greater than 50% were noted for several compounds in the field duplicates. Positive results for compounds that exceeded the 50% RPD quality control limit were qualified as estimated (J) in the field duplicate pair.

COMPOUND QUANTITATION

Due to the presence of target compounds, samples OU4-SD-M01-100A, OU4-SD-M01-300A and OU4-SD-M13-100A were analyzed and reported at 25X, 10X and 10X dilutions respectively.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the reporting limit, (RL), were qualified as estimated (J).

Samples were frozen from time of receipt at the laboratory to sample extraction, therefore, holding time from sample collection to sample extraction is not an issue, however, the 40 day holding time from sample extraction to analysis was exceeded for samples OU4-SD-M01-100A, OU4-SD-M01-300A and OU4-SD-M13-100A. Only positive results were reported for all parameters in the aforementioned samples, and these were qualified as estimated (J).

Samples were reported on a dry weight basis. This is consistent with historical data from this site.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: The laboratory was not able to meet quality control criteria for the continuing calibration of several compounds.

SRM % recoveries of several compounds failed to meet quality control limits.

Other Factors Affecting Data Quality: Field duplicate RPDs exceeded 50% for several compounds.

MS / MSD % recoveries and Relative Percent Differences (RPDs) of several compounds were not compliant with quality control limits.

Recovery of the surrogates d8-naphthalene, d12-perylene and d12-chrysene fell below quality control limits in several QC and environmental samples.

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Douglas S. Schloer
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

		PORTSMOUTH NAVAL SHIPYARD FIELD DUPLICATES											
SDG		M3021		M3023				M3023		M3024			
FRACTION	COMPOUND	OU4-SD-M09-300A RESULT ng/g		OU4-FD-004-000A RESULT ng/g		RPD		OU4-SD-M01-300A RESULT ng/g		OU4-FD-001-000A RESULT ng/g		RPD	
PAH													
	1,6,7-Trimethylnaphthalene	14.42		16.74		-14.9		32.21		22.13		37.1	
	1-Methylnaphthalene	32.86		34.39		-4.6		97.16		47.36		68.9	
	1-Methylphenanthrene	44.8		56.21		-22.6		233.57		215.68		8.0	
	2,6-Dimethylnaphthalene	21.41		24.74		-14.4		47.16		28.81		48.3	
	2-Methylnaphthalene	49.19		51.7		-5.0		126.06		92.65		30.6	
	Acenaphthene	76.75		91.5		-17.5		84.18		64.61		26.3	
	Acenaphthylene	101.33		125.21		-21.1		448.67		453.39		-1.0	
	Anthracene	223.93		290.73		-26.0		846.45		384.83		75.0	
	Benzo(A)anthracene	478.92		655.07		-31.1		1200.08		1549.24		-25.4	
	Benzo(A)pyrene	101.88		274.28		-91.7		2040.78		2071.06		-1.5	
	Benzo(B)fluoranthene	802.53		1023.24		-24.2		1291.37		2441.58		-61.6	
	Benzo(E)pyrene	421.46		522.07		-21.3		1243.34		2062.36		-49.6	
	Benzo(G,H,I)perylene	418.01		538.43		-25.2		1152.88		1713.31		-39.1	
	Benzo(K)fluoranthene	270.58		347.45		-24.9		489.57		416.86		16.0	
	Biphenyl	10.91		12.36		-12.5		34.8		25.3		31.6	
	C1-Chrysenes	364.88		475.86		-26.4		1660.59		2386.1		-35.9	
	C1-Dibenzothiophenes	24.98		29.71		-17.3		54.73		44		21.7	
	C1-Fluoranthenes/Pyrenes	541.69		655.49		-19.0		3363.68		2720.21		21.2	
	C1-Fluorenes	45.54		57.06		-22.5		249.38		349.08		-33.3	
	C1-Naphthalenes	82.05		86.09		-4.8		223.22		140.01		45.8	
	C1-Phenanthrenes/Anthracenes	230.86		287.38		-21.8		931.57		670.26		32.6	
	C2-Chrysenes	134.49		196.31		-37.4		769.28		892.83		-14.9	
	C2-Dibenzothiophenes	30.53		37.02		-19.2		114.14		122.79		-7.3	
	C2-Fluorenes	71.61		59.22		18.9		285.13		343.79		-18.7	
	C2-Naphthalenes	84.28		53.56		44.6		283.06		151.62		60.5	
	C2-Phenanthrenes/Anthracenes	152.13		187.43		-20.8		1062.04		1088.17		-2.4	
	C3-Chrysenes	10.01		11.64		-15.1		12.85	J	0.27	J	191.8	
	C3-Dibenzothiophenes	27.73		30.14		-8.3		139.57		160.58		-14.0	
	C3-Fluorenes	21		49.89		-81.5		314.93		387.66		-20.7	
	C3-Naphthalenes	82.43		77.14		6.6		214.69		146.27		37.9	
	C3-Phenanthrenes/Anthracenes	85.59		103.15		-18.6		824.29		888.42		-7.5	
	C4-Chrysenes	11.56		13.1		-12.5		18.16		8.31		74.4	
	C4-Naphthalenes	34.65		39.07		-12.0		157.38		130.26		18.9	
	C4-Phenanthrenes/Anthracenes	63.6		101.83		-46.2		431.51		415.04		3.9	
	Chrysene	548.19		658.92		-18.3		1280.25		1501.55		-15.9	
	Dibenzo(a,h)anthracene	109.74		124.42		-12.5		196.33		391.93		-66.5	
	Dibenzothiophene	30.25		32.71		-7.8		40.37		26.93		39.9	
	Fluoranthene	1024.45		1216.08		-17.1		1825.31		1294.51		34.0	
	Fluorene	87.92		113.7		-25.6		215.19		133.16		47.1	
	Indeno(1,2,3-c,d)pyrene	465.92		547.76		-16.1		808.98		1370.81		-51.5	
	Naphthalene	77.25		71.95		7.1		157.57		167.74		-6.3	
	Perylene	205.61		212.76		-3.4		354.49		218.34		47.5	
	Phenanthrene	497.42		604.15		-19.4		1100.58		514.13		72.6	
	Pyrene	947.48		1128.65		-17.5		2840.21		2433.29		15.4	

ND - Compound not detected.
NC - RPD not calculated.

		PORTSMOUTH NAVAL SHIPYARD FIELD DUPLICATES					
SDG		M3023	M3024		M3023	M3024	
FRACTION	COMPOUND	OU4-SD-M08-100A	OU4-FD-003-000A	RPD	OU4-SD-M10-100A	OU4-FD-005-000A	RPD
		RESULT ng/g	RESULT ng/g		RESULT ng/g	RESULT ng/g	
PAH							
	1,6,7-Trimethylnaphthalene	12.6	10.38	19.3	4.09	3.55	14.1
	1-Methylnaphthalene	29.23	22.12	27.7	9.11	8.45	7.5
	1-Methylphenanthrene	44.45	42.68	4.1	11.32	23.22	-68.9
	2,6-Dimethylnaphthalene	18.04	16.89	6.6	7.43	5.86	23.6
	2-Methylnaphthalene	45.25	37.58	18.5	20.48	15.91	25.1
	Acenaphthene	43.17	55.92	-25.7	3.98	10.32	-88.7
	Acenaphthylene	83.07	90.85	-8.9	23.54	29.51	-22.5
	Anthracene	214.47	211.77	1.3	43.02	77.02	-56.6
	Benzo(A)anthracene	426.52	379.14	11.8	103.2	210.68	-68.5
	Benzo(A)pyrene	369.6	574.74	-43.4	60.2	373.32	-144.5
	Benzo(B)fluoranthene	689.77	711.99	-3.2	162.52	304.83	-60.9
	Benzo(E)pyrene	367.43	348.03	5.4	95.42	171.02	-56.7
	Benzo(G,H,I)perylene	343.85	304.45	12.2	94.58	153.11	-47.3
	Benzo(K)fluoranthene	198.62	213.93	-7.4	43.92	114.54	-89.1
	Biphenyl	7.82	7.76	0.8	3.3	2.75	18.2
	C1-Chrysenes	293.64	163.67	56.8	83.2	80.88	2.8
	C1-Dibenzothiophenes	18.23	15.33	17.3	6.36	8.34	-26.9
	C1-Fluoranthenes/Pyrenes	427.31	220.51	63.8	76.49	110.88	-36.7
	C1-Fluorenes	32.01	30.61	4.5	11.44	12.83	-11.5
	C1-Naphthalenes	74.48	59.7	22.0	29.59	24.36	19.4
	C1-Phenanthrenes/Anthracenes	169.35	135.94	21.9	52.03	71.63	-31.7
	C2-Chrysenes	114.39	73.63	43.4	52.27	67.87	-26.0
	C2-Dibenzothiophenes	23.63	17.22	31.4	6.84	9.76	-35.2
	C2-Fluorenes	40.45	46.66	-14.3	15.33	19	-21.4
	C2-Naphthalenes	84.27	63.29	28.4	33.73	28.6	16.5
	C2-Phenanthrenes/Anthracenes	150.49	71.88	70.7	27.67	41.05	-38.9
	C3-Chrysenes	8.91	5.15	53.5	10.77	8.77	20.5
	C3-Dibenzothiophenes	27.1	10.61	87.5	4.61	6.57	-35.1
	C3-Fluorenes	45.67	45.32	0.8	13.63	20.51	-40.3
	C3-Naphthalenes	71.71	57.94	21.2	31.87	27.22	15.7
	C3-Phenanthrenes/Anthracenes	196.19	39.76	132.6	14.5	20.56	-34.6
	C4-Chrysenes	8.61	5.06	51.9	3.48	2.51	32.4
	C4-Naphthalenes	51.59	31.41	48.6	13.05	13.57	-3.9
	C4-Phenanthrenes/Anthracenes	110.06	19.55	139.7	10.59	9.24	13.6
	Chrysene	476.4	451.57	5.4	109.26	184.88	-51.4
	Dibenzo(a,h)anthracene	84.36	83.48	1.0	23.93	45.18	-61.5
	Dibenzothiophene	17.86	22.13	-21.4	6.12	9.23	-40.5
	Fluoranthene	789.63	810.17	-2.6	194.01	353.99	-58.4
	Fluorene	47.56	76	-46.0	12.16	22.7	-60.5
	Indeno(1,2,3-c,d)pyrene	345.7	353.69	-2.3	88.52	167.92	-61.9
	Naphthalene	41.56	41.2	0.9	24.15	25.86	-6.8
	Perylene	71.47	106.02	-38.9	30.65	42.71	-32.9
	Phenanthrene	293.4	420.07	-35.5	103.08	175.11	-51.8
	Pyrene	716.63	683.07	4.8	156.23	275.51	-55.3

ND - Compound not detected.
NC - RPD not calculated.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-FD-004-000A			OU4-SD-M01-100A			OU4-SD-M01-200A			OU4-SD-M01-300A		
SAMPLE DATE:	08/27/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36615			C36644			C36649			C36654		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	36.7 %			64.2 %			80.8 %			54.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M09-300A											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	16.7			56.5	J	H	8.56			32.2	J	H
1-METHYLNAPHTHALENE	34.4	J	CE	123	J	EH	36.2	J	CE	97.2	J	EGH
1-METHYLPHENANTHRENE	56.2			382	J	H	39.8			234	J	H
2,6-DIMETHYLNAPHTHALENE	24.7			76.0	J	H	16.6			47.2	J	H
2-METHYLNAPHTHALENE	51.7	J	E	143	J	EH	58.4	J	E	126	J	EH
ACENAPHTHENE	91.5			766	J	H	9.63			84.2	J	H
ACENAPHTHYLENE	125			151	J	H	114			449	J	H
ANTHRACENE	291			1471	J	H	146			846	J	GH
BENZO(A)ANTHRACENE	655			2137	J	H	276			1200	J	H
BENZO(A)PYRENE	274	J	CEG	2729	J	CH	127	J	C	2041	J	CH
BENZO(B)FLUORANTHENE	1023	J	E	2293	J	EH	490	J	E	1291	J	EGH
BENZO(E)PYRENE	522			1370	J	CEH	339	J	E	1243	J	CH
BENZO(G,H,I)PERYLENE	538	J	C	1111	J	CH	416	J	C	1153	J	CH
BENZO(K)FLUORANTHENE	347			893	J	CH	160			490	J	CH
BIPHENYL	12.4	J	C	45.2	J	H	9.82	J	C	34.8	J	H
C1-CHRYSENES	476			1211	J	H	288			1661	J	H
C1-DIBENZOTHIOPHENES	29.7			112	J	H	13.5			54.7	J	H
C1-FLUORANTHENES/PYRENES	655			2563	J	H	317			3364	J	H
C1-FLUORENES	57.1			277	U	A	35.6			249	J	H
C1-NAPHTHALENES	86.1			265	J	H	94.6			223	J	H
C1-PHENANTHRENES/ANTHRACENES	287			1549	J	H	139			932	J	H
C2-CHRYSENES	196			423	J	H	135			769	J	H
C2-DIBENZOTHIOPHENES	37.0			78.3	J	H	17.7			114	J	H
C2-FLUORENES	59.2			119	J	H	53.5			285	J	H
C2-NAPHTHALENES	53.6			236	J	H	89.4			283	J	GH
C2-PHENANTHRENES/ANTHRACENES	187			859	J	H	110			1062	J	H
C3-CHRYSENES	11.6			12.0	J	HP	7.32			12.9	J	GHP
C3-DIBENZOTHIOPHENES	30.1			54.6	J	H	13.1			140	J	H
C3-FLUORENES	49.9	J	G	63.2	U	A	41.1			315	J	H
C3-NAPHTHALENES	77.1			235	J	H	63.3			215	J	H
C3-PHENANTHRENES/ANTHRACENES	103			375	J	H	64.8			824	J	H
C4-CHRYSENES	13.1			8.27	J	HP	8.05			18.2	J	GH
C4-NAPHTHALENES	39.1			127	U	A	39.8			157	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-FD-004-000A			OU4-SD-M01-100A			OU4-SD-M01-200A			OU4-SD-M01-300A		
SAMPLE DATE:	08/27/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36615			C36644			C36649			C36654		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	36.7 %			64.2 %			80.8 %			54.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M09-300A											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	102			133	J	H	48.7			432	J	H
CHRYSENE	659			2001	J	CH	320			1280	J	CH
DIBENZO(A,H)ANTHRACENE	124	J	CE	226	J	EH	94.9	J	CE	196	J	EGH
DIBENZOTHIOPHENE	32.7			210	J	H	8.83			40.4	J	H
FLUORANTHENE	1216			5746	J	H	369			1825	J	H
FLUORENE	114			761	J	H	21.5			215	J	H
INDENO(1,2,3-CD)PYRENE	548	J	C	1107	J	H	362	J	C	809	J	GH
NAPHTHALENE	72.0			247	J	H	63.9			158	J	H
PERYLENE	213			468	J	H	58.0			354	J	H
PHENANTHRENE	604			4906	J	H	164			1101	J	GH
PYRENE	1129	J	C	5126	J	H	349	J	C	2840	J	H

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-SD-M02-100A			OU4-SD-M02-200A			OU4-SD-M02-300A			OU4-SD-M06-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/29/00		
LABORATORY ID:	C36659			C36664			C36669			C36674		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	68.1 %			73.0 %			35.2 %			74.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	1.93			10.8			4.36			5.51		
1-METHYLNAPHTHALENE	3.42	J	CE	25.1	J	ECR	9.67	J	EC	9.15	J	CE
1-METHYLPHENANTHRENE	6.71			28.0			26.2			31.6		
2,6-DIMETHYLNAPHTHALENE	2.72			17.8			6.00			10.8		
2-METHYLNAPHTHALENE	4.86	J	E	49.2	J	E	12.7	J	E	18.2	J	E
ACENAPHTHENE	2.38	J	C	15.8	J	C	14.8	J	C	11.0	J	C
ACENAPHTHYLENE	12.7			79.2			45.8			41.6		
ANTHRACENE	21.9			110			82.7			83.5		
BENZO(A)ANTHRACENE	32.6			265			159			233		
BENZO(A)PYRENE	46.0	J	C	98.5	J	EC	52.5	J	EC	113	J	CE
BENZO(B)FLUORANTHENE	63.4	J	CE	393	J	EC	240	J	EC	438	J	CE
BENZO(E)PYRENE	33.3	J	CE	225			119			210		
BENZO(G,H,I)PERYLENE	33.0	J	C	257	J	C	114	J	C	225	J	C
BENZO(K)FLUORANTHENE	17.8			125			85.0			149		
BIPHENYL	1.38	J	C	7.16	J	C	3.50	J	C	4.56	J	C
C1-CHRYSENES	29.8			249			119			150		
C1-DIBENZOTHIOPHENES	2.45			19.9			8.61			10.5		
C1-FLUORANTHENES/PYRENES	34.9			257			159			255		
C1-FLUORENES	4.91	U	A	38.6			16.5			16.9	U	A
C1-NAPHTHALENES	8.28			74.3	J	R	22.4			27.4		
C1-PHENANTHRENES/ANTHRACENES	19.7			155			76.5			90.5		
C2-CHRYSENES	13.6			113			42.5			71.2		
C2-DIBENZOTHIOPHENES	3.24			29.0			12.0			14.6		
C2-FLUORENES	6.71			64.7			23.6			32.2		
C2-NAPHTHALENES	8.99			79.4			27.2			31.8		
C2-PHENANTHRENES/ANTHRACENES	13.5			113			48.9			54.2		
C3-CHRYSENES	2.30			9.89			5.01			3.85		
C3-DIBENZOTHIOPHENES	2.39			20.3			9.90			11.5		
C3-FLUORENES	6.26	U	A	53.6			18.4			13.9		
C3-NAPHTHALENES	8.06	U	A	91.8			21.3			28.8		
C3-PHENANTHRENES/ANTHRACENES	8.96			56.6			41.4			35.0		
C4-CHRYSENES	2.93			8.97			13.2			6.10		
C4-NAPHTHALENES	10.5	U	A	38.8			22.4			17.8		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-SD-M02-100A			OU4-SD-M02-200A			OU4-SD-M02-300A			OU4-SD-M06-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/29/00		
LABORATORY ID:	C36659			C36664			C36669			C36674		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	68.1 %			73.0 %			35.2 %			74.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	4.98			34.9			20.0			43.9		
CHRYSENE	36.7			298			163			249		
DIBENZO(A,H)ANTHRACENE	7.00	J	E	57.6	J	E	28.4	J	E	47.1	J	E
DIBENZOTHIOPHENE	1.93			13.9			7.54			11.7		
FLUORANTHENE	52.7			345			255			488		
FLUORENE	4.85			33.1			22.3			22.3		
INDENO(1,2,3-CD)PYRENE	33.5			247			121			237		
NAPHTHALENE	7.43			60.5	J	R	19.8			21.5		
PERYLENE	19.9			69.4			43.7			72.5		
PHENANTHRENE	24.8			192			125			193		
PYRENE	51.8	U	A	322	J	C	209	J	C	436	J	C

SAMPLE NUMBER:	OU4-SD-M07-100A			OU4-SD-M08-100A			OU4-SD-M08-300A			OU4-SD-M09-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/29/00		
LABORATORY ID:	C36679			C36684			C36689			C36694		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	69.9 %			69.8 %			94.8 %			62.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	4.12			12.6			1.89			7.11		
1-METHYLNAPHTHALENE	5.69	J	CE	29.2	J	CDE	3.71	J	CER	16.3	J	CER
1-METHYLPHENANTHRENE	20.4			44.5	J	CDE	5.90			26.4		
2,6-DIMETHYLNAPHTHALENE	4.88			18.0			3.10			11.2		
2-METHYLNAPHTHALENE	9.35	J	E	45.3	J	DE	7.26	J	E	27.6	J	E
ACENAPHTHENE	9.66	J	C	43.2	J	CD	7.15	J	C	33.0	J	C
ACENAPHTHYLENE	23.8			83.1			21.5			54.9		
ANTHRACENE	56.5			214			43.5			128		
BENZO(A)ANTHRACENE	163			427			73.8			304		
BENZO(A)PYRENE	85.6	J	CE	370	J	CDE	32.5	J	CE	124	J	CE
BENZO(B)FLUORANTHENE	224	J	CE	690	J	CDE	136	J	CE	437	J	CE
BENZO(E)PYRENE	115			367			79.7			239		
BENZO(G,H,I)PERYLENE	121	J	C	344	J	CD	82.7	J	C	261	J	C
BENZO(K)FLUORANTHENE	63.6			199			44.0			167		
BIPHENYL	2.47	J	C	7.82	J	CD	1.84	J	C	5.97	J	C
C1-CHRYSENES	120			294	J	G	47.9			213		
C1-DIBENZOTHIOPHENES	7.02			18.2			3.19			12.1		
C1-FLUORANTHENES/PYRENES	169			427	J	G	69.8			285		
C1-FLUORENES	13.2	U	A	32.0			4.42	U	A	24.5		
C1-NAPHTHALENES	15.0			74.5			11.0	J	R	44.0	J	R
C1-PHENANTHRENES/ANTHRACENES	68.4			169			28.8			114		
C2-CHRYSENES	49.2			114			24.4			88.7		
C2-DIBENZOTHIOPHENES	10.3			23.6			4.78			15.1		
C2-FLUORENES	20.9			40.5			8.23			34.9		
C2-NAPHTHALENES	20.9			84.3			9.79			43.9		
C2-PHENANTHRENES/ANTHRACENES	48.2			150	J	G	15.6			78.8		
C3-CHRYSENES	3.14			8.91	J	G	4.31			7.74		
C3-DIBENZOTHIOPHENES	9.83			27.1	J	G	6.78			14.3		
C3-FLUORENES	13.9			45.7			5.94	U	A	24.0		
C3-NAPHTHALENES	20.1			71.7			12.4			39.3		
C3-PHENANTHRENES/ANTHRACENES	29.6			196	J	G	10.3			43.8		
C4-CHRYSENES	2.28			8.61	J	G	1.68			5.88		
C4-NAPHTHALENES	10.6	U	A	51.6			9.31	U	A	27.5		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-SD-M07-100A			OU4-SD-M08-100A			OU4-SD-M08-300A			OU4-SD-M09-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/29/00		
LABORATORY ID:	C36679			C36684			C36689			C36694		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	69.9 %			69.8 %			94.8 %			62.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	19.7			110	J	G	11.4			24.5		
CHRYSENE	169			476	J	D	118			327		
DIBENZO(A,H)ANTHRACENE	29.7	J	E	84.4	J	DE	19.2	J	E	63.9	J	E
DIBENZOTHIOPHENE	6.81			17.9	J	D	3.72			12.7		
FLUORANTHENE	310			790	J	D	172			492		
FLUORENE	15.7			47.6	J	D	8.14			35.6		
INDENO(1,2,3-CD)PYRENE	129			346	J	D	76.0			271		
NAPHTHALENE	14.0			41.6	J	D	8.71	J	R	30.0	J	R
PERYLENE	42.1			71.5	J	D	21.6	J	R	91.1		
PHENANTHRENE	117			293	J	D	81.7			224		
PYRENE	268	J	C	717	J	CD	147	J	C	468	J	C

SAMPLE NUMBER:	OU4-SD-M10-100A			OU4-SD-M10-200A			OU4-SD-M10-300A			OU4-SD-M13-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/28/00		
LABORATORY ID:	C36699			C36704			C36709			C36714		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	71.0 %			59.9 %			41.4 %			34.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	4.09			29.6			12.5			65.4	J	H
1-METHYLNAPHTHALENE	9.11	J	CER	25.4	J	CE	18.5	J	CER	22.3	J	EHP
1-METHYLPHENANTHRENE	11.3	J	G	111			30.7			508	J	H
2,6-DIMETHYLNAPHTHALENE	7.43			24.3			17.1			48.0	J	H
2-METHYLNAPHTHALENE	20.5	J	E	30.1	J	E	29.0	J	E	29.8	J	EHP
ACENAPHTHENE	3.98	J	CG	45.5			20.1	J	C	1033	J	H
ACENAPHTHYLENE	23.5			114			135			215	J	H
ANTHRACENE	43.0	J	G	494			251			1283	J	H
BENZO(A)ANTHRACENE	103	J	G	835			383	J	R	1778	J	H
BENZO(A)PYRENE	60.2	J	CEG	697	J	CE	230	J	CER	1321	J	CEH
BENZO(B)FLUORANTHENE	163	J	CEG	856	J	CE	610	J	CE	1461	J	EH
BENZO(E)PYRENE	95.4	J	G	430			322	J	R	764	J	CH
BENZO(G,H,I)PERYLENE	94.6	J	C	478			278	J	CR	426	J	CH
BENZO(K)FLUORANTHENE	43.9	J	G	317			250	J	R	475	J	CH
BIPHENYL	3.30	J	C	7.25	J	C	7.42			13.4	J	HP
C1-CHRYSENES	83.2			439			349	J	R	842	J	H
C1-DIBENZOTHIOPHENES	6.36			31.3			16.3			158	J	H
C1-FLUORANTHENES/PYRENES	76.5			701			437			2502	J	H
C1-FLUORENES	11.4	U	A	100			35.2			447	J	H
C1-NAPHTHALENES	29.6	J	R	55.6			47.5	J	R	52.0	J	H
C1-PHENANTHRENES/ANTHRACENES	52.0			386			142			1690	J	H
C2-CHRYSENES	52.3			137			144	J	R	229	J	H
C2-DIBENZOTHIOPHENES	6.84			30.9			20.1			113	J	H
C2-FLUORENES	15.3			76.6			36.3			185	J	H
C2-NAPHTHALENES	33.7			128			58.9			132	J	H
C2-PHENANTHRENES/ANTHRACENES	27.7			208			104			773	J	H
C3-CHRYSENES	10.8			7.02			8.31	J	R	7.47	J	HP
C3-DIBENZOTHIOPHENES	4.61			18.1			17.2			65.7	J	H
C3-FLUORENES	13.6			45.3			36.1			166	J	H
C3-NAPHTHALENES	31.9			178			54.4			228	J	H
C3-PHENANTHRENES/ANTHRACENES	14.5			85.3			62.1			290	J	H
C4-CHRYSENES	3.48			4.47			6.06	J	R	9.74	J	HP
C4-NAPHTHALENES	13.1			89.8			35.0			136	J	H

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-SD-M10-100A			OU4-SD-M10-200A			OU4-SD-M10-300A			OU4-SD-M13-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/28/00		
LABORATORY ID:	C36699			C36704			C36709			C36714		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	71.0 %			59.9 %			41.4 %			34.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	10.6			51.3			57.4			152	J	H
CHRYSENE	109	J	G	625			478	J	R	1733	J	CH
DIBENZO(A,H)ANTHRACENE	23.9	J	EG	121	J	E	67.4	J	ER	106	J	EH
DIBENZOTHIOPHENE	6.12			39.5			13.2			269	J	H
FLUORANTHENE	194	J	G	1395			400			8447	J	H
FLUORENE	12.2	J	G	117			39.4			834	J	H
INDENO(1,2,3-CD)PYRENE	88.5	J	G	562			296			425	J	H
NAPHTHALENE	24.2	J	R	56.6			45.4	J	R	84.2	J	HP
PERYLENE	30.7			150			94.1			270	J	H
PHENANTHRENE	103	J	G	710			202			4389	J	H
PYRENE	156	J	CG	1188	J	C	616	J	C	5957	J	H

SAMPLE NUMBER:	OU4-SD-M13-200A			OU4-SD-M13-300A			OU4-SD-M14-100A			OU4-SD-M14-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36719			C36724			C36729			C36734		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	39.3 %			33.1 %			42.6 %			54.9 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	18.0			22.8			9.08			57.9		
1-METHYLNAPHTHALENE	27.5	J	CER	23.9	J	CER	18.9	J	CER	304	J	CER
1-METHYLPHENANTHRENE	63.3			51.8			57.0			1257		
2,6-DIMETHYLNAPHTHALENE	21.5			22.2			16.0			73.9		
2-METHYLNAPHTHALENE	40.2	J	E	37.8	J	E	35.8	J	E	353	J	E
ACENAPHTHENE	29.0	J	C	71.4	J	C	15.3	J	C	100	J	C
ACENAPHTHYLENE	150			131			117			189		
ANTHRACENE	340			359			166			433		
BENZO(A)ANTHRACENE	631			585			321			838		
BENZO(A)PYRENE	150	J	CE	160	J	CE	182	J	CE	359	J	CE
BENZO(B)FLUORANTHENE	1008	J	CE	949	J	CE	524	J	CE	880	J	CE
BENZO(E)PYRENE	518			509			335			590		
BENZO(G,H,I)PERYLENE	417	J	C	433	J	C	310	J	C	540	J	C
BENZO(K)FLUORANTHENE	298			324			137			291		
BIPHENYL	9.12			13.0			8.56			20.5		
C1-CHRYSENES	519			475			318			1018		
C1-DIBENZOTHIOPHENES	20.4			28.8			20.5			39.5		
C1-FLUORANTHENES/PYRENES	664			723			462			1192		
C1-FLUORENES	41.5			61.8			36.3			191		
C1-NAPHTHALENES	67.7	J	R	61.7	J	R	54.7	J	R	657	J	R
C1-PHENANTHRENES/ANTHRACENES	190			47.2			180			1463		
C2-CHRYSENES	190			164			126			404		
C2-DIBENZOTHIOPHENES	37.4			62.4			26.9			52.4		
C2-FLUORENES	44.4			81.4			59.4			190		
C2-NAPHTHALENES	85.6			76.3			59.4			492		
C2-PHENANTHRENES/ANTHRACENES	159			173			126			869		
C3-CHRYSENES	10.1			9.74			8.05			15.0		
C3-DIBENZOTHIOPHENES	43.7			177			20.4			38.9		
C3-FLUORENES	60.6			120			41.4			85.0		
C3-NAPHTHALENES	80.1			101			48.1			291		
C3-PHENANTHRENES/ANTHRACENES	115			130			110			678		
C4-CHRYSENES	3.91			12.2			6.85			10.4		
C4-NAPHTHALENES	61.8			74.3			21.0			264		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-SD-M13-200A			OU4-SD-M13-300A			OU4-SD-M14-100A			OU4-SD-M14-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36719			C36724			C36729			C36734		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	39.3 %			33.1 %			42.6 %			54.9 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	89.9			121			95.9			220		
CHRYSENE	867			684			331			738		
DIBENZO(A,H)ANTHRACENE	109	J	E	113	J	E	71.9	J	E	135	J	E
DIBENZOTHIOPHENE	20.2			29.9			15.5			24.4		
FLUORANTHENE	1075			1256			518			967		
FLUORENE	65.0			116			34.9			142		
INDENO(1,2,3-CD)PYRENE	435			488			349			504		
NAPHTHALENE	50.0	J	R	60.1	J	R	55.7	J	R	367	J	R
PERYLENE	134			174			86.7			111		
PHENANTHRENE	289			359			188			1253		
PYRENE	946	J	C	1166	J	C	502	J	C	1169	J	C

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 12, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PCBs and PESTICIDES**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – M3023

SAMPLES: 20/Sediment/

OU4-FD-004-000A	OU4-SD-M01-100A	OU4-SD-M01-200A
OU4-SD-M01-300A	OU4-SD-M02-100A	OU4-SD-M02-200A
OU4-SD-M02-300A	OU4-SD-M06-100A	OU4-SD-M07-100A
OU4-SD-M08-100A	OU4-SD-M08-300A	OU4-SD-M09-200A
OU4-SD-M10-100A	OU4-SD-M10-200A	OU4-SD-M10-300A
OU4-SD-M13-100A	OU4-SD-M13-200A	OU4-SD-M13-300A
OU4-SD-M14-100A	OU4-SD-M14-200A	

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG M3023 consisting of twenty (20) sediment samples were included in this SDG. Samples were analyzed for pesticides and PCBs. Several field duplicates were included in this SDG: OU4-FD-004-000A and OU4-SD-M09-300A (in SDG M3021); OU4-FD-001-000A (in SDG M3024) and OU4-SD-M01-300A; OU4-FD-003-000A (in SDG M3024) and OU4-SD-M08-100A; and OU4-FD-005-000A (in SDG M3024) and OU4-SD-M10-100A.

The samples were collected by Tetra Tech NUS on August 27-30, 1999 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using GERG SOP 9810 and 9805 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * Calibration
- Method Blank Results
- * Surrogate Standard Recoveries
- * Instrument Performance
- * Compound Identification
- Compound Quantitation
- Matrix Spike/Matrix Spike Duplicate Results
- Standard Reference Materials
- Field Duplicate Results

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANKS

The maximum concentration of contaminants found in the laboratory method blank analysis is summarized below.

Compound	Maximum Concentration	Sediment Action Level
Tetrachlorobenzene, 1245-	0.05 ng/g	0.25 ng/g
Tetrachlorobenzene, 1234-	0.05 ng/g	0.25 ng/g
Pentachlorobenzene	0.09 ng/g	0.45 ng/g
Pentachloroanisole	0.02 ng/g	0.10 ng/g
PCB 153/132	0.05 ng/g	0.25 ng/g
PCB 138/160	0.05 ng/g	0.25 ng/g
PCB 77	0.04 ng/g	0.20 ng/g
PCB 169	0.08 ng/g	0.50 ng/g

Samples Affected: All

Blank Actions:

Dilution factors, percent solids, and sample aliquot used for analysis were taken into consideration prior to the application of all action levels. Positive results for all compounds, except PCB 170/190, below the blank action level were qualified at the reported concentration. The blank had a dry weight of 11.3 g. Sample aliquots ranged from ~6 to 16 g dry weight.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike and/or matrix spike duplicate recoveries fell below the lower quality control limit and/or fell below 10%. Positive results were qualified as estimated, J, in the unspiked sample, OU4-SD-M08-100A, for the following compounds: 4,4'-DDE, 2,4'-DDD, 4,4'-DDD, PCB 52, PCB 44, PCB 66, PCB 101/90, PCB 118, PCB 152/132, PCB 105, PCB 138/160, PCB 187, PCB 128, PCB 180, PCB 170/190, PCB 195/208, and PCB 206. MS and/or MSD recoveries exceeded the upper quality control limits for 4,4'-DDT and PCB 209. Positive results were qualified as estimated, J, in the unspiked sample. Relative percent differences (RPDs) exceeded the upper quality control limit for 12 compounds. No qualifiers were assigned on this basis.

STANDARD REFERENCE MATERIAL RESULTS

Recovery of PCB 170/190 and 105 exceeded the upper quality control limit. Interference with quantitation of this PCB was noted on the Form 1s. Positive results for this compound were qualified as estimated, J, in all samples. Recovery of 2,4'-DDE fell below the lower quality control limit. Positive results for this compound were qualified as estimated, J, in all samples.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

PCB 201/157/173 was present on the Form 1s but not on the electronic data deliverable. The reviewer amended the EDD to include these results.

Interference was noted for PCB 170/190 in all samples due to co-elution with other target compounds.

In some cases a result of 0.00 appeared on the Form 1 and electronic deliverable. In these cases, the reviewer amended the EDD to reflect the associated reporting limit for the compound in the sample. The reporting limit was qualified as nondetected, U.

Sample OU4-SD-M05-200A was re-analyzed at a 20X dilution factor due to the presence of Dieldrin above the linear calibration range of the instrument. The laboratory reported the diluted result for this compound only on the Form 1.

Samples OU4-SD-M01-200A and OU4-SD-M08-300A were re-analyzed at a 20X dilution factor due to the presence of 4,4'-DDD and 4,4'-DDT above the linear calibration range of the instrument. The laboratory reported the diluted results for these compounds only on the Form 1s.

Sample OU4-SD-M06-100A was re-analyzed at a 5X dilution factor due to the presence of 4,4'-DDD above the linear calibration range of the instrument. The laboratory reported the diluted result for this compound only on the Form 1.

Sample OU4-SD-M10-300A was re-analyzed at a 20X dilution factor due to the presence of 4,4'-DDT above the linear calibration range of the instrument. The laboratory reported the diluted result for this compound only on the Form 1.

Sample OU4-SD-M08-100A was re-analyzed at a 20X dilution factor due to the presence of 2,4'-DDD, 4,4'-DDD, 4,4'-DDT, PCB 101/90, PCB 118, PCB 153/132, and PCB 138/160 above the linear calibration range of the instrument. The laboratory reported the diluted results for these compounds only on the Form 1s.

FIELD DUPLICATE RESULTS

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-FD-001-000A and OU4-SD-M01-300A. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-FD-003-000A and OU4-SD-M08-100A. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-FD-005-000A and OU4-SD-M10-100A. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-FD-004-000A and OU4-SD-M09-300A. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses. An interference was noted for the analysis of PCB 170/190.

Other Factors Affecting Data Quality: Field duplicate results exceeded the 50% RPD criteria.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

	OU4-FD-001-000A SDG M3024	OU4-SD-M01-300A SDG M3023	RPD
1,2,3,4-Tetrachlorobenzene	0.26 U	0.04 U*	NA
1,2,4,5-Tetrachlorobenzene	1.88 U*	0.6	NC
2,4'-DDD	8.87	8.88	0
2,4'-DDE	0.27	0.03 J	160
2,4'-DDT	2	1.47	31
4,4'-DDD	11.41	11.08	3
4,4'-DDE	4.41	4.21	5
4,4'-DDT	20.6	11.87	54
Aldrin	0.08 U	0.07 U	NA
a-BHC	0.25	0.06 J	123
a-Chlordane	3.36	3.58	-6
b-BHC	0.26 U	1.82	200
Chlorpyrifos	0.48 U*	0.35 U	NA
cis-Nonachlor	1.42	0.89	46
d-BHC	0.06 U	0.08	200
Dieldrin	0.28	0.08 U	200
Endosulfan II	0.93	5.27	-140
Endrin	0.17 U	0.14 J	NC
g-BHC	0.3 U	0.43	200
g-Chlordane	2.93	2.23	27
Heptachlor	0.22	0.31	-34
Heptachlor epoxide	0.04 U	0.04 U	NA
Hexachlorobenzene	0.04 J	0.06 U	NC
Mirex	0.04 U	0.04 U	NA
Oxychlordane	0.36	0.82	-78
PCB-101/90	1.15	1.02	12
PCB-105	0.25 J	0.48	-63
PCB-114	0.23 U	0.22 U	NA
PCB-118	1.86	1.48	23
PCB-126	0.23 U	0.22 U	NA
PCB-128	0.34	1.67	-132
PCB-138/160	2.04	2.96	-37
PCB-149/123	1.4	2.56	-59
PCB-153/132	2.83	2.68	5
PCB-156	1.74	0.22 U	200
PCB-167	5.54	9.14	-49
PCB-169	0.09 U*	0.12 U*	NA
PCB-170/190	23.53	28.26	-18
PCB-18/17	0.11 U	0.11 U	NA
PCB-180	1.39	1.08	25
PCB-187	0.55	0.89	-47
PCB-189	1.04	1.51	-37
PCB-195/208	0.97	1.73	-56
PCB-206	0.17	1.26	-152
PCB-209	2.57	2.24	14
PCB-28	0.75	0.55	31
PCB-44	0.32	0.37	-14
PCB-52	1	0.71	34
PCB-66	1.08	1.79	-49
PCB-77	0.13 U*	0.22 U	NA
PCB-8/5	0.72	0.42	53
PCB-81	0.25 J	0.39	-44
Pentachloroanisole	0.1 U*	0.07 U*	NA
Pentachlorobenzene	0.32 U*	0.14 U*	NA
trans-Nonachlor	1.01	0.79	24
PCB-201/157/173	1.07	1.17	-9

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-FD-003-000A SDG M3024	OU4-SD-M08-100A SDG M3023	RPD
1,2,3,4-Tetrachlorobenzene	0.42	0.21 U*	200
1,2,4,5-Tetrachlorobenzene	0.93 U*	0.64	NC
2,4'-DDD	43.31	30.71	34
2,4'-DDE	2.24	1.02	75
2,4'-DDT	5.85	3.75	44
4,4'-DDD	104.52	79.89	27
4,4'-DDE	16.99	16.78	1
4,4'-DDT	32.06	12.94	85
Aldrin	0.06 U	0.06 U	NA
a-BHC	0.1	0.05 J	67
a-Chlordane	2.25	1.52	39
b-BHC	0.2 U	0.21	200
Chlorpyrifos	1.21 U*	0.27 U	NA
cis-Nonachlor	0.68	0.46	39
d-BHC	0.04 U	0.04 U	NA
Dieldrin	0.25	0.06 U	200
Endosulfan II	0.4	0.47	-16
Endrin	0.13 U	0.13 U	NA
g-BHC	0.23 U	0.22 U	NA
g-Chlordane	2.22	2.08	7
Heptachlor	0.17 U	0.05 J	NC
Heptachlor epoxide	0.03 U	0.03 U	NA
Hexachlorobenzene	0.04 J	0.04 J	0
Mirex	0.03 U	0.02 J	NC
Oxychlordane	0.02	0.37	-179
PCB-101/90	11.77	40.98	-111
PCB-105	2.34	22.45	-162
PCB-114	0.18 U	0.17 U	NA
PCB-118	6.1	32.36	-137
PCB-126	0.18 U	0.17 U	NA
PCB-128	1.98	9.23	-129
PCB-138/160	13.13	39.35	-100
PCB-149/123	8.05	19.26	-82
PCB-153/132	14.91	35.05	-81
PCB-156	2.18	6.07	-94
PCB-167	1.46	2.92	-67
PCB-169	0.02 U*	0.01 U*	NA
PCB-170/190	1.27	42.68	-188
PCB-18/17	2.67	1.29	70
PCB-180	8.51	17.1	-67
PCB-187	5.36	9.2	-53
PCB-189	0.39	0.49	-23
PCB-195/208	5	6.02	-19
PCB-206	10.44	14.65	-34
PCB-209	4.14	2.89	36
PCB-28	1.17	1.51	-25
PCB-44	1.81	9.75	-137
PCB-52	4.15	27.14	-147
PCB-66	1.31	6.38	-132
PCB-77	0.09 U*	0.18 U*	NA
PCB-8/5	0.34 U*	0.56	200
PCB-81	0.13 J	0.1 J	26
Pentachloroanisole	0.17 J	0.13 U*	200
Pentachlorobenzene	0.33 U*	0.1 U*	NA
trans-Nonachlor	1.47	1.02	36
PCB-201/157/173	0.98	1.21	-21

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-FD-004-000A SDG M3023	OU4-SD-M09-300A SDG M3021	RPD
1,2,3,4-Tetrachlorobenzene	0.44 U*	0.24 U*	NA
1,2,4,5-Tetrachlorobenzene	1.25	1.82 U*	NC
2,4'-DDD	4.32	3.13	32
2,4'-DDE	0.33	0.3	10
2,4'-DDT	0.98	0.38	88
4,4'-DDD	4.44	3.35	28
4,4'-DDE	3.03	3.28	-8
4,4'-DDT	3.37	2.25	40
Aldrin	0.11 U	0.11 U	NA
a-BHC	0.1 J	0.24	-82
a-Chlordane	0.73	0.7	4
b-BHC	1.38	0.37 U	200
Chlorpyrifos	4.16	1.55 U*	200
cis-Nonachlor	0.25	0.35	-33
d-BHC	0.21	0.14	40
Dieldrin	0.12 U	0.12 U	NA
Endosulfan II	1.49	1.95	-27
Endrin	0.24 U	0.25 U	NA
g-BHC	0.43 U	0.44 U	NA
g-Chlordane	0.33	0.39	-17
Heptachlor	0.31 U	0.32 U	NA
Heptachlor epoxide	0.05 U	0.06 U	NA
Hexachlorobenzene	0.34	0.24	34
Mirex	0.05 U	0.06 U	NA
Oxychlordane	0.08	0.24	-100
PCB-101/90	4.27	3.71	14
PCB-105	2.45	1.51	47
PCB-114	0.32 U	0.33 U	NA
PCB-118	2.85	4.01	-34
PCB-126	0.32 U	0.33 U	NA
PCB-128	1.19	1.5	-23
PCB-138/160	6.38	7.21	-12
PCB-149/123	4.86	4.02	19
PCB-153/132	5.81	7.26	-22
PCB-156	16.2	1.94	157
PCB-167	2.32	0.42	139
PCB-169	0.32 U	0.05 U*	NA
PCB-170/190	21.58	1.1 J	181
PCB-18/17	0.64	1.19	-60
PCB-180	4.64	5.69	-20
PCB-187	3.71	4.12	-10
PCB-189	0.37	0.63	-52
PCB-195/208	2.49	4.31	-54
PCB-206	5.19	11.94 J	-79
PCB-209	1.75	4.3	-84
PCB-28	2.63	2.05	25
PCB-44	5.18	1.26	122
PCB-52	2.73	3.16	-15
PCB-66	1.51	1.2	23
PCB-77	0.16 U*	0.05 J	NC
PCB-8/5	1.34	0.58 J	79
PCB-81	0.13 J	0.1 U*	200
Pentachloroanisole	0.25 U*	0.25 U*	NA
Pentachlorobenzene	0.49 U*	0.48 U*	NA
trans-Nonachlor	0.4	0.33	19
PCB-201/157/173	0.82	1.45	-56

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-FD-005-000A SDG M3024	OU4-SD-M10-100A SDG M3023	RPD
1,2,3,4-Tetrachlorobenzene	0.21 U	0.2 U	NA
1,2,4,5-Tetrachlorobenzene	0.74 U*	0.07 U*	NA
2,4'-DDD	8.39	7.37	13
2,4'-DDE	0.9	0.18	133
2,4'-DDT	4.94	2.98	49
4,4'-DDD	21.14	15.27	32
4,4'-DDE	8.84	6.15	36
4,4'-DDT	27.6	12.22	77
Aldrin	0.01 J	0.06 U	NC
a-BHC	0.11	0.03 J	114
a-Chlordane	6.1	5.16	17
b-BHC	0.2 U	0.16 J	NC
Chlorpyrifos	0.62 U*	0.27 U	NA
cis-Nonachlor	0.56	0.44	24
d-BHC	0.05 U	0.04 U	NA
Dieldrin	0.2	0.15	29
Endosulfan II	0.06 J	0.09	-40
Endrin	0.14 U	0.13 U	NA
g-BHC	0.24 U	0.23 U	NA
g-Chlordane	6.23	5.92	5
Heptachlor	0.37	0.2	60
Heptachlor epoxide	0.03 U	0.01 J	NC
Hexachlorobenzene	0.06	0.04 U	200
Mirex	0.03 U	0.03 U	NA
Oxychlordane	0.02 U	0.08	200
PCB-101/90	2.05	1.83	11
PCB-105	0.49 J	1.05	-73
PCB-114	0.18 U	0.17 U	NA
PCB-118	1.3	1.99	-42
PCB-126	0.18 U	0.17 U	NA
PCB-128	0.32	0.44	-32
PCB-138/160	1.91	2.27	-17
PCB-149/123	1.32	1.21	9
PCB-153/132	1.91	1.92	-1
PCB-156	0.23	0.3	-26
PCB-167	0.34	0.4	-16
PCB-169	0.02 U*	0.03 U*	NA
PCB-170/190	4.43	3.27	NA
PCB-18/17	0.09 U	0.08 U	NA
PCB-180	0.84	0.67	23
PCB-187	0.45	0.53	-16
PCB-189	0.18 U	0.17 U	NA
PCB-195/208	0.14	0.09	43
PCB-206	0.08 U	0.2	200
PCB-209	0.54	0.3	57
PCB-28	0.2 U	0.19 J	NC
PCB-44	0.16 U	0.33	200
PCB-52	0.74	0.87	-16
PCB-66	0.09 J	0.19	-71
PCB-77	0.04 U*	0.02 U*	NA
PCB-8/5	0.32 U	0.2 J	NC
PCB-81	0.18 U	0.03 J	NC
Pentachloroanisole	0.2 J	0.09 U*	76
Pentachlorobenzene	0.13 U*	0.07 U*	NA
trans-Nonachlor	2.65	2.42	9
PCB-201/157/173	0.1	0.02 U	200

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-FD-004-000A			OU4-SD-M01-100A			OU4-SD-M01-200A			OU4-SD-M01-300A		
SAMPLE DATE:	08/27/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36615			C36644			C36649			C36654		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	36.7 %			64.2 %			80.8 %			54.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M09-300A											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.44	U	A	0.020	U	A	0.28	U	A	0.040	U	A
1,2,4,5-TETRACHLOROBENZENE	1.3			0.42	J	P	1.0			0.60		
2,4'-DDD	4.3			11			11			8.9		
2,4'-DDE	0.33	J	E	0.18	J	E	0.66	J	E	0.030	J	EGP
2,4'-DDT	0.98	J	G	2.0			18			1.5		
4,4'-DDD	4.4			20			37			11		
4,4'-DDE	3.0			3.7			20			4.2		
4,4'-DDT	3.4			15			87			12	J	G
ALDRIN	0.11	U		0.062	U		0.050	U		0.074	U	
ALPHA-BHC	0.10	J	GP	0.060	J	P	0.030	J	P	0.060	J	GP
ALPHA-CHLORDANE	0.73			2.4			3.1			3.6		
BETA-BHC	1.4	J	G	1.8			0.090	J	P	1.8	J	G
CHLORPYRIFOS	4.2	J	G	0.30	U		0.24	U		0.35	U	
CIS-NONACHLOR	0.25			0.39			0.37			0.89		
DELTA-BHC	0.21			0.047	U		0.037	U		0.080	J	G
DIELDRIN	0.12	U		13			32			0.083	UJ	G
ENDOSULFAN II	1.5			3.2			0.88			5.3	J	G
ENDRIN	0.24	U		0.36			0.63			0.14	J	P
GAMMA-BHC (LINDANE)	0.43	U		0.25			0.20	U		0.43	J	G
GAMMA-CHLORDANE	0.33			1.7			3.7			2.2		
HEPTACHLOR	0.31	U		0.040	J	P	0.42			0.31		
HEPTACHLOR EPOXIDE	0.054	U		0.031	U		0.02	U		0.037	U	
HEXACHLOROBENZENE	0.34			0.047	U		0.080			0.055	U	
MIREX	0.054	U		0.031	U		0.025	U		0.037	U	
OXYCHLORDANE	0.080	J	G	0.36			0.040			0.82	J	G
PCB-101/90	4.3			1.1			0.70			1.0		
PCB-105	2.5	J	E	0.64	J	EP	0.52	J	EP	0.48	J	EGP
PCB-114	0.32	U		0.19	U		0.15	U		0.22	U	
PCB-118	2.9			1.3			0.57			1.5		
PCB-126	0.32	U		0.19	U		0.15	U		0.22	U	
PCB-128	1.2			0.64			0.26			1.7	J	G
PCB-138/160	6.4			2.2			1.3			3.0		
PCB-14	4.9			2.[illegible]			1.1			2.6	J	G

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-FD-004-000A			OU4-SD-M01-100A			OU4-SD-M01-200A			OU4-SD-M01-300A		
SAMPLE DATE:	08/27/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36615			C36644			C36649			C36654		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	36.7 %			64.2 %			80.8 %			54.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M09-300A											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	5.8			2.8			0.99			2.7		
PCB-156	1.6	J	G	2.1			0.64			0.22	UJ	G
PCB-167	2.3	J	G	1.4			0.26			9.1		
PCB-169	0.32	U		0.010	U	A	0.15	U		0.12	U	A
PCB-170/190	22	J	EGQ	34	J	EQ	14	J	EQ	28	J	EQ
PCB-18/17	0.64	J	G	0.060	J	P	0.030	J	P	0.11	U	
PCB-180	4.6			1.3			0.80			1.1		
PCB-187	3.7			1.2			0.43			0.89		
PCB-189	0.37	J	G	0.97			0.32			1.5		
PCB-195/208	2.5	J	G	2.1			0.32			1.7	J	G
PCB-201/157/173	0.82	J	G	1.29			0.25			1.17	J	G
PCB-206	5.2	J	G	4.6			0.24			1.3		
PCB-209	1.8	J	G	2.3			0.64			2.2		
PCB-28	2.6			0.40			0.020	J	P	0.55		
PCB-44	5.2	J	G	0.11	J	P	0.15			0.37		
PCB-52	2.7			0.74			0.74			0.71		
PCB-66	1.5			2.4			0.18			1.8		
PCB-77	0.16	U	A	0.24	U	A	0.060	U	A	0.22	U	
PCB-8/5	1.3	J	G	0.41			0.26	J	P	0.42	J	G
PCB-81	0.13	J	GP	0.21			0.030	J	P	0.39		
PENTACHLOROANISOLE	0.25	U	A	0.10	U	A	0.11	U	A	0.070	U	A
PENTACHLOROBENZENE	0.49	U	A	0.080	U	A	0.070	U	A	0.14	U	A
TRANS-NONACHLOR	0.40			0.73			1.3			0.79		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-SD-M02-100A			OU4-SD-M02-200A			OU4-SD-M02-300A			OU4-SD-M06-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/29/00		
LABORATORY ID:	C36659			C36664			C36669			C36674		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	68.1 %			73.0 %			35.2 %			74.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.040	U	A	0.19	U	A	0.75			0.11	U	A
1,2,4,5-TETRACHLOROBENZENE	0.090	U	A	0.34	U	A	1.7			0.29	U	A
2,4'-DDD	0.22			2.4			1.5			9.9		
2,4'-DDE	0.079	U		0.090	J	E	0.15	U		0.12	J	E
2,4'-DDT	0.32			3.2			0.10			0.46		
4,4'-DDD	0.36			4.6			3.6			17		
4,4'-DDE	0.29			4.5			4.6			2.1		
4,4'-DDT	1.6			24			0.76			12		
ALDRIN	0.057	U		0.053	U		0.11	U		0.054	U	
ALPHA-BHC	0.030	J	P	0.040	J	P	0.030	J	P	0.020	J	P
ALPHA-CHLORDANE	0.065	U		0.40			0.080	J	P	0.19		
BETA-BHC	1.1			0.37			1.1			0.21		
CHLORPYRIFOS	0.27	U		0.25	U		0.53	U		0.25	U	
CIS-NONACHLOR	0.030	J	P	0.14			0.42			0.060		
DELTA-BHC	0.043	U		0.040	U		0.084	U		0.04	U	
DIELDRIN	0.065	U		2.6			0.13	U		0.060	U	
ENDOSULFAN II	0.090			1.0			0.58			0.62		
ENDRIN	0.13	U		0.12	U		0.25	U		0.12	U	
GAMMA-BHC (LINDANE)	0.23	U		0.090	J	P	0.45	U		0.060	J	P
GAMMA-CHLORDANE	0.060	J	P	0.18			0.19			0.040	J	P
HEPTACHLOR	0.17	U		0.15	U		0.32	U		0.15	U	
HEPTACHLOR EPOXIDE	0.029	U		0.027	U		0.056	U		0.027	U	
HEXACHLOROBENZENE	0.020	J	P	0.040	J	P	0.12			0.020	J	P
MIREX	0.029	U		0.027	U		0.056	U		0.027	U	
OXYCHLORDANE	0.014	U		0.020			0.028	U		0.080		
PCB-101/90	0.27			0.85			2.1			0.99		
PCB-105	0.15	J	EP	0.49	J	EP	1.2	J	EP	0.49	J	EP
PCB-114	0.17	U		0.16	U		0.34	U		0.16	U	
PCB-118	0.16			0.76			1.6			0.70		
PCB-126	0.17	U		0.16	U		0.34	U		0.16	U	
PCB-128	0.050			0.25			0.97			0.25		
PCB-138/160	0.44			1.5			1.9			1.6		
PCB-14[illegible]	0.22			1			3.0			1.5		

SAMPLE NUMBER:	OU4-SD-M02-100A			OU4-SD-M02-200A			OU4-SD-M02-300A			OU4-SD-M06-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/29/00		
LABORATORY ID:	C36659			C36664			C36669			C36674		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	68.1 %			73.0 %			35.2 %			74.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	0.42			1.4			2.8			1.8		
PCB-156	0.11	J	P	0.53			0.50			0.48		
PCB-167	0.20			1.3			1.9			0.96		
PCB-169	0.020	U	A	0.010	U	A	0.040	U	A	0.010	U	A
PCB-170/190	2.4	J	EQ	11	J	EQ	8.6	J	EQ	13	J	EQ
PCB-18/17	0.060	J	P	0.080	J	P	0.17			0.080		
PCB-180	0.29			0.56			1.7			1.1		
PCB-187	0.17			0.47			0.61			0.88		
PCB-189	0.040	J	P	0.33			0.12	J	P	0.11	J	P
PCB-195/208	0.070			0.20			0.38			0.40		
PCB-201/157/173	0.01	J	P	0.2			0.17			0.15		
PCB-206	0.080	J	P	0.23			0.41			0.40		
PCB-209	0.15			0.42			0.30			0.67		
PCB-28	0.13	J	P	0.21			0.20	J	P	0.22		
PCB-44	0.060	J	P	0.17			0.59			0.16		
PCB-52	0.34			0.63			0.73			0.96		
PCB-66	0.040	J	P	0.42			0.42			0.31		
PCB-77	0.010	U	A	0.050	U	A	0.040	U	A	0.090	U	A
PCB-8/5	0.29	J	P	0.29	J	P	0.48	J	P	0.28	J	P
PCB-81	0.17	U		0.010	J	P	0.010	J	P	0.16	U	
PENTACHLOROANISOLE	0.030	U	A	0.030	U	A	0.080	U	A	0.030	U	A
PENTACHLOROBENZENE	0.080	U	A	0.090	U	A	0.31	U	A	0.070	U	A
TRANS-NONACHLOR	0.020	J	P	0.22			0.24			0.070		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-SD-M07-100A			OU4-SD-M08-100A			OU4-SD-M08-300A			OU4-SD-M09-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/29/00		
LABORATORY ID:	C36679			C36684			C36689			C36694		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	69.9 %			69.8 %			94.8 %			62.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.11	U	A	0.21	U	AG	0.060	U	A	0.18	U	A
1,2,4,5-TETRACHLOROBENZENE	0.61			0.64			0.030	U	A	0.70		
2,4'-DDD	1.2			31	J	D	14			2.2		
2,4'-DDE	0.070	J	EP	1.0	J	EG	0.50	J	E	0.090	J	E
2,4'-DDT	0.37			3.8			15			0.55		
4,4'-DDD	1.8			80	J	D	38			3.9		
4,4'-DDE	2.1			17	J	D	11			1.9		
4,4'-DDT	1.7			13	J	DG	70			3.1		
ALDRIN	0.056	U		0.056	U		0.042	U		0.064	U	
ALPHA-BHC	0.020	J	P	0.050	J	GP	0.020	J	P	0.060	J	P
ALPHA-CHLORDANE	0.060	J	P	1.5			0.72			0.55		
BETA-BHC	0.37			0.21	J	G	0.14	U		0.24		
CHLORPYRIFOS	0.27	U		0.27	U		0.20	U		0.30	U	
CIS-NONACHLOR	0.070			0.46			0.20			0.17		
DELTA-BHC	0.070			0.042	U		0.032	U		0.060		
DIELDRIN	0.32			0.063	UJ	G	0.048	U		0.072	U	
ENDOSULFAN II	0.28			0.47			0.16			0.53		
ENDRIN	0.13	U		0.13	U		0.096	U		0.14	U	
GAMMA-BHC (LINDANE)	0.23	U		0.22	U		0.17	U		0.26	U	
GAMMA-CHLORDANE	0.12			2.1			0.98			0.62		
HEPTACHLOR	0.16	U		0.050	J	P	0.12	U		0.18	U	
HEPTACHLOR EPOXIDE	0.028	U		0.028	U		0.021	U		0.032	U	
HEXACHLOROBENZENE	0.030	J	P	0.040	J	P	0.020	J	P	0.15		
MIREX	0.028	U		0.020	J	P	0.021	U		0.032	U	
OXYCHLORDANE	0.050			0.37	J	G	0.011	U		0.016	U	
PCB-101/90	1.2			41	J	DG	2.4			2.8		
PCB-105	0.68	J	EP	22	J	DEG	1.8	J	E	1.8	J	E
PCB-114	0.17	U		0.17	U		0.13	U		0.19	U	
PCB-118	1.1			32	J	DG	0.88			1.9		
PCB-126	0.17	U		0.17	U		0.13	U		0.19	U	
PCB-128	0.27			9.2	J	DG	0.59			0.70		
PCB-138/160	1.5			39	J	DG	6.1			4.5		
PCB-1[illegible]	0.98			1[illegible]	J	G	5.7			3.1		

CTO2[illegible] PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-SD-M07-100A			OU4-SD-M08-100A			OU4-SD-M08-300A			OU4-SD-M09-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/29/00		
LABORATORY ID:	C36679			C36684			C36689			C36694		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	69.9 %			69.8 %			94.8 %			62.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	1.4			35	J	DG	6.5			3.8		
PCB-156	0.35			6.1	J	G	0.70			1.6		
PCB-167	0.92			2.9	J	G	0.33			1.0		
PCB-169	0.010	U	A	0.010	U	A	0.020	U	A	0.060	U	A
PCB-170/190	6.9	J	EQ	43	J	DEGQ	6.9	J	EQ	10	J	EQ
PCB-18/17	0.40			1.3	J	G	0.12			0.21		
PCB-180	0.73			17	J	DG	6.3			4.2		
PCB-187	0.71			9.2	J	DG	3.6			2.8		
PCB-189	0.10	J	P	0.49			0.21			0.25		
PCB-195/208	0.35			6.0	J	D	1.0			2.7		
PCB-201/157/173	0.14			1.21			0.3			0.69		
PCB-206	0.70			15	J	D	1.6			9.0		
PCB-209	0.35			2.9	J	D	0.51			1.9		
PCB-28	0.99			1.5			0.22			1.6		
PCB-44	0.60			9.7	J	DG	0.32			1.1		
PCB-52	1.0			27	J	DG	0.59			1.2		
PCB-66	0.75			6.4	J	DG	0.25			0.75		
PCB-77	0.030	U	A	0.18	U	A	0.020	U	A	0.080	U	A
PCB-8/5	0.48			0.56	J	G	0.17	J	P	0.51		
PCB-81	0.17	U		0.10	J	P	0.13	U		0.11	J	P
PENTACHLOROANISOLE	0.040	U	A	0.13	U	AG	0.24	J	P	0.12	U	A
PENTACHLOROBENZENE	0.12	U	A	0.10	U	A	0.050	U	A	0.20	U	A
TRANS-NONACHLOR	0.060			1.0			0.48			0.31		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-SD-M10-100A			OU4-SD-M10-200A			OU4-SD-M10-300A			OU4-SD-M13-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/28/00		
LABORATORY ID:	C36699			C36704			C36709			C36714		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	71.0 %			59.9 %			41.4 %			34.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.20	U		0.060	U	A	0.080	U	A	0.10	U	A
1,2,4,5-TETRACHLOROBENZENE	0.070	U	A	0.17	U	A	1.1			0.44	U	A
2,4'-DDD	7.4			3.1			4.2			6.6		
2,4'-DDE	0.18	J	EG	0.15	J	E	0.27	J	E	0.16	U	
2,4'-DDT	3.0			0.050			0.71			0.080		
4,4'-DDD	15			7.2			24			1.4		
4,4'-DDE	6.2			1.8			3.8			1.5		
4,4'-DDT	12	J	G	0.58			66			2.4		
ALDRIN	0.057	U		0.066	U		0.097	U		0.12	U	
ALPHA-BHC	0.030	J	GP	0.050	J	P	0.070	J	P	0.050	J	P
ALPHA-CHLORDANE	5.2			0.33			0.36			1.3		
BETA-BHC	0.16	J	P	0.55			0.64			0.30	J	P
CHLORPYRIFOS	0.27	U		0.32	U		0.46	U		0.56	U	
CIS-NONACHLOR	0.44			0.11			0.13			0.31		
DELTA-BHC	0.042	U		0.10			0.15			0.088	U	
DIELDRIN	0.15			0.11			0.050	J	P	0.13	U	
ENDOSULFAN II	0.090			0.68			0.78			3.8		
ENDRIN	0.13	U		0.15	U		0.22	U		0.26	U	
GAMMA-BHC (LINDANE)	0.23	U		0.090	J	P	0.39	U		0.25	J	P
GAMMA-CHLORDANE	5.9			0.30			0.48			0.13	U	
HEPTACHLOR	0.20	J	G	0.19	U		0.28	U		0.34	U	
HEPTACHLOR EPOXIDE	0.010	J	P	0.033	U		0.048	U		0.058	U	
HEXACHLOROBENZENE	0.042	UJ	G	0.050	U		0.18			0.63		
MIREX	0.028	U		0.033	U		0.048	U		0.058	U	
OXYCHLORDANE	0.080	J	G	0.19			0.024	U		0.029	U	
PCB-101/90	1.8			1.4			3.6			2.3		
PCB-105	1.1	J	EG	1.0	J	E	1.7	J	E	1.1	J	EP
PCB-114	0.17	U		0.20	U		0.29	U		0.35	U	
PCB-118	2.0			1.5			2.7			1.9		
PCB-126	0.17	U		0.20	U		0.29	U		0.35	U	
PCB-128	0.44			0.54			0.76			0.77		
PCB-138/[illegible]	2.3			2.2			4.2			4.2		
PCB-14[illegible]	1.2			1[illegible]			2.5			3.8		

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-SD-M10-100A			OU4-SD-M10-200A			OU4-SD-M10-300A			OU4-SD-M13-100A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/28/00		
LABORATORY ID:	C36699			C36704			C36709			C36714		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	71.0 %			59.9 %			41.4 %			34.4 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	1.9			2.1			4.3			4.4		
PCB-156	0.30			0.28			0.83			2.8		
PCB-167	0.40			4.8			1.7			2.4		
PCB-169	0.030	U	A	0.20	U		0.040	U	A	0.090	U	A
PCB-170/190	3.3	J	EQ	8.5	J	EQ	16	J	EQ	65	J	EQ
PCB-18/17	0.085	U		0.100	U		0.20			0.92		
PCB-180	0.67			1.4			1.6			2.9		
PCB-187	0.53			0.89			1.5			1.6		
PCB-189	0.17	U		0.18	J	P	0.21	J	P	0.56		
PCB-195/208	0.090			0.35			0.48			1.6		
PCB-201/157/173	0.02124	UJ	G	0.15			0.22			1.3		
PCB-206	0.20	J	G	0.13			0.66			1.3		
PCB-209	0.30	J	G	0.40			1.3			1.5		
PCB-28	0.19	J	P	0.81			0.88			1.5		
PCB-44	0.33	J	G	0.26			0.58			0.79		
PCB-52	0.87			0.63			1.2			2.9		
PCB-66	0.19	J	G	0.78			0.86			1.3		
PCB-77	0.020	U	A	0.040	U	A	0.090	U	A	0.28	U	A
PCB-8/5	0.20	J	P	0.60			0.66			1.2		
PCB-81	0.030	J	P	0.050	J	P	0.29	U		0.31	J	P
PENTACHLOROANISOLE	0.090	U	AG	0.050	U	A	0.11	U	A	0.24	U	A
PENTACHLOROBENZENE	0.070	U	A	0.070	U	A	0.27	U	A	0.22	U	A
TRANS-NONACHLOR	2.4			0.10			0.16			0.10		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3023

SAMPLE NUMBER:	OU4-SD-M13-200A			OU4-SD-M13-300A			OU4-SD-M14-100A			OU4-SD-M14-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36719			C36724			C36729			C36734		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	39.3 %			33.1 %			42.6 %			54.9 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.070	U	A	0.93			0.24	U	A	0.23	U	A
1,2,4,5-TETRACHLOROBENZENE	0.50	U	A	0.87	J	P	0.89			1.0		
2,4'-DDD	1.8			2.3			1.2			1.3		
2,4'-DDE	0.080	J	EP	0.17	U		0.13	U		0.099	U	
2,4'-DDT	0.050			0.050			0.040			0.050		
4,4'-DDD	0.98			2.0			0.44			0.38		
4,4'-DDE	1.0			1.3			2.6			0.37		
4,4'-DDT	0.79			0.62			0.65			0.19		
ALDRIN	0.10	U		0.12	U		0.093	U		0.072	U	
ALPHA-BHC	0.050	J	P	0.060	J	P	0.040	J	P	0.030	J	P
ALPHA-CHLORDANE	0.48			0.33			0.15			0.13		
BETA-BHC	1.8			1.3			0.080	J	P	0.44		
CHLORPYRIFOS	0.48	U		0.58	U		0.44	U		0.34	U	
CIS-NONACHLOR	0.15			0.18			0.070			0.040		
DELTA-BHC	0.080			0.11			0.070	U		0.030	J	P
DIELDRIN	0.040	J	P	0.040	J	P	0.10	U		0.090		
ENDOSULFAN II	0.87			0.76			1.1			0.91		
ENDRIN	0.23	U		0.27	U		0.21	U		0.16	U	
GAMMA-BHC (LINDANE)	0.40	U		0.49	U		0.37	U		0.29	U	
GAMMA-CHLORDANE	0.060	J	P	0.090	J	P	0.030	J	P	0.081	U	
HEPTACHLOR	0.29	U		0.35	U		0.080	J	P	0.21	U	
HEPTACHLOR EPOXIDE	0.050	U		0.061	U		0.047	U		0.036	U	
HEXACHLOROBENZENE	0.070	J	P	0.25			0.080			0.040	J	P
MIREX	0.050	U		0.061	U		0.047	U		0.036	U	
OXYCHLORDANE	0.12			0.24			0.16			0.18		
PCB-101/90	1.5			3.7			0.86			0.34		
PCB-105	0.93	J	EP	2.0	J	E	0.42	J	EP	0.20	J	EP
PCB-114	0.30	U		0.36	U		0.28	U		0.22	U	
PCB-118	1.4			3.0			1.3			0.36		
PCB-126	0.30	U		0.36	U		0.28	U		0.22	U	
PCB-128	0.49			0.94			0.070	J	P	0.24		
PCB-138/160	2.5			5.5			0.79			0.86		
PCB-1[illegible]	1.4			4[illegible]			0.76			0.63		

SAMPLE NUMBER:	OU4-SD-M13-200A			OU4-SD-M13-300A			OU4-SD-M14-100A			OU4-SD-M14-200A		
SAMPLE DATE:	08/28/00			08/28/00			08/28/00			08/28/00		
LABORATORY ID:	C36719			C36724			C36729			C36734		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	39.3 %			33.1 %			42.6 %			54.9 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	2.1			5.8			1.5			0.57		
PCB-156	1.3			1.5			0.64			0.37		
PCB-167	2.0			2.0			1.7			2.4		
PCB-169	0.30	U		0.040	U	A	0.090	U	A	0.060	U	A
PCB-170/190	20	J	EQ	24	J	EQ	13	J	EQ	6.0	J	EQ
PCB-18/17	0.13	J	P	1.9			0.34			0.040	J	P
PCB-180	1.4			4.2			0.57			0.31		
PCB-187	1.4			2.9			0.31			0.30		
PCB-189	0.47			0.30	J	P	0.19	J	P	0.30		
PCB-195/208	0.69			1.0			0.44			0.18		
PCB-201/157/173	0.36			0.43			0.22			0.15		
PCB-206	0.54			1.6			0.61			0.24		
PCB-209	0.95			1.4			0.54			0.32		
PCB-28	0.78			3.4			0.29	J	P	0.20	J	P
PCB-44	0.39			1.8			0.37			0.010	J	P
PCB-52	1.2			4.0			0.22			0.23		
PCB-66	0.50			1.7			0.54			0.64		
PCB-77	0.050	U	A	0.080	U	A	0.080	U	A	0.020	U	A
PCB-8/5	0.68			1.9			1.2			0.33	J	P
PCB-81	0.30	U		0.36	U		0.28	U		0.030	J	P
PENTACHLOROANISOLE	0.090	U	A	0.19	U	A	0.080	U	A	0.040	U	A
PENTACHLOROBENZENE	0.23	U	A	0.33	U	A	0.22	U	A	0.10	U	A
TRANS-NONACHLOR	0.050	J	P	0.050	J	P	0.18			0.045	U	

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 8, 2000**

FROM: **DOUGLAS S. SCHLOER** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYNUCLEAR AROMATIC HYDROCARBONS**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – M3024

SAMPLES: 19 / Sediments / PAH

OU4-FD-001-000A	OU4-FD-003-000A	OU4-FD-005-000A	OU4-SD-M09-100A
OU4-SD-M11-300A	OU4-SD-M12-100A	OU4-SD-M12-200A	OU4-SD-M12-300A
OU4-SD-M14-300A	OU4-SD-R01-200A	OU4-SD-R01-300A	OU4-SD-R02-100A
OU4-SD-R02-200A	OU4-SD-R02-400A	OU4-SD-R03-200A	OU4-SD-R03-300A
OU4-SD-R04-200A	OU4-SD-R04-300A	OU4-SD-R04-400A	

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine; SDG M3024 consists of nineteen (19) sediment samples. The samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). Four field duplicate pairs were included in this SDG: OU4-SD-M01-300A and OU4-FD-001-000A; *OU4-SD-M08-100A and OU4-FD-003-000A; *OU4-SD-M10-100A and OU4-FD-005-000A; OU4-SD-M12-200A and *OU4-FD-006-000A. The symbol (*) Indicates samples that were not analyzed within this SDG.

The samples were collected by Tetra Tech NUS on August 28th, 29th and 30th, 2000 and were analyzed by Texas A&M University under NOAA Technical Memorandum NOS ORCA 130 Quality Assurance/Quality Control (QA/QC) criteria. All analyses and preparations were conducted using NOAA Technical Memorandum NOS ORCQ 130 (Program Mussel Watch) Methods.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * GC/MS Tuning and System Performance
- Initial / Continuing Calibration
- Blank Contamination
- Surrogate / Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate Results
- * Blank Spike Results
- * Lab Duplicate Results
- Field Duplicate Results
- * Instrument Performance
- * Compound Identification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

CALIBRATION

The following tables summarize calibration noncompliances and corresponding validation actions. The key associated with this table is presented after the tables.

Compound	CCV 10/10/00; (18:54)	CCV 10/11/00; (02:55)	CCV 10/11/00; (10:57)	CCV 10/11/00; (16:23)
1-Methylnaphthalene		X	X	
Acenaphthylene		X		
Benzo(G,H,I)perylene			X	
Benzo(A)anthracene		X		X
Benzo(B)fluoranthene			X	
Benzo(A)pyrene		X		
Benzo(E)pyrene				X
Biphenyl		X		
Dibenzo(A,H)anthracene	X	X		
Fluoranthene			X	
Indeno(1,2,3-CD)pyrene	X			X
Perylene	X			
Pyrene			X	
Samples Affected:	OU4-SD-M14-300A OU4-SD-R02-100A OU4-SD-R02-400A OU4-SD-R03-200A	OU4-SD-M14-300A OU4-SD-R02-100A OU4-SD-R02-400A OU4-SD-R03-200A OU4-SD-R03-300A OU4-SD-R04-200A OU4-SD-R04-300A OU4-SD-R04-400A OU4-FD-001-000A OU4-FD-003-000A OU4-FD-005-000A OU4-SD-M09-100A OU4-SD-M11-300A	OU4-SD-R03-300A OU4-SD-R04-200A OU4-SD-R04-300A OU4-SD-R04-400A OU4-FD-001-000A OU4-FD-003-000A OU4-FD-005-000A OU4-SD-M09-100A OU4-SD-M11-300A OU4-SD-M12-300A OU4-SD-R01-200A OU4-SD-R01-300A OU4-SD-R02-200A	OU4-SD-M12-300A OU4-SD-R01-200A OU4-MU-R01-300A OU4-MU-R02-200A

Compound	CCV 10/18/00; (03:56)	CCV 10/18/00; (11:17)	CCV 10/18/00; (09:14)	CCV 10/18/00; (21:24)
1-Methylnaphthalene			X	X
1-methylphenanthrene			X	
Acenaphthene			X	X
Acenaphthylene	X			X
Benzo(G,H,I)perylene			X	X
Benzo(A)pyrene			X	X
Benzo(E)pyrene	X			X
Biphenyl			X	
Fluoranthene	X			
Phenanthrene		X	X	
Perylene				X
Pyrene	X		X	X
Samples Affected:	OU4-SD-M12-100A	OU4-SD-M12-100A	OU4-SD-M12-200A	OU4-SD-M12-200A

Calibration Actions

X - Percent Difference (%D) greater than 15%. Qualify positive and nondetected results for the affected compounds as estimated (J) and (UJ) respectively.

BLANKS

The maximum concentration of contaminants found in associated laboratory method blank and/or field quality control blanks are summarized below:

Compound	Maximum Concentration (Ng/g)	Blank Action Level (Ng/g)
Benzo(G,H,I)perylene	1.18	5.9
Benzo(E)pyrene	0.41	2.05

Samples Affected: All
Blank Actions:

- Value < Contract Required Quantitation Limit (CRQL); report CRQL followed by a U.
- Value > CRQL and < action level; report value followed by a U.
- Value > CRQL and > action level; report value unqualified.

Dilution factors, % solids*, and sample aliquots used for analysis were taken into consideration prior to the application of blank action levels. Positive results less than the blank action level for the aforementioned compounds were qualified as nondetected (U) in the affected samples. Field quality control blanks were not qualified due to method blank contamination.

* Sample results are calculated on a dry weight basis, therefore, the ratios of method blank to sample dry weights were taken into consideration when applying the blank action level. As a result of this adjustment, % solids are accounted for.

SURROGATE / INTERNAL STANDARD RECOVERY

Surrogates recovery was not compliant with the 40%-120% quality control limit for samples OU4-SD-M12-100A, OU4-SD-M12-200A. Since the samples required dilution for analysis, no action was taken based on this noncompliance.

Recovery of surrogate d8-naphthalene fell below the 40%-120% (but >10%) quality control limit in sample OU4-SD-R04-400A. The positive results reported for the target compounds associated with this surrogate were qualified as estimated (J) in the aforementioned sample.

FIELD DUPLICATE RESULTS

Relative percent differences (RPDs) greater than 50% were noted for several compounds in the field duplicates. Positive results for compounds that exceeded the 50% RPD quality control limit were qualified as estimated (J) in the field duplicate pair.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

% Recoveries of all Matrix Spike compounds were not compliant with the 40%-120% quality control limit except for naphthalene, biphenyl and benzo(G,H,I)perylene, which were within quality control limits.

% Recoveries of all Matrix Spike Duplicate compounds were not compliant with the 40%-120% quality control limit except for biphenyl and perylene which were within quality control limits.

MS / MSD Relative Percent Differences (RPDs) for all compounds exceeded the 25% quality control limit except for biphenyl. The unspiked sample OU4-SD-R03-300A contained significant concentrations of the spiked compounds, which, in light of this fact may not warrant action based on % recovery noncompliance, however, since the laboratory could not demonstrate acceptable MS / MSD precision, all parameters except biphenyl were qualified as estimated (J) in the unspiked sample. Biphenyl was not qualified in this manner since the % recovery and RPD of this compound were compliant.

COMPOUND QUANTITATION

Due to the presence of target compounds, both samples OU4-SD-M12-100A and OU4-SD-M12-200A were analyzed and reported at 50X dilutions.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the reporting limit, (RL), were qualified as estimated (J).

Samples were frozen from time of receipt at the laboratory to sample extraction, therefore, holding time from sample collection to sample extraction is not an issue.

Samples were reported on a dry weight basis. This is consistent with historical data from this site.

It should be noted that the dry weight of 20.0 grams for the laboratory method blank analyzed in this SDG is not consistent with method blanks as observed in other round 3 SDGs for CTO 201. Relevant calculations by the data reviewer were made using reported values.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: The laboratory was not able to meet quality control criteria for the continuing calibration of several compounds.

Other Factors Affecting Data Quality: Field duplicate RPDs exceeded 50% for several compounds.

MS / MSD % recoveries and Relative Percent Differences (RPDs) of several compounds were not compliant with quality control limits.

Recovery of the surrogate d8-naphthalene fell below quality control limits in one environmental sample.

MEMO TO: D. COHEN – PAGE 5
DATE: 12/08/00 – SDG M3024

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Douglas S. Schloer
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

		PORTSMOUTH NAVAL SHIPYARD FIELD DUPLICATES									
SDG		M3021		M3023				M3023		M3024		
FRACTION	COMPOUND	OU4-SD-M09-300A		OU4-FD-004-000A		RPD		OU4-SD-M01-300A		OU4-FD-001-000A		RPD
		RESULT ng/g		RESULT ng/g				RESULT ng/g		RESULT ng/g		
PAH												
	1,6,7-Trimethylnaphthalene	14.42		16.74		-14.9		32.21		22.13		37.1
	1-Methylnaphthalene	32.86		34.39		-4.6		97.16		47.36		68.9
	1-Methylphenanthrene	44.8		56.21		-22.6		233.57		215.68		8.0
	2,6-Dimethylnaphthalene	21.41		24.74		-14.4		47.16		28.81		48.3
	2-Methylnaphthalene	49.19		51.7		-5.0		126.06		92.65		30.6
	Acenaphthene	76.75		91.5		-17.5		84.18		64.61		26.3
	Acenaphthylene	101.33		125.21		-21.1		448.67		453.39		-1.0
	Anthracene	223.93		290.73		-26.0		846.45		384.83		75.0
	Benzo(A)anthracene	478.92		655.07		-31.1		1200.08		1549.24		-25.4
	Benzo(A)pyrene	101.88		274.28		-91.7		2040.78		2071.06		-1.5
	Benzo(B)fluoranthene	802.53		1023.24		-24.2		1291.37		2441.58		-61.6
	Benzo(E)pyrene	421.46		522.07		-21.3		1243.34		2062.36		-49.6
	Benzo(G,H,I)perylene	418.01		538.43		-25.2		1152.88		1713.31		-39.1
	Benzo(K)fluoranthene	270.58		347.45		-24.9		489.57		416.86		16.0
	Biphenyl	10.91		12.36		-12.5		34.8		25.3		31.6
	C1-Chrysenes	364.88		475.86		-26.4		1660.59		2386.1		-35.9
	C1-Dibenzothiophenes	24.98		29.71		-17.3		54.73		44		21.7
	C1-Fluoranthenes/Pyrenes	541.69		655.49		-19.0		3363.68		2720.21		21.2
	C1-Fluorenes	45.54		57.06		-22.5		249.38		349.08		-33.3
	C1-Naphthalenes	82.05		86.09		-4.8		223.22		140.01		45.8
	C1-Phenanthrenes/Anthracenes	230.86		287.38		-21.8		931.57		670.26		32.6
	C2-Chrysenes	134.49		196.31		-37.4		769.28		892.83		-14.9
	C2-Dibenzothiophenes	30.53		37.02		-19.2		114.14		122.79		-7.3
	C2-Fluorenes	71.61		59.22		18.9		285.13		343.79		-18.7
	C2-Naphthalenes	84.28		53.56		44.6		283.06		151.62		60.5
	C2-Phenanthrenes/Anthracenes	152.13		187.43		-20.8		1062.04		1088.17		-2.4
	C3-Chrysenes	10.01		11.64		-15.1		12.85	J	0.27	J	191.8
	C3-Dibenzothiophenes	27.73		30.14		-8.3		139.57		160.58		-14.0
	C3-Fluorenes	21		49.89		-81.5		314.93		387.66		-20.7
	C3-Naphthalenes	82.43		77.14		6.6		214.69		146.27		37.9
	C3-Phenanthrenes/Anthracenes	85.59		103.15		-18.6		824.29		888.42		-7.5
	C4-Chrysenes	11.56		13.1		-12.5		18.16		8.31		74.4
	C4-Naphthalenes	34.65		39.07		-12.0		157.38		130.26		18.9
	C4-Phenanthrenes/Anthracenes	63.6		101.83		-46.2		431.51		415.04		3.9
	Chrysene	548.19		658.92		-18.3		1280.25		1501.55		-15.9
	Dibenzo(a,h)anthracene	109.74		124.42		-12.5		196.33		391.93		-66.5
	Dibenzothiophene	30.25		32.71		-7.8		40.37		26.93		39.9
	Fluoranthene	1024.45		1216.08		-17.1		1825.31		1294.51		34.0
	Fluorene	87.92		113.7		-25.6		215.19		133.16		47.1
	Indeno(1,2,3-c,d)pyrene	465.92		547.76		-16.1		808.98		1370.81		-51.5
	Naphthalene	77.25		71.95		7.1		157.57		167.74		-6.3
	Perylene	205.61		212.76		-3.4		354.49		218.34		47.5
	Phenanthrene	497.42		604.15		-19.4		1100.58		514.13		72.6
	Pyrene	947.48		1128.65		-17.5		2840.21		2433.29		15.4

ND - Compound not detected.
NC - RPD not calculated.

		PORTSMOUTH NAVAL SHIPYARD FIELD DUPLICATES					
SDG		M3023	M3024		M3023	M3024	
FRACTION	COMPOUND	OU4-SD-M08-100A	OU4-FD-003-000A	RPD	OU4-SD-M10-100A	OU4-FD-005-000A	RPD
		RESULT ng/g	RESULT ng/g		RESULT ng/g	RESULT ng/g	
PAH							
	1,6,7-Trimethylnaphthalene	12.6	10.38	19.3	4.09	3.55	14.1
	1-Methylnaphthalene	29.23	22.12	27.7	9.11	8.45	7.5
	1-Methylphenanthrene	44.45	42.68	4.1	11.32	23.22	-68.9
	2,6-Dimethylnaphthalene	18.04	16.89	6.6	7.43	5.86	23.6
	2-Methylnaphthalene	45.25	37.58	18.5	20.48	15.91	25.1
	Acenaphthene	43.17	55.92	-25.7	3.98	10.32	-88.7
	Acenaphthylene	83.07	90.85	-8.9	23.54	29.51	-22.5
	Anthracene	214.47	211.77	1.3	43.02	77.02	-56.6
	Benzo(A)anthracene	426.52	379.14	11.8	103.2	210.68	-68.5
	Benzo(A)pyrene	369.6	574.74	-43.4	60.2	373.32	-144.5
	Benzo(B)fluoranthene	689.77	711.99	-3.2	162.52	304.83	-60.9
	Benzo(E)pyrene	367.43	348.03	5.4	95.42	171.02	-56.7
	Benzo(G,H,I)perylene	343.85	304.45	12.2	94.58	153.11	-47.3
	Benzo(K)fluoranthene	198.62	213.93	-7.4	43.92	114.54	-89.1
	Biphenyl	7.82	7.76	0.8	3.3	2.75	18.2
	C1-Chrysenes	293.64	163.67	56.8	83.2	80.88	2.8
	C1-Dibenzothiophenes	18.23	15.33	17.3	6.36	8.34	-26.9
	C1-Fluoranthenes/Pyrenes	427.31	220.51	63.8	76.49	110.88	-36.7
	C1-Fluorenes	32.01	30.61	4.5	11.44	12.83	-11.5
	C1-Naphthalenes	74.48	59.7	22.0	29.59	24.36	19.4
	C1-Phenanthrenes/Anthracenes	169.35	135.94	21.9	52.03	71.63	-31.7
	C2-Chrysenes	114.39	73.63	43.4	52.27	67.87	-26.0
	C2-Dibenzothiophenes	23.63	17.22	31.4	6.84	9.76	-35.2
	C2-Fluorenes	40.45	46.66	-14.3	15.33	19	-21.4
	C2-Naphthalenes	84.27	63.29	28.4	33.73	28.6	16.5
	C2-Phenanthrenes/Anthracenes	150.49	71.88	70.7	27.67	41.05	-38.9
	C3-Chrysenes	8.91	5.15	53.5	10.77	8.77	20.5
	C3-Dibenzothiophenes	27.1	10.61	87.5	4.61	6.57	-35.1
	C3-Fluorenes	45.67	45.32	0.8	13.63	20.51	-40.3
	C3-Naphthalenes	71.71	57.94	21.2	31.87	27.22	15.7
	C3-Phenanthrenes/Anthracenes	196.19	39.76	132.6	14.5	20.56	-34.6
	C4-Chrysenes	8.61	5.06	51.9	3.48	2.51	32.4
	C4-Naphthalenes	51.59	31.41	48.6	13.05	13.57	-3.9
	C4-Phenanthrenes/Anthracenes	110.06	19.55	139.7	10.59	9.24	13.6
	Chrysene	476.4	451.57	5.4	109.26	184.88	-51.4
	Dibenzo(a,h)anthracene	84.36	83.48	1.0	23.93	45.18	-61.5
	Dibenzothiophene	17.86	22.13	-21.4	6.12	9.23	-40.5
	Fluoranthene	789.63	810.17	-2.6	194.01	353.99	-58.4
	Fluorene	47.56	76	-46.0	12.16	22.7	-60.5
	Indeno(1,2,3-c,d)pyrene	345.7	353.69	-2.3	88.52	167.92	-61.9
	Naphthalene	41.56	41.2	0.9	24.15	25.86	-6.8
	Perylene	71.47	106.02	-38.9	30.65	42.71	-32.9
	Phenanthrene	293.4	420.07	-35.5	103.08	175.11	-51.8
	Pyrene	716.63	683.07	4.8	156.23	275.51	-55.3

ND - Compound not detected.
NC - RPD not calculated.

		PORTSMOUTH NAVAL SHIPYARD FIELD DUPLICATES											
SDG		M3021		M3021				M3024		M3025			
FRACTION	COMPOUND	OU4-SD-M05-100A RESULT ng/g		OU4-FD-002-000A RESULT ng/g		RPD		OU4-SD-M12-200A RESULT ng/g		OU4-FD-006-000A RESULT ng/g		RPD	
PAH													
	1,6,7-Trimethylnaphthalene	6.47		13.37		-69.6		32.12		35.49		-10.0	
	1-Methylnaphthalene	12.72		25.37		-66.4		118.3		115.38		2.5	
	1-Methylphenanthrene	22.47		36.29		-47.0		265.74		346.28		-26.3	
	2,6-Dimethylnaphthalene	8.44		15.89		-61.2		59.33	J	60.72		-2.3	
	2-Methylnaphthalene	19.69		38.18		-63.9		153.31		153.37		0.0	
	Acenaphthene	13.85		26.48		-62.6		1239.02		1032.17		18.2	
	Acenaphthylene	46.16		107.28		-79.7		190.95		242.22		-23.7	
	Anthracene	62.91		175.25		-94.3		1031.43		1074.55		-4.1	
	Benzo(A)anthracene	180.8		365.03		-67.5		3619.98		3230.13		11.4	
	Benzo(A)pyrene	209.33		105.85		65.7		4054.8		3903.25		3.8	
	Benzo(B)fluoranthene	302.97		573.82		-61.8		4172.34		4334.29		-3.8	
	Benzo(E)pyrene	172.87		290.41		-50.7		2126.36		1978.35		7.2	
	Benzo(G,H,I)perylene	155.94		284.54		-58.4		2123.25		1874.81		12.4	
	Benzo(K)fluoranthene	112.64		209.24		-60.0		1852.14		1363.96		30.4	
	Biphenyl	5.01		8.19		-48.2		42.63		40.99		3.9	
	C1-Chrysenes	150.31		285.05		-61.9		1288.26		1606.49		-22.0	
	C1-Dibenzothiophenes	10.04		20.3		-67.6		116.31		117.09		-0.7	
	C1-Fluoranthenes/Pyrenes	169.48		430.58		-87.0		1931.4		2006.55		-3.8	
	C1-Fluorenes	18.09		36.93		-68.5		318.19		269.49		16.6	
	C1-Naphthalenes	32.41		63.55		-64.9		271.61		268.75		1.1	
	C1-Phenanthrenes/Anthracenes	89.1		170.75		-62.8		1106.65		1230.64		-10.6	
	C2-Chrysenes	52.43		112.52		-72.9		362.23		404.49		-11.0	
	C2-Dibenzothiophenes	14.49		31.79		-74.8		52.56		57.43		-8.9	
	C2-Fluorenes	20.05		54.6		-92.6		122.42		179.72		-37.9	
	C2-Naphthalenes	29.21		65.32		-76.4		163.66		251.7		-42.4	
	C2-Phenanthrenes/Anthracenes	65.23		137.44		-71.3		465.26		565.9		-19.5	
	C3-Chrysenes	5.22		7.54		-36.4		16.77	J	9.14		58.9	
	C3-Dibenzothiophenes	9.76		28.94		-99.1		37.44	J	36.97		1.3	
	C3-Fluorenes	10.81		35.49		-106.6		77.26		154.82		-66.8	
	C3-Naphthalenes	23.75		71.18		-99.9		113.75		129.1		-12.6	
	C3-Phenanthrenes/Anthracenes	31.39		115.06		-114.3		183.47		208.82		-12.9	
	C4-Chrysenes	6.61		7.72		-15.5		4.82	J	109.23		-183.1	
	C4-Naphthalenes	11.15		38.75		-110.6		47.49		60.08		-23.4	
	C4-Phenanthrenes/Anthracenes	14.77		71.53		-131.5		46.97	J	66.96		-35.1	
	Chrysene	139.99		376.73		-91.6		3317.36		3310.36		0.2	
	Dibenzo(a,h)anthracene	33.71		73.7		-74.5		539.87		474.84		12.8	
	Dibenzothiophene	8.37		17.46		-70.4		278.99		276.13		1.0	
	Fluoranthene	351.25		730.97		-70.2		8199.58		8279.87		-1.0	
	Fluorene	18.71		42.78		-78.3		1057.01		1055.22		0.2	
	Indeno(1,2,3-c,d)pyrene	157.61		326.49		-69.8		2233.75		2322.06		-3.9	
	Naphthalene	40.16		57.43		-35.4		354.22		327.39		7.9	
	Perylene	54.38		136.94		-86.3		847.66		653.07		25.9	
	Phenanthrene	145.24		294.42		-67.9		5882.69		5510.96		6.5	
	Pyrene	310.65		666.71		-72.9		6639.18		6640.66		0.0	

ND - Compound not detected.
NC - RPD not calculated.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-FD-001-000A			OU4-FD-003-000A			OU4-FD-005-000A			OU4-SD-M09-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/29/00			08/30/00		
LABORATORY ID:	C36779			C36784			C36789			C36802		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	53.1 %			68.7 %			66.5 %			89.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M01-300A			OU4-SD-M08-100A			OU4-SD-M10-100A					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	22.1			10.4			3.55			9.54		
1-METHYLNAPHTHALENE	47.4	J	CG	22.1	J	C	8.45	J	C	47.6	J	C
1-METHYLPHENANTHRENE	216			42.7			23.2	J	G	6.96		
2,6-DIMETHYLNAPHTHALENE	28.8			16.9			5.86			22.7		
2-METHYLNAPHTHALENE	92.7			37.6			15.9			50.7		
ACENAPHTHENE	64.6			55.9			10.3	J	G	2.23		
ACENAPHTHYLENE	453	J	C	90.9	J	C	29.5	J	C	6.81	J	C
ANTHRACENE	385	J	G	212			77.0	J	G	13.3		
BENZO(A)ANTHRACENE	1549	J	C	379	J	C	211	J	CG	25.1	J	C
BENZO(A)PYRENE	2071	J	C	575	J	C	373	J	CG	43.4	J	C
BENZO(B)FLUORANTHENE	2442	J	CG	712	J	C	305	J	CG	51.6	J	C
BENZO(E)PYRENE	2062			348			171			27.1		
BENZO(G,H,I)PERYLENE	1713	J	C	304	J	C	153	J	C	26.4	J	C
BENZO(K)FLUORANTHENE	417			214			115	J	G	14.4		
BIPHENYL	25.3	J	C	7.76	J	C	2.75	J	C	3.89	J	C
C1-CHRYSENES	2386			164	J	G	80.9			16.7		
C1-DIBENZOTHIOPHENES	44.0			15.3			8.34			3.83		
C1-FLUORANTHENES/PYRENES	2720			221	J	G	111			16.3		
C1-FLUORENES	349			30.6			12.8			10.1		
C1-NAPHTHALENES	140			59.7			24.4			98.3		
C1-PHENANTHRENES/ANTHRACENES	670			136			71.6			21.9		
C2-CHRYSENES	893			73.6			67.9			9.72		
C2-DIBENZOTHIOPHENES	123			17.2			9.76			3.67		
C2-FLUORENES	344			46.7			19.0			14.7		
C2-NAPHTHALENES	152	J	G	63.3			28.6			102		
C2-PHENANTHRENES/ANTHRACENES	1088			71.9	J	G	41.1			14.0		
C3-CHRYSENES	0.27	J	GP	5.15	J	G	8.77			0.77	J	P
C3-DIBENZOTHIOPHENES	161			10.6	J	G	6.57			1.77		
C3-FLUORENES	388			45.3			20.5			11.0		
C3-NAPHTHALENES	146			57.9			27.2			75.6		
C3-PHENANTHRENES/ANTHRACENES	888			39.8	J	G	20.6			5.64		
C4-CHRYSENES	8.31	J	G	5.06	J	G	2.51			0.44	J	P
C4-NA[illegible]ALENES	130			3[illegible]			13.6			22.3		

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-FD-001-000A			OU4-FD-003-000A			OU4-FD-005-000A			OU4-SD-M09-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/29/00			08/30/00		
LABORATORY ID:	C36779			C36784			C36789			C36802		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	53.1 %			68.7 %			66.5 %			89.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M01-300A			OU4-SD-M08-100A			OU4-SD-M10-100A					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	415			19.6	J	G	9.24			3.03		
CHRYSENE	1502			452			185	J	G	36.3		
DIBENZO(A,H)ANTHRACENE	392	J	CG	83.5	J	C	45.2	J	CG	6.44	J	C
DIBENZOTHIOPHENE	26.9			22.1			9.23			2.19		
FLUORANTHENE	1295	J	C	810	J	C	354	J	CG	54.7	J	C
FLUORENE	133			76.0			22.7	J	CG	6.72		
INDENO(1,2,3-CD)PYRENE	1371	J	G	354			168	J	CG	26.6		
NAPHTHALENE	168			41.2			25.9			50.9		
PERYLENE	218			106			42.7			9.21		
PHENANTHRENE	514	J	G	420			175	J	G	28.7		
PYRENE	2433	J	C	683	J	C	276	J	CG	43.2	J	C

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-M11-300A			OU4-SD-M12-100A			OU4-SD-M12-200A			OU4-SD-M12-300A		
SAMPLE DATE:	08/30/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36807			C36812			C36817			C36822		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	87.6 %			54.7 %			54.4 %			51.1 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	9.95			54.9			32.1			11.5		
1-METHYLNAPHTHALENE	17.3	J	C	251			118	J	C	25.2	J	C
1-METHYLPHENANTHRENE	31.9			550			266	J	C	70.4		
2,6-DIMETHYLNAPHTHALENE	18.4			113			59.3	J	P	19.0		
2-METHYLNAPHTHALENE	38.7			317			153			36.1		
ACENAPHTHENE	4.75			2561			1239	J	C	133		
ACENAPHTHYLENE	21.1	J	C	303	J	C	191	J	C	84.6		
ANTHRACENE	66.9			2205			1031			196		
BENZO(A)ANTHRACENE	142	J	C	5833			3620			438	J	C
BENZO(A)PYRENE	233	J	C	8467			4055	J	C	692		
BENZO(B)FLUORANTHENE	221	J	C	7235			4172			795	J	C
BENZO(E)PYRENE	102			3370	J	C	2126	J	C	361	J	C
BENZO(G,H,I)PERYLENE	90.9	J	C	3248			2123	J	C	343	J	C
BENZO(K)FLUORANTHENE	56.2			2332			1852			203		
BIPHENYL	8.80	J	C	66.8	J	P	42.6	J	CP	11.1		
C1-CHRYSENES	75.8			2119			1288			238		
C1-DIBENZOTHIOPHENES	13.2			180			116			23.9		
C1-FLUORANTHENES/PYRENES	105			3584			1931			308		
C1-FLUORENES	18.7			423			318			52.8		
C1-NAPHTHALENES	55.9			568			272			61.3		
C1-PHENANTHRENES/ANTHRACENES	84.0			1901			1107			197		
C2-CHRYSENES	33.3			489			362			106		
C2-DIBENZOTHIOPHENES	16.2			101			52.6			25.9		
C2-FLUORENES	32.7			303			122			62.1		
C2-NAPHTHALENES	61.5			465			164			71.3		
C2-PHENANTHRENES/ANTHRACENES	54.8			730			465			104		
C3-CHRYSENES	2.00			44.4	J	P	16.8	J	GP	1.73		
C3-DIBENZOTHIOPHENES	11.2			76.4			37.4	J	P	21.2		
C3-FLUORENES	27.3			293			77.3	J	G	50.3		
C3-NAPHTHALENES	68.4			284			114			58.8		
C3-PHENANTHRENES/ANTHRACENES	34.9			292			183			62.1		
C4-CHRYSENES	0.71	J	P	45.4	J	P	4.82	J	GP	0.49	J	P
C4-NAPHTHALENES	48.4			8[illegible]			47.5			30.2		

CTO2[illegible] PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-M11-300A			OU4-SD-M12-100A			OU4-SD-M12-200A			OU4-SD-M12-300A		
SAMPLE DATE:	08/30/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36807			C36812			C36817			C36822		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	87.6 %			54.7 %			54.4 %			51.1 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	19.9			88.5			47.0	J	P	36.3		
CHRYSENE	192			6585			3317			511		
DIBENZO(A,H)ANTHRACENE	27.0	J	C	790			540			97.5		
DIBENZOTHIOPHENE	8.17			481			279			33.5		
FLUORANTHENE	239	J	C	13836.81	J	C	8200			843	J	C
FLUORENE	16.6			2434			1057			117		
INDENO(1,2,3-CD)PYRENE	113			3740			2234			411	J	C
NAPHTHALENE	49.4			582			354			70.5		
PERYLENE	29.9			1016			848	J	C	112		
PHENANTHRENE	123			9952	J	C	5883	J	C	552		
PYRENE	197	J	C	11419.54	J	C	6639	J	C	790	J	C

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-M14-300A			OU4-SD-R01-200A			OU4-SD-R01-300A			OU4-SD-R02-100A		
SAMPLE DATE:	08/28/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36739			C36827			C36832			C36744		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	42.1 %			73.0 %			75.3 %			75.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	25.3			1.02			0.65			12.0		
1-METHYLNAPHTHALENE	22.6	J	C	1.60	J	CP	1.04	J	CP	19.4	J	C
1-METHYLPHENANTHRENE	109			3.44			2.78			93.6		
2,6-DIMETHYLNAPHTHALENE	22.2			1.55			1.10	J	P	11.2		
2-METHYLNAPHTHALENE	34.4			2.60	J	P	1.57	J	P	24.8		
ACENAPHTHENE	32.5			1.87			0.67			16.3		
ACENAPHTHYLENE	130	J	C	7.82			5.27			164	J	C
ANTHRACENE	353			12.2			10.7			294		
BENZO(A)ANTHRACENE	511	J	C	19.2	J	C	18.2	J	C	599	J	C
BENZO(A)PYRENE	742	J	C	35.3			25.2			831	J	C
BENZO(B)FLUORANTHENE	625			32.3	J	C	23.0	J	C	899		
BENZO(E)PYRENE	288			16.9	J	C	11.9	J	C	506		
BENZO(G,H,I)PERYLENE	279			18.5	J	C	11.7	J	C	415		
BENZO(K)FLUORANTHENE	248			11.2			6.63			327		
BIPHENYL	9.21	J	C	0.98	J	P	0.49	J	P	4.97	J	C
C1-CHRYSENES	263			13.5			7.28			369		
C1-DIBENZOTHIOPHENES	34.8			1.43			0.85			31.8		
C1-FLUORANTHENES/PYRENES	502			13.1			11.4			439		
C1-FLUORENES	94.3			2.74			2.30			78.7		
C1-NAPHTHALENES	57.0			4.20			2.61			44.2		
C1-PHENANTHRENES/ANTHRACENES	331			9.42			8.07			276		
C2-CHRYSENES	122			5.29			2.46			166		
C2-DIBENZOTHIOPHENES	43.7			2.17			0.98			41.7		
C2-FLUORENES	90.2			9.66			5.51			55.1		
C2-NAPHTHALENES	93.1			5.00			3.31			61.3		
C2-PHENANTHRENES/ANTHRACENES	225			7.07			4.46			195		
C3-CHRYSENES	1.79	J	P	0.06	J	P	0.02	J	P	0.81	J	P
C3-DIBENZOTHIOPHENES	48.2			1.38			0.49	J	P	34.5		
C3-FLUORENES	59.1			5.18			2.19			66.6		
C3-NAPHTHALENES	98.9			4.68			4.06			58.0		
C3-PHENANTHRENES/ANTHRACENES	114			3.96			1.86			114		
C4-CHRYSENES	4.78			0.04	J	P	0.01	J	P	10.2		
C4-NAPHTHALENES	59.5			3			4.13			43.1		

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-M14-300A			OU4-SD-R01-200A			OU4-SD-R01-300A			OU4-SD-R02-100A		
SAMPLE DATE:	08/28/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36739			C36827			C36832			C36744		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	42.1 %			73.0 %			75.3 %			75.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	65.6			2.06			0.94			39.7		
CHRYSENE	533			22.4			18.3			667		
DIBENZO(A,H)ANTHRACENE	69.8	J	C	4.26			2.69			123	J	C
DIBENZOTHIOPHENE	27.1			0.98			0.72			24.5		
FLUORANTHENE	919			25.8	J	C	39.3	J	C	1155		
FLUORENE	84.5			2.95			2.05			50.2		
INDENO(1,2,3-CD)PYRENE	337	J	C	20.6	J	C	13.9	J	C	467	J	C
NAPHTHALENE	64.0			5.47			3.14	J	P	28.4		
PERYLENE	173	J	C	10.7			5.71			108	J	C
PHENANTHRENE	468			13.0			13.1			440		
PYRENE	856			24.6	J	C	34.3	J	C	950		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-R02-200A			OU4-SD-R02-400A			OU4-SD-R03-200A			OU4-SD-R03-300A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36837			C36749			C36754			C36759		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	74.4 %			53.7 %			56.1 %			63.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	9.89			15.7			30.2			14.6	J	D
1-METHYLNAPHTHALENE	9.53	J	C	35.2	J	C	18.5	J	C	26.5	J	CD
1-METHYLPHENANTHRENE	44.7			94.7			161			67.3	J	C
2,6-DIMETHYLNAPHTHALENE	8.76			19.3			20.7			13.5	J	C
2-METHYLNAPHTHALENE	15.4			53.7			29.3			27.4	J	C
ACENAPHTHENE	22.1			26.3			38.9			49.5	J	C
ACENAPHTHYLENE	63.5			163	J	C	124	J	C	43.4	J	CD
ANTHRACENE	146			295			402			152	J	D
BENZO(A)ANTHRACENE	344	J	C	506	J	C	714	J	C	308	J	CD
BENZO(A)PYRENE	496			338	J	C	838	J	C	428	J	CD
BENZO(B)FLUORANTHENE	465	J	C	896			795			399	J	CD
BENZO(E)PYRENE	210	J	C	400			375			186	J	D
BENZO(G,H,I)PERYLENE	189	J	C	357			353			156	J	CD
BENZO(K)FLUORANTHENE	116			189			211			99.9	J	D
BIPHENYL	3.88			10.1	J	C	8.40	J	C	4.91	J	CD
C1-CHRYSENES	158			293			327			113		
C1-DIBENZOTHIOPHENES	16.4			32.3			44.7			22.7		
C1-FLUORANTHENES/PYRENES	188			461			486			231		
C1-FLUORENES	40.4			73.4			142			72.4		
C1-NAPHTHALENES	24.9			88.9			47.8			53.9		
C1-PHENANTHRENES/ANTHRACENES	148			270			422			214		
C2-CHRYSENES	64.2			177			143			91.3		
C2-DIBENZOTHIOPHENES	18.9			45.6			55.8			20.2		
C2-FLUORENES	44.5			58.9			115			53.9		
C2-NAPHTHALENES	33.7			76.0			79.7			69.2		
C2-PHENANTHRENES/ANTHRACENES	87.9			222			313			123		
C3-CHRYSENES	0.05	J	P	0.51	J	P	0.18	J	P	2.85		
C3-DIBENZOTHIOPHENES	8.25			31.5			24.7			11.5		
C3-FLUORENES	36.8			58.0			80.1			38.6		
C3-NAPHTHALENES	36.7			82.0			149			77.1		
C3-PHENANTHRENES/ANTHRACENES	37.9			162			190			56.1		
C4-CHRYSENES	1.60			4.23			5.42			2.66		
C4-NAP[illegible]LENES	21.3			4[illegible]			79.8			37.9		

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-R02-200A			OU4-SD-R02-400A			OU4-SD-R03-200A			OU4-SD-R03-300A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36837			C36749			C36754			C36759		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	74.4 %			53.7 %			56.1 %			63.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	15.1			46.0			61.6			15.0		
CHRYSENE	285			625			583			282	J	D
DIBENZO(A,H)ANTHRACENE	55.6			96.1	J	C	92.9	J	C	45.7	J	CD
DIBENZOTHIOPHENE	14.6			22.6			43.1			25.2	J	D
FLUORANTHENE	414	J	C	860			1094			461	J	CD
FLUORENE	47.2			53.7			114			73.9	J	D
INDENO(1,2,3-CD)PYRENE	229	J	C	419	J	C	461	J	C	184	J	D
NAPHTHALENE	33.3			79.9			52.1			37.1	J	D
PERYLENE	101			104	J	C	164	J	C	78.3	J	D
PHENANTHRENE	269			342			670			414	J	D
PYRENE	367	J	C	818			933			448	J	CD

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-R04-200A			OU4-SD-R04-300A			OU4-SD-R04-400A					
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			/ /		
LABORATORY ID:	C36764			C36769			C36774					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	78.3 %			79.6 %			72.0 %			100.0 %		
UNITS:	NG/G			NG/G			NG/G					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	0.32			0.40			0.47					
1-METHYLNAPHTHALENE	0.69	J	CP	0.65	J	CP	0.81	J	CPR			
1-METHYLPHENANTHRENE	0.89			1.20			1.30					
2,6-DIMETHYLNAPHTHALENE	1.34			1.64			0.82	J	P			
2-METHYLNAPHTHALENE	1.11	J	P	1.00	J	P	1.33	J	P			
ACENAPHTHENE	0.24	J	CP	0.24	J	CP	0.45	J	CP			
ACENAPHTHYLENE	1.84			2.68			2.46					
ANTHRACENE	2.35			3.25			3.33					
BENZO(A)ANTHRACENE	2.82	J	C	5.49	J	C	5.65	J	C			
BENZO(A)PYRENE	5.01	J	C	7.68	J	C	6.86	J	C			
BENZO(B)FLUORANTHENE	6.31	J	C	9.11	J	C	7.43	J	C			
BENZO(E)PYRENE	3.40			4.47			3.97					
BENZO(G,H,I)PERYLENE	3.61	U	A	4.78	U	A	4.17	U	A			
BENZO(K)FLUORANTHENE	1.86			2.62			1.94					
BIPHENYL	0.41	J	CP	0.41	J	CP	0.56	J	CP			
C1-CHRYSENES	2.19			4.48			2.98					
C1-DIBENZOTHIOPHENES	0.42	J	P	0.49	J	P	0.54	J	P			
C1-FLUORANTHENES/PYRENES	2.62			5.66			5.10					
C1-FLUORENES	1.27			2.17			2.06					
C1-NAPHTHALENES	1.80			1.65			2.14	J	R			
C1-PHENANTHRENES/ANTHRACENES	2.34			3.47			3.49					
C2-CHRYSENES	1.37			1.89			1.11					
C2-DIBENZOTHIOPHENES	0.58			0.99			0.84					
C2-FLUORENES	3.61			3.94			3.23					
C2-NAPHTHALENES	3.39			3.65			3.50					
C2-PHENANTHRENES/ANTHRACENES	2.15			3.78			3.36					
C3-CHRYSENES	0.97	U		0.01	J	P	0.01	J	P			
C3-DIBENZOTHIOPHENES	0.39	J	P	0.79			0.81					
C3-FLUORENES	1.96			2.26			3.23					
C3-NAPHTHALENES	2.16			1.88			3.17					
C3-PHENANTHRENES/ANTHRACENES	0.95			2.04			1.62					
C4-CHRYSENES	0.01	J	P	0.01	J	P	0.02	J	P			
C4-NAPH[illegible]LENES	0.85			1.5[illegible]			1.00					

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-R04-200A			OU4-SD-R04-300A			OU4-SD-R04-400A					
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			/ /		
LABORATORY ID:	C36764			C36769			C36774					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	78.3 %			79.6 %			72.0 %			100.0 %		
UNITS:	NG/G			NG/G			NG/G					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	0.02	J	P	0.88			0.83	J	P			
CHRYSENE	4.01			6.73			6.63					
DIBENZO(A,H)ANTHRACENE	0.59	J	C	0.91	J	C	0.72	J	C			
DIBENZOTHIOPHENE	0.27			0.35			0.37					
FLUORANTHENE	6.11	J	C	8.82	J	C	12.9	J	C			
FLUORENE	0.75			0.93			0.94					
INDENO(1,2,3-CD)PYRENE	3.62			5.09			4.01					
NAPHTHALENE	1.77	J	P	1.63	J	P	1.96	J	PR			
PERYLENE	2.52	J	P	4.02			2.86	J	PR			
PHENANTHRENE	3.21			3.90			3.89					
PYRENE	6.28	J	C	8.13	J	C	11.4	J	C			

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 12, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PCBs and PESTICIDES**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – M3024

SAMPLES: 19/Sediment/

OU4-FD-001-000A	OU4-FD-003-000A	OU4-FD-005-000A
OU4-SD-M09-100A	OU4-SD-M11-300A	OU4-SD-M12-100A
OU4-SD-M12-200A	OU4-SD-M12-300A	OU4-SD-M14-300A
OU4-SD-R01-200A	OU4-SD-R01-300A	OU4-SD-R02-100A
OU4-SD-R02-200A	OU4-SD-R02-400A	OU4-SD-R03-200A
OU4-SD-R03-300A	OU4-SD-R04-200A	OU4-SD-R04-300A
OU4-SD-R04-400A		

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG M3024 consisting of nineteen (19) sediment samples were included in this SDG. Samples were analyzed for pesticides and PCBs. Several field duplicates were included in this SDG: OU4-FD-006-000A (in SDG M0325) and OU4-SD-M12-200A; OU4-FD-001-000A and OU4-SD-M01-300A (in SDG M3023); OU4-FD-003-000A and OU4-SD-M08-100A (in SDG M3023); and OU4-FD-005-000A and OU4-SD-M10-100A (in SDG M3023).

The samples were collected by Tetra Tech NUS on August 28-30, 1999 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using GERG SOP 9810 and 9805 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * Calibration
- Method Blank Results
- * Surrogate Standard Recoveries
- * Instrument Performance
- * Compound Identification
- Compound Quantitation
- Matrix Spike/Matrix Spike Duplicate Results
- Standard Reference Materials
- Field Duplicate Results

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANKS

The maximum concentration of contaminants found in the laboratory method blank analysis is summarized below.

Compound	Maximum Concentration	Sediment Action Level
Tetrachlorobenzene, 1245-	0.54 ng/g	2.7 ng/g
Pentachlorobenzene	0.17 ng/g	0.85 ng/g
a-BHC	0.01 ng/g	0.05 ng/g
Pentachloroanisole	0.02 ng/g	0.10 ng/g
Chlorpyrifos	0.43 ng/g	2.15 ng/g
PCB 8/5	0.05 ng/g	0.25 ng/g
PCB 28	0.02 ng/g	0.10 ng/g
PCB 153/132	0.05 ng/g	0.25 ng/g
PCB 138/160	0.07 ng/g	0.35 ng/g
PCB180	0.02 ng/g	0.10 ng/g
PCB170/190	0.02 ng/g	0.10 ng/g
PCB 77	0.29 ng/g	1.45 ng/g
PCB 169	0.01 ng/g	0.05 ng/g

Samples Affected: All

Blank Actions:

Dilution factors, percent solids, and sample aliquot used for analysis were taken into consideration prior to the application of all action levels. Positive results for all compounds, except PCB 170/190, below the blank action level were qualified at the reported concentration. The blank had a dry weight of 13.6 g. Sample aliquots ranged from 8.5 to 18.3 g dry weight.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS) recovery of PCB 170/190 exceeded the upper quality control limit. Interference was noted for this compound in both the MS/MSD and standard reference materials (SRMs). Positive results were qualified as estimated, J, for this compound in the unspiked sample, OU4-SD-R03-300A.

STANDARD REFERENCE MATERIAL RESULTS

Recovery of PCB 170/190 exceeded the upper quality control limit. Interference with quantitation of this PCB was noted on the Form 1s. Positive results for this compound were qualified as estimated, J, in all samples.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

PCB 201/157/173 was present on the Form 1s but not on the electronic data deliverable. The reviewer amended the EDD to include these results.

Interference was noted for PCB 170/190 in all samples due to co-elution with other target compounds.

Sample OU4-FD-003-000A was re-analyzed at a 5X dilution factor due to the presence of 4,4'-DDE, 2,4'-DDD, 4,4'-DDT, and PCB 153/132 above the linear calibration range of the instrument. The sample was also re-analyzed at a 20X dilution factor due to the presence of 4,4'-DDD above the linear calibration range of the instrument. The laboratory reported the diluted results for these compounds only on the Form 1.

Sample OU4-FD-005-000A was re-analyzed at a 5X dilution factor due to the presence of 4,4'-DDD and 4,4'-DDT above the linear calibration range of the instrument. The laboratory reported the diluted results for these compounds only on the Form 1.

Sample OU4-SD-M11-300A was re-analyzed at a 5X dilution factor due to the presence of PCBs 101/90, 153/132, and 138/160 above the linear calibration range of the instrument. The laboratory reported the diluted results for these compounds only on the Form 1.

Sample OU4-SD-M12-100A was re-analyzed at a 5X dilution factor due to the presence of PCB 209 above the linear calibration range of the instrument. The laboratory reported the diluted result for this compounds only on the Form 1.

FIELD DUPLICATE RESULTS

Several results exceeded the 50% relative percent difference (RPD) criteria in the field duplicate pair OU4-FD-001-000A and OU4-SD-M01-300A. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-FD-003-000A and OU4-SD-M08-100A. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-FD-005-000A and OU4-SD-M10-100A. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-FD-006-000A and OU4-SD-M12-200A. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses. An interference was noted for the analysis of PCB 170/190.

Other Factors Affecting Data Quality: Field duplicate results exceeded the 50% RPD criteria.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

	OU4-FD-001-000A SDG M3024	OU4-SD-M01-300A SDG M3023	RPD
1,2,3,4-Tetrachlorobenzene	0.26 U	0.04 U*	NA
1,2,4,5-Tetrachlorobenzene	1.88 U*	0.6	NC
2,4'-DDD	8.87	8.88	0
2,4'-DDE	0.27	0.03 J	160
2,4'-DDT	2	1.47	31
4,4'-DDD	11.41	11.08	3
4,4'-DDE	4.41	4.21	5
4,4'-DDT	20.6	11.87	54
Aldrin	0.08 U	0.07 U	NA
a-BHC	0.25	0.06 J	123
a-Chlordane	3.36	3.58	-6
b-BHC	0.26 U	1.82	200
Chlorpyrifos	0.48 U*	0.35 U	NA
cis-Nonachlor	1.42	0.89	46
d-BHC	0.06 U	0.08	200
Dieldrin	0.28	0.08 U	200
Endosulfan II	0.93	5.27	-140
Endrin	0.17 U	0.14 J	NC
g-BHC	0.3 U	0.43	200
g-Chlordane	2.93	2.23	27
Heptachlor	0.22	0.31	-34
Heptachlor epoxide	0.04 U	0.04 U	NA
Hexachlorobenzene	0.04 J	0.06 U	NC
Mirex	0.04 U	0.04 U	NA
Oxychlordane	0.36	0.82	-78
PCB-101/90	1.15	1.02	12
PCB-105	0.25 J	0.48	-63
PCB-114	0.23 U	0.22 U	NA
PCB-118	1.86	1.48	23
PCB-126	0.23 U	0.22 U	NA
PCB-128	0.34	1.67	-132
PCB-138/160	2.04	2.96	-37
PCB-149/123	1.4	2.56	-59
PCB-153/132	2.83	2.68	5
PCB-156	1.74	0.22 U	200
PCB-167	5.54	9.14	-49
PCB-169	0.09 U*	0.12 U*	NA
PCB-170/190	23.53	28.26	-18
PCB-18/17	0.11 U	0.11 U	NA
PCB-180	1.39	1.08	25
PCB-187	0.55	0.89	-47
PCB-189	1.04	1.51	-37
PCB-195/208	0.97	1.73	-56
PCB-206	0.17	1.26	-152
PCB-209	2.57	2.24	14
PCB-28	0.75	0.55	31
PCB-44	0.32	0.37	-14
PCB-52	1	0.71	34
PCB-66	1.08	1.79	-49
PCB-77	0.13 U*	0.22 U	NA
PCB-8/5	0.72	0.42	53
PCB-81	0.25 J	0.39	-44
Pentachloroanisole	0.1 U*	0.07 U*	NA
Pentachlorobenzene	0.32 U*	0.14 U*	NA
trans-Nonachlor	1.01	0.79	24
PCB-201/157/173	1.07	1.17	-9

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-FD-003-000A SDG M3024	OU4-SD-M08-100A SDG M3023	RPD
1,2,3,4-Tetrachlorobenzene	0.42	0.21 U*	200
1,2,4,5-Tetrachlorobenzene	0.93 U*	0.64	NC
2,4'-DDD	43.31	30.71	34
2,4'-DDE	2.24	1.02	75
2,4'-DDT	5.85	3.75	44
4,4'-DDD	104.52	79.89	27
4,4'-DDE	16.99	16.78	1
4,4'-DDT	32.06	12.94	85
Aldrin	0.06 U	0.06 U	NA
a-BHC	0.1	0.05 J	67
a-Chlordane	2.25	1.52	39
b-BHC	0.2 U	0.21	200
Chlorpyrifos	1.21 U*	0.27 U	NA
cis-Nonachlor	0.68	0.46	39
d-BHC	0.04 U	0.04 U	NA
Dieldrin	0.25	0.06 U	200
Endosulfan II	0.4	0.47	-16
Endrin	0.13 U	0.13 U	NA
g-BHC	0.23 U	0.22 U	NA
g-Chlordane	2.22	2.08	7
Heptachlor	0.17 U	0.05 J	NC
Heptachlor epoxide	0.03 U	0.03 U	NA
Hexachlorobenzene	0.04 J	0.04 J	0
Mirex	0.03 U	0.02 J	NC
Oxychlordane	0.02	0.37	-179
PCB-101/90	11.77	40.98	-111
PCB-105	2.34	22.45	-162
PCB-114	0.18 U	0.17 U	NA
PCB-118	6.1	32.36	-137
PCB-126	0.18 U	0.17 U	NA
PCB-128	1.98	9.23	-129
PCB-138/160	13.13	39.35	-100
PCB-149/123	8.05	19.26	-82
PCB-153/132	14.91	35.05	-81
PCB-156	2.18	6.07	-94
PCB-167	1.46	2.92	-67
PCB-169	0.02 U*	0.01 U*	NA
PCB-170/190	1.27	42.68	-188
PCB-18/17	2.67	1.29	70
PCB-180	8.51	17.1	-67
PCB-187	5.36	9.2	-53
PCB-189	0.39	0.49	-23
PCB-195/208	5	6.02	-19
PCB-206	10.44	14.65	-34
PCB-209	4.14	2.89	36
PCB-28	1.17	1.51	-25
PCB-44	1.81	9.75	-137
PCB-52	4.15	27.14	-147
PCB-66	1.31	6.38	-132
PCB-77	0.09 U*	0.18 U*	NA
PCB-8/5	0.34 U*	0.56	200
PCB-81	0.13 J	0.1 J	26
Pentachloroanisole	0.17 J	0.13 U*	200
Pentachlorobenzene	0.33 U*	0.1 U*	NA
trans-Nonachlor	1.47	1.02	36
PCB-201/157/173	0.98	1.21	-21

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-FD-005-000A SDG M3024	OU4-SD-M10-100A SDG M3023	RPD
1,2,3,4-Tetrachlorobenzene	0.21 U	0.2 U	NA
1,2,4,5-Tetrachlorobenzene	0.74 U*	0.07 U*	NA
2,4'-DDD	8.39	7.37	13
2,4'-DDE	0.9	0.18	133
2,4'-DDT	4.94	2.98	49
4,4'-DDD	21.14	15.27	32
4,4'-DDE	8.84	6.15	36
4,4'-DDT	27.6	12.22	77
Aldrin	0.01 J	0.06 U	NC
a-BHC	0.11	0.03 J	114
a-Chlordane	6.1	5.16	17
b-BHC	0.2 U	0.16 J	NC
Chlorpyrifos	0.62 U*	0.27 U	NA
cis-Nonachlor	0.56	0.44	24
d-BHC	0.05 U	0.04 U	NA
Dieldrin	0.2	0.15	29
Endosulfan II	0.06 J	0.09	-40
Endrin	0.14 U	0.13 U	NA
g-BHC	0.24 U	0.23 U	NA
g-Chlordane	6.23	5.92	5
Heptachlor	0.37	0.2	60
Heptachlor epoxide	0.03 U	0.01 J	NC
Hexachlorobenzene	0.06	0.04 U	200
Mirex	0.03 U	0.03 U	NA
Oxychlordane	0.02 U	0.08	200
PCB-101/90	2.05	1.83	11
PCB-105	0.49 J	1.05	-73
PCB-114	0.18 U	0.17 U	NA
PCB-118	1.3	1.99	-42
PCB-126	0.18 U	0.17 U	NA
PCB-128	0.32	0.44	-32
PCB-138/160	1.91	2.27	-17
PCB-149/123	1.32	1.21	9
PCB-153/132	1.91	1.92	-1
PCB-156	0.23	0.3	-26
PCB-167	0.34	0.4	-16
PCB-169	0.02 U*	0.03 U*	NA
PCB-170/190	4.43	3.27	NA
PCB-18/17	0.09 U	0.08 U	NA
PCB-180	0.84	0.67	23
PCB-187	0.45	0.53	-16
PCB-189	0.18 U	0.17 U	NA
PCB-195/208	0.14	0.09	43
PCB-206	0.08 U	0.2	200
PCB-209	0.54	0.3	57
PCB-28	0.2 U	0.19 J	NC
PCB-44	0.16 U	0.33	200
PCB-52	0.74	0.87	-16
PCB-66	0.09 J	0.19	-71
PCB-77	0.04 U*	0.02 U*	NA
PCB-8/5	0.32 U	0.2 J	NC
PCB-81	0.18 U	0.03 J	NC
Pentachloroanisole	0.2 J	0.09 U*	76
Pentachlorobenzene	0.13 U*	0.07 U*	NA
trans-Nonachlor	2.65	2.42	9
PCB-201/157/173	0.1	0.02 U	200

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

	OU4-FD-006-000A SDG M3025	OU4-SD-M12-200A SDG M3024	RPD
1,2,3,4-Tetrachlorobenzene	0.17 J	0.06 J	96
1,2,4,5-Tetrachlorobenzene	2.81	1.02 U*	200
2,4'-DDD	5.82	7.13	-20
2,4'-DDE	0.1 U	0.1 U	NA
2,4'-DDT	0.34	0.17	67
4,4'-DDD	2.37	1.76	30
4,4'-DDE	1.34	1.21	10
4,4'-DDT	0.9	0.98	-9
Aldrin	0.03 J	0.05 J	-50
a-BHC	0.22	0.2	10
a-Chlordane	0.92	0.68	30
b-BHC	0.24 U	0.25 U	NA
Chlorpyrifos	0.34 U	0.76 U*	NA
cis-Nonachlor	0.5	0.37	30
d-BHC	0.05 U	0.05 U	NA
Dieldrin	0.08 U	0.08	200
Endosulfan II	0.11 U	0.4	200
Endrin	0.16 U	0.16 U	NA
g-BHC	0.29 U	0.29 U	NA
g-Chlordane	0.08 U	0.15	200
Heptachlor	0.21 U	0.21 U	NA
Heptachlor epoxide	0.04 U	0.04 U	NA
Hexachlorobenzene	0.01 J	0.05 U	NC
Mirex	0.04 U	0.04 U	NA
Oxychlordane	0.31	0.02 U	200
PCB-101/90	6.69	4.13	47
PCB-105	3.78	0.9 J	123
PCB-114	0.21 U	0.22 U	NA
PCB-118	5.06	4.54	11
PCB-126	0.21 U	0.22 U	NA
PCB-128	1.33	1.08	21
PCB-138/160	14.55	7.59	63
PCB-149/123	9.71	5.01	64
PCB-153/132	25.19	11.92	72
PCB-156	2.05	2.32	-12
PCB-167	2.5	1.75	35
PCB-169	0.01 U*	0.03 U*	NA
PCB-170/190	67.73	57.26	17
PCB-18/17	1	0.11 U	200
PCB-180	16.52	10.75	42
PCB-187	10.72	5.59	63
PCB-189	0.82	0.77	6
PCB-195/208	3.36	3.26	3
PCB-206	5.31	4.44	18
PCB-209	1.59	2.15	-30
PCB-28	1.91	1.96	-3
PCB-44	1.92	1.34	36
PCB-52	2.15	3.42	-46
PCB-66	2.14	2.55	-17
PCB-77	0.02 J	0.2 U*	NC
PCB-8/5	2.23	2.12	5
PCB-81	0.32	0.21 J	42
Pentachloroanisole	0.08 U*	0.56 U	NA
Pentachlorobenzene	0.53 U*	0.35 U*	NA
trans-Nonachlor	0.05	0.05 U	200
PCB-201/157/173	2.06	2.46	-18

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-FD-001-000A			OU4-FD-003-000A			OU4-FD-005-000A			OU4-SD-M09-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/29/00			08/30/00		
LABORATORY ID:	C36779			C36784			C36789			C36802		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	53.1 %			68.7 %			66.5 %			89.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M01-300A			OU4-SD-M08-100A			OU4-SD-M10-100A					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.26	U		0.42	J	G	0.21	U		0.29		
1,2,4,5-TETRACHLOROBENZENE	1.9	U	A	0.93	U	A	0.74	U	A	0.84	U	A
2,4'-DDD	8.9			43			8.4			0.33		
2,4'-DDE	0.27	J	G	2.2	J	G	0.90	J	G	0.10		
2,4'-DDT	2.0			5.9			4.9			0.28		
4,4'-DDD	11			105			21			0.49		
4,4'-DDE	4.4			17			8.8			0.37		
4,4'-DDT	21	J	G	32	J	G	28	J	G	1.4		
ALDRIN	0.076	U		0.058	U		0.010	J	P	0.044	U	
ALPHA-BHC	0.25	J	G	0.10			0.11	J	G	0.030	U	A
ALPHA-CHLORDANE	3.4			2.3			6.1			1.0		
BETA-BHC	0.26	UJ	G	0.20	UJ	G	0.20	U		0.15	U	
CHLORPYRIFOS	0.48	U	A	1.2	U	A	0.62	U	A	0.91	U	A
CIS-NONACHLOR	1.4			0.68	J	G	0.56			0.23		
DELTA-BHC	0.057	UJ	G	0.044	U		0.045	U		0.010	J	P
DIELDRIN	0.28	J	G	0.25	J	G	0.20			0.010	J	P
ENDOSULFAN II	0.93	J	G	0.40			0.060	J	P	0.030	J	P
ENDRIN	0.17	U		0.13	U		0.14	U		0.100	U	
GAMMA-BHC (LINDANE)	0.30	UJ	G	0.23	U		0.24	U		0.18	U	
GAMMA-CHLORDANE	2.9			2.2			6.2			1.4		
HEPTACHLOR	0.22			0.17	U		0.37	J	G	0.12	J	P
HEPTACHLOR EPOXIDE	0.038	U		0.029	U		0.030	U		0.050		
HEXACHLOROBENZENE	0.040	J	P	0.040	J	P	0.060	J	G	0.13		
MIREX	0.038	U		0.029	U		0.030	U		0.022	U	
OXYCHLORDANE	0.36	J	G	0.020	J	G	0.015	UJ	G	0.011	U	
PCB-101/90	1.2			12	J	G	2.1			1.3		
PCB-105	0.25	J	GP	2.3	J	G	0.49	J	GP	0.43	J	P
PCB-114	0.23	U		0.18	U		0.18	U		0.13	U	
PCB-118	1.9			6.1	J	G	1.3			0.85		
PCB-126	0.23	U		0.18	U		0.18	U		0.13	U	
PCB-128	0.34	J	G	2.0	J	G	0.32			0.32		
PCB-138/160	2.0			13	J	G	1.9			1.8		
PCB-14[illegible]	1.4	J	G	8.[illegible]	J	G	1.3			1.1		

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-FD-001-000A			OU4-FD-003-000A			OU4-FD-005-000A			OU4-SD-M09-100A		
SAMPLE DATE:	08/28/00			08/28/00			08/29/00			08/30/00		
LABORATORY ID:	C36779			C36784			C36789			C36802		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	53.1 %			68.7 %			66.5 %			89.8 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:	OU4-SD-M01-300A			OU4-SD-M08-100A			OU4-SD-M10-100A					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	2.8			15	J	G	1.9			1.9		
PCB-156	1.7	J	G	2.2	J	G	0.23			0.31		
PCB-167	5.5			1.5	J	G	0.34			0.21		
PCB-169	0.090	U	A	0.020	U	A	0.020	U	A	0.040	U	A
PCB-170/190	24	J	EQ	1.3	J	EGQ	4.4	J	EQ	0.17	J	EPQ
PCB-18/17	0.11	U		2.7	J	G	0.091	U		0.28		
PCB-180	1.4			8.5	J	G	0.84			1.3		
PCB-187	0.55			5.4	J	G	0.45			1.0		
PCB-189	1.0			0.39			0.18	U		0.12	J	P
PCB-195/208	0.97	J	G	5.0			0.14			0.81		
PCB-201/157/173	1.07			0.98			0.1	J	G	0.26		
PCB-206	0.17	J	G	10			0.083	UJ	G	1.7		
PCB-209	2.6			4.1			0.54	J	G	0.45		
PCB-28	0.75			1.2			0.20	U		0.59		
PCB-44	0.32			1.8	J	G	0.16	UJ	G	0.84		
PCB-52	1.0			4.2	J	G	0.74			0.74		
PCB-66	1.1			1.3	J	G	0.090	J	GP	0.52		
PCB-77	0.13	U	A	0.090	U	A	0.040	U	A	0.010	U	A
PCB-8/5	0.72	J	G	0.34	U	AG	0.33	U		0.15	U	A
PCB-81	0.25	J	P	0.13	J	P	0.18	U		0.020	J	P
PENTACHLOROANISOLE	0.10	U	A	0.17	J	GP	0.20	J	GP	0.10	U	A
PENTACHLOROBENZENE	0.32	U	A	0.33	U	A	0.13	U	A	0.21	U	A
TRANS-NONACHLOR	1.0			1.5			2.7			0.56		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-M11-300A			OU4-SD-M12-100A			OU4-SD-M12-200A			OU4-SD-M12-300A		
SAMPLE DATE:	08/30/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36807			C36812			C36817			C36822		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	87.6 %			54.7 %			54.4 %			51.1 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.65			0.080	J	P	0.060	J	GP	0.010	J	P
1,2,4,5-TETRACHLOROBENZENE	1.8	U	A	1.3	U	A	1.0	U	AG	0.83	U	A
2,4'-DDD	1.0			7.4			7.1			1.9		
2,4'-DDE	0.41			0.099	U		0.10	U		0.11	U	
2,4'-DDT	0.85			0.43			0.17	J	G	0.16		
4,4'-DDD	1.2			5.0			1.8			1.2		
4,4'-DDE	0.85			3.1			1.2			0.97		
4,4'-DDT	0.74			2.8			0.98			0.86		
ALDRIN	0.046	U		0.072	U		0.050	J	GP	0.020	J	P
ALPHA-BHC	0.040	U	A	0.23			0.20			0.23		
ALPHA-CHLORDANE	1.2			1.6			0.68			0.49		
BETA-BHC	0.16	U		0.24	U		0.25	U		0.26	U	
CHLORPYRIFOS	0.53	U	A	0.34	U		0.76	U	A	1.4	U	A
CIS-NONACHLOR	0.58			0.67			0.37			0.33		
DELTA-BHC	0.034	U		0.054	U		0.055	U		0.059	U	
DIELDRIN	2.7			0.33			0.080	J	G	0.050	J	P
ENDOSULFAN II	0.17			0.35			0.40	J	G	0.26		
ENDRIN	0.10	U		0.16	U		0.16	U		0.18	U	
GAMMA-BHC (LINDANE)	0.18	U		0.29	U		0.29	U		0.31	U	
GAMMA-CHLORDANE	0.27			0.081	U		0.15	J	G	0.22		
HEPTACHLOR	0.58			0.21	U		0.21	U		0.23	U	
HEPTACHLOR EPOXIDE	0.023	U		0.036	U		0.036	U		0.039	U	
HEXACHLOROBENZENE	0.35			0.054	U		0.055	U		0.059	U	
MIREX	0.023	U		0.036	U		0.036	U		0.039	U	
OXYCHLORDANE	0.011	U		0.72			0.018	UJ	G	0.050		
PCB-101/90	13			7.9			4.1			2.9		
PCB-105	2.9			2.0			0.90	J	GP	0.91	J	P
PCB-114	0.14	U		0.22	U		0.22	U		0.24	U	
PCB-118	6.9			10.0			4.5			2.3		
PCB-126	0.14	U		0.15	J	P	0.22	U		0.24	U	
PCB-128	2.4			1.8			1.1			0.97		
PCB-138/160	21			9.2			7.6	J	G	6.5		
PCB-14[illegible]	6.6			4[illegible]			5.0	J	G	3.8		

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-M11-300A			OU4-SD-M12-100A			OU4-SD-M12-200A			OU4-SD-M12-300A		
SAMPLE DATE:	08/30/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36807			C36812			C36817			C36822		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	87.6 %			54.7 %			54.4 %			51.1 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	17			12			12	J	G	7.9		
PCB-156	1.5			9.9			2.3			1.1		
PCB-167	0.71			3.2			1.8			0.54		
PCB-169	0.14	U		0.22	U		0.030	U	A	0.010	U	A
PCB-170/190	5.6	J	EQ	98	J	EQ	57	J	EQ	1.4	J	EQ
PCB-18/17	0.15			2.5			0.11	UJ	G	0.12	U	
PCB-180	10			8.6			11			6.5		
PCB-187	9.7			6.6			5.6	J	G	4.1		
PCB-189	0.30			0.75			0.77			0.35		
PCB-195/208	2.0			6.4			3.3			1.4		
PCB-201/157/173	1.25			4.13			2.46			0.84		
PCB-206	3.1			11			4.4			1.7		
PCB-209	1.0			34			2.2			2.3		
PCB-28	0.51			4.3			2.0			1.0		
PCB-44	0.82			3.5			1.3			0.78		
PCB-52	3.4			6.4			3.4			1.7		
PCB-66	0.89			7.8			2.6			1.2		
PCB-77	0.14	U		0.17	U	A	0.20	U	A	0.050	U	A
PCB-8/5	0.15	U	A	7.8			2.1			0.71		
PCB-81	2.9			0.18	J	P	0.21	J	P	0.24	U	
PENTACHLOROANISOLE	0.35	J	P	0.090	U	A	0.56	U		0.15	U	A
PENTACHLOROBENZENE	0.66	U	A	0.27	U	A	0.35	U	A	0.30	U	A
TRANS-NONACHLOR	0.29			0.48			0.046	UJ	G	0.13		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-M14-300A			OU4-SD-R01-200A			OU4-SD-R01-300A			OU4-SD-R02-100A		
SAMPLE DATE:	08/28/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36739			C36827			C36832			C36744		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	42.1 %			73.0 %			75.3 %			75.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.16	J	P	0.040	J	P	0.19	U		0.030	J	P
1,2,4,5-TETRACHLOROBENZENE	2.6	U	A	0.53	U	A	0.53	U	A	0.98	U	A
2,4'-DDD	2.1			0.26			0.070			1.2		
2,4'-DDE	0.10	J	P	0.050	J	P	0.070			0.040	J	P
2,4'-DDT	0.17			0.57			0.020	U		0.32		
4,4'-DDD	2.0			0.38			0.040	J	P	0.49		
4,4'-DDE	1.5			0.30			0.050			0.81		
4,4'-DDT	1.4			1.7			0.033	U		2.4		
ALDRIN	0.040	J	P	0.010	J	P	0.010	J	P	0.054	U	
ALPHA-BHC	0.32			0.020	U	A	0.020	U	A	0.16		
ALPHA-CHLORDANE	0.64			0.010	J	P	0.060	U		0.75		
BETA-BHC	0.32	U		0.18	U		0.18	U		0.37		
CHLORPYRIFOS	1.2	U	A	0.65	U	A	0.43	U	A	0.75	U	A
CIS-NONACHLOR	0.25			0.030	J	P	0.020	J	P	0.080		
DELTA-BHC	0.072	U		0.020	J	P	0.010	J	P	0.040	U	
DIELDRIN	0.14			0.061	U		0.060	U		0.020	J	P
ENDOSULFAN II	0.23			0.081	U		0.080	U		0.12		
ENDRIN	0.22	U		0.12	U		0.12	U		0.12	U	
GAMMA-BHC (LINDANE)	0.38	U		0.080	J	P	0.21	U		0.21	U	
GAMMA-CHLORDANE	0.18			0.040	J	P	0.060	U		0.43		
HEPTACHLOR	0.27	U		0.16	U		0.15	U		0.070	J	P
HEPTACHLOR EPOXIDE	0.048	U		0.027	U		0.027	U		0.027	U	
HEXACHLOROBENZENE	0.072	U		0.25			0.040	U		0.040	U	
MIREX	0.048	U		0.027	U		0.027	U		0.027	U	
OXYCHLORDANE	0.25			0.013	U		0.013	U		0.090		
PCB-101/90	2.3			0.22			0.050			0.60		
PCB-105	0.97	J	P	0.090	J	P	0.020	J	P	0.33	J	P
PCB-114	0.29	U		0.16	U		0.16	U		0.16	U	
PCB-118	2.9			0.20			0.070	J	P	0.74		
PCB-126	0.29	U		0.16	U		0.16	U		0.16	U	
PCB-128	0.71			0.060			0.010	J	P	0.19		
PCB-138/160	3.5			0.31			0.15			1.3		
PCB-1[illegible]	1.7			0	U	A	0.040	U	A	0.84		

SAMPLE NUMBER:	OU4-SD-M14-300A			OU4-SD-R01-200A			OU4-SD-R01-300A			OU4-SD-R02-100A		
SAMPLE DATE:	08/28/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36739			C36827			C36832			C36744		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	42.1 %			73.0 %			75.3 %			75.2 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	3.3			0.30	U	A	0.16	U	A	1.2		
PCB-156	1.1			0.050	J	P	0.020	J	P	0.60		
PCB-167	0.23	J	P	0.020	J	P	0.020	J	P	0.16	J	P
PCB-169	0.030	U	A	0.010	U	A	0.020	U	A	0.030	U	A
PCB-170/190	11	J	EQ	0.79	J	EQ	0.54	J	EQ	10	J	EQ
PCB-18/17	0.16			0.090			0.080	U		0.080	U	
PCB-180	1.8			0.14	U	A	0.11	U	A	0.98		
PCB-187	1.2			0.070	J	P	0.10	J	P	0.50		
PCB-189	0.11	J	P	0.16	U		0.16	U		0.15	J	P
PCB-195/208	0.58			0.080			0.030	J	P	0.34		
PCB-201/157/173	0.77			0.02022	U		0.02			0.33		
PCB-206	0.75			0.074	U		0.073	U		0.020	J	P
PCB-209	1.3			0.080			0.070	J	P	0.61		
PCB-28	1.0			0.090	U	A	0.030	U	A	0.45		
PCB-44	0.68			0.090	J	P	0.040	J	P	0.20		
PCB-52	1.7			0.090	J	P	0.030	J	P	13		
PCB-66	0.76			0.11	U		0.11	U		0.20		
PCB-77	0.71	U	A	0.010	U	A	0.020	U	A	0.14	U	A
PCB-8/5	2.1			0.080	U	A	0.050	U	A	0.62		
PCB-81	0.29	U		0.16	U		0.16	U		0.020	J	P
PENTACHLOROANISOLE	0.15	U	A	0.020	U	A	0.020	U	A	0.39	J	P
PENTACHLOROBENZENE	0.30	U	A	0.16	U	A	0.12	U	A	0.40	U	A
TRANS-NONACHLOR	0.16			0.034	U		0.033	U		0.31		

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-R02-200A			OU4-SD-R02-400A			OU4-SD-R03-200A			OU4-SD-R03-300A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36837			C36749			C36754			C36759		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	74.4 %			53.7 %			56.1 %			63.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.19	J	P	0.18	J	P	0.12	J	P	0.050	J	P
1,2,4,5-TETRACHLOROBENZENE	0.59	U	A	1.6	U	A	1.6	U	A	1.1	U	A
2,4'-DDD	1.0			2.3			2.4			1.4		
2,4'-DDE	0.050	J	P	0.040	J	P	0.14			0.16		
2,4'-DDT	0.010	J	P	0.070			0.030	J	P	0.010	J	P
4,4'-DDD	0.61			1.3			1.1			0.54		
4,4'-DDE	0.21			1.6			0.60			0.46		
4,4'-DDT	0.35			1.1			0.27			0.28		
ALDRIN	0.010	J	P	0.075	U		0.020	J	P	0.040	J	P
ALPHA-BHC	0.10			0.20			0.20			0.080	U	A
ALPHA-CHLORDANE	0.21			0.75			0.67			0.28		
BETA-BHC	0.18	U		0.25	U		0.24	U		0.21	U	
CHLORPYRIFOS	0.52	U	A	0.64	U	A	0.99	U	A	0.61	U	A
CIS-NONACHLOR	0.080			0.34			0.31			0.11		
DELTA-BHC	0.041	U		0.056	U		0.054	U		0.020	J	P
DIELDRIN	0.21			0.050	J	P	0.10			0.010	J	P
ENDOSULFAN II	0.060	J	P	0.16			0.66			0.095	U	
ENDRIN	0.12	U		0.17	U		0.16	U		0.14	U	
GAMMA-BHC (LINDANE)	0.22	U		0.30	U		0.29	U		0.25	U	
GAMMA-CHLORDANE	0.070			0.39			0.13			0.060	J	P
HEPTACHLOR	0.16	U		0.57			0.12	J	P	0.090	J	P
HEPTACHLOR EPOXIDE	0.027	U		0.037	U		0.036	U		0.032	U	
HEXACHLOROBENZENE	0.041	U		0.056	U		0.054	U		0.047	U	
MIREX	0.027	U		0.037	U		0.036	U		0.032	U	
OXYCHLORDANE	0.080			0.070			0.47			0.11		
PCB-101/90	0.91			3.1			2.0			0.51		
PCB-105	0.37	J	P	1.4			0.94			0.19	J	P
PCB-114	0.16	U		0.22	U		0.21	U		0.19	U	
PCB-118	0.95			3.6			2.6			0.78		
PCB-126	0.16	U		0.22	U		0.21	U		0.19	U	
PCB-128	0.20			1.1			0.57			0.13		
PCB-138/160	0.91			4.7			2.1			0.75		
PCB-14[illegible]	0.43			1.[illegible]			1.3			0.29		

CTO2[illegible] PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-R02-200A			OU4-SD-R02-400A			OU4-SD-R03-200A			OU4-SD-R03-300A		
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			08/29/00		
LABORATORY ID:	C36837			C36749			C36754			C36759		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	74.4 %			53.7 %			56.1 %			63.5 %		
UNITS:	NG/G			NG/G			NG/G			NG/G		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	0.91			4.3			2.0			0.78		
PCB-156	0.35			1.1			0.71			0.46		
PCB-167	0.090	J	P	0.38			0.22			0.040	J	P
PCB-169	0.16	U		0.040	U	A	0.030	U	A	0.020	U	A
PCB-170/190	3.7	J	EQ	15	J	EQ	8.9	J	EQ	6.1	J	DEQ
PCB-18/17	0.081	U		0.11	U		0.27			0.43		
PCB-180	0.48			1.4			1.1			0.53		
PCB-187	0.14	J	P	1.0			0.46			0.29		
PCB-189	0.090	J	P	0.36			0.29			0.11	J	P
PCB-195/208	0.11			0.47			0.27			0.19		
PCB-201/157/173	0.27			0.58			0.57			0.24		
PCB-206	0.040	J	P	0.59			0.15			0.090		
PCB-209	0.17			1.1			0.62			0.40		
PCB-28	0.24			1.0			0.59			0.19	J	P
PCB-44	0.21			0.40			0.17	J	P	0.10	J	P
PCB-52	0.59			3.1			1.1			0.49		
PCB-66	0.39			1.3			0.41			0.19		
PCB-77	0.030	U	A	0.55	U	A	0.010	U	A	0.060	U	A
PCB-8/5	0.24	U	A	0.36	U	A	1.9			0.45		
PCB-81	0.030	J	P	0.22	U		0.020	J	P	0.19	J	P
PENTACHLOROANISOLE	0.070	U	A	0.15	U	A	0.55	U		0.070	U	A
PENTACHLOROBENZENE	0.22	U	A	0.34	U	A	0.28	U	A	0.25	U	A
TRANS-NONACHLOR	0.070			0.23			0.28			0.040	J	P

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-R04-200A			OU4-SD-R04-300A			OU4-SD-R04-400A					
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			/ /		
LABORATORY ID:	C36764			C36769			C36774					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	78.3 %			79.6 %			72.0 %			100.0 %		
UNITS:	NG/G			NG/G			NG/G					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.18	U		0.17	U		0.020	J	P			
1,2,4,5-TETRACHLOROBENZENE	0.56	U	A	0.43	U	A	0.53	U	A			
2,4'-DDD	0.050	U		0.040	J	P	0.055	U				
2,4'-DDE	0.11			0.080			0.15					
2,4'-DDT	0.080			0.040			0.020					
4,4'-DDD	0.19			0.14			0.16					
4,4'-DDE	0.080			0.10			0.15					
4,4'-DDT	0.010	J	P	0.031	U		0.035	U				
ALDRIN	0.050	U		0.050	U		0.055	U				
ALPHA-BHC	0.040	U	A	0.060	U	A	0.030	U	A			
ALPHA-CHLORDANE	0.10			0.090			0.062	U				
BETA-BHC	0.17	U		0.17	U		0.19	U				
CHLORPYRIFOS	0.47	U	A	0.42	U	A	0.46	U	A			
CIS-NONACHLOR	0.030			0.020	J	P	0.010	J	P			
DELTA-BHC	0.010	J	P	0.020	J	P	0.030	J	P			
DIELDRIN	0.057	U		0.056	U		0.062	U				
ENDOSULFAN II	0.075	U		0.074	U		0.083	U				
ENDRIN	0.11	U		0.11	U		0.12	U				
GAMMA-BHC (LINDANE)	0.20	U		0.20	U		0.22	U				
GAMMA-CHLORDANE	0.057	U		0.020	J	P	0.020	J	P			
HEPTACHLOR	0.020	J	P	0.030	J	P	0.040	J	P			
HEPTACHLOR EPOXIDE	0.025	U		0.025	U		0.028	U				
HEXACHLOROBENZENE	0.038	U		0.037	U		0.041	U				
MIREX	0.025	U		0.025	U		0.028	U				
OXYCHLORDANE	0.013	U		0.012	U		0.014	U				
PCB-101/90	0.20			0.15			0.060					
PCB-105	0.020	J	P	0.020	J	P	0.020	J	P			
PCB-114	0.15	U		0.15	U		0.17	U				
PCB-118	0.050	J	P	0.060	J	P	0.050	J	P			
PCB-126	0.15	U		0.15	U		0.17	U				
PCB-128	0.038	U		0.010	J	P	0.041	U				
PCB-138/160	0.17	U	A	0.16	U	A	0.12	U	A			
PCB-14[illegible]	0.090	J	P	0.[illegible]	J	P	0.040	J	P			

CTO2(,ORTSMOUTH
SOIL DATA
GERG
SDG: M3024

SAMPLE NUMBER:	OU4-SD-R04-200A	OU4-SD-R04-300A	OU4-SD-R04-400A	
SAMPLE DATE:	08/29/00	08/29/00	08/29/00	/ /
LABORATORY ID:	C36764	C36769	C36774	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	78.3 %	79.6 %	72.0 %	100.0 %
UNITS:	NG/G	NG/G	NG/G	
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	0.13	U	A	0.13	U	A	0.10	U	A			
PCB-156	0.010	J	P	0.030	J	P	0.020	J	P			
PCB-167	0.15	U		0.050	J	P	0.17	U				
PCB-169	0.010	U	A	0.15	U		0.17	U				
PCB-170/190	0.48	J	EQ	0.54	J	EQ	0.48	J	EQ			
PCB-18/17	0.075	U		0.074	U		0.083	U				
PCB-180	0.070	U	A	0.090	U	A	0.060	U	A			
PCB-187	0.030	J	P	0.030	J	P	0.020	J	P			
PCB-189	0.15	U		0.15	U		0.17	U				
PCB-195/208	0.010	J	P	0.010	J	P	0.048	U				
PCB-201/157/173	0.020	U		0.020	U		0.020	U				
PCB-206	0.069	U		0.068	U		0.076	U				
PCB-209	0.24			0.24			0.070	J	P			
PCB-28	0.060	U	A	0.17	U		0.19	U				
PCB-44	0.040	J	P	0.040	J	P	0.020	J	P			
PCB-52	0.16			0.11	J	P	0.19					
PCB-66	0.11	U		0.11	U		0.12	U				
PCB-77	0.010	U	A	0.020	U	A	0.010	U	A			
PCB-8/5	0.10	U	A	0.11	U	A	0.030	U	A			
PCB-81	0.15	U		0.020	J	P	0.17	U				
PENTACHLOROANISOLE	0.020	U	A	0.040	U	A	0.040	U	A			
PENTACHLOROBENZENE	0.12	U	A	0.13	U	A	0.17	U	A			
TRANS-NONACHLOR	0.090			0.030	J	P	0.030					

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 8, 2000**

FROM: **DOUGLAS S. SCHLOER** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYNUCLEAR AROMATIC HYDROCARBONS**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – M3025

SAMPLES: 3 / Sediments / PAH

OU4-FD-006-000A OU4-SD-R02-300A OU4-SD-R03-400A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine; SDG M3025 consists of three (3) sediment samples. The samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). One field duplicate pair was included in this SDG: *OU4-SD-M12-200A and OU4-FD-006-000A. The symbol (*) Indicates that the sample was not analyzed within this SDG.

The samples were collected by Tetra Tech NUS on August 29th, 2000 and were analyzed by Texas A&M University under NOAA Technical Memorandum NOS ORCA 130 Quality Assurance/Quality Control (QA/QC) criteria. All analyses and preparations were conducted using NOAA Technical Memorandum NOS ORCQ 130 (Program Mussel Watch) Methods.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * GC/MS Tuning and System Performance
- Initial / Continuing Calibration
- * Blank Contamination
- * Surrogate / Internal Standard Recoveries
- Matrix Spike / Matrix Spike Duplicate Results
- Blank Spike Results
- * Lab Duplicate Results
- Field Duplicate Results
- * Instrument Performance
- * Compound Identification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

CALIBRATION

The following table summarizes calibration noncompliances and corresponding validation actions. The key associated with this table is presented after the table.

Compound	CCV 10/17/00; (19:21)	CCV 10/18/00; (03:56)	CCV 10/24/00; (11:17)	CCV 10/24/00; (16:25)
Acenaphthene	X	X	X	
Acenaphthylene			X	
Benzo(A)pyrene			X	
Benzo(E)pyrene		X	X	X
Benzo(K)fluoranthene	X		X	X
Chrysene			X	
Indeno(1,2,3-CD)pyrene			X	
Fluoranthene		X		
Pyrene		X		
Samples Affected:	OU4-SD-R02-300A OU4-SD-R03-400A	OU4-SD-R02-300A OU4-SD-R03-400A	OU4-FD-006-000A	OU4-FD-006-000A

Calibration Actions

X - Percent Difference (%D) greater than 15%. Qualify positive and nondetected results for the affected compounds as estimated (J) and (UJ) respectively.

SURROGATE / INTERNAL STANDARD RECOVERY

Surrogates for sample OU4-FD-006-000A were not compliant with the 40%-120% quality control limit. Since this sample required dilution for analysis, no action was taken based on this noncompliance.

FIELD DUPLICATE RESULTS

Relative percent differences (RPDs) greater than 50% were noted for several compounds in the field duplicates. Positive results for compounds that exceeded the 50% RPD quality control limit were qualified as estimated (J) in the field duplicate pair.

STANDARD REFERENCE MATERIAL

Standard Reference Material (SRM) % recovery of benzo(A)fluoranthene failed to meet the quality control limit of ± 35% deviation from manufacturer certified concentrations. Only positive results were reported for benzo(A)fluoranthene, and these were qualified as estimated (J) in all samples.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

% Recoveries of all Matrix Spike compounds were not compliant with the 40%-120% quality control limit except for 1-methylnaphthalene, 2-methylnaphthalene, 2,6-dimethylnaphthalene, naphthalene and biphenyl which were within quality control limits.

% Recoveries of all Matrix Spike Duplicate compounds were not compliant with the 40%-120% quality control limit except for acenaphthylene, anthracene, biphenyl, dibenzothiophene and perylene which were within quality control limits.

MS / MSD Relative Percent Differences (RPDs) for all compounds exceeded the 25% quality control limit. The unspiked sample OU4-SD-R03-300A contained significant concentrations of the spiked compounds, which, in light of this fact may not warrant action based on % recovery noncompliance, however, since the laboratory could not demonstrate acceptable MS / MSD precision, all parameters were qualified as estimated (J) in the unspiked sample.

COMPOUND QUANTITATION

Due to the presence of target compounds, sample OU4-FD-006-000A was analyzed and reported at 25X dilution.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the reporting limit, (RL), were qualified as estimated (J).

Samples were frozen from time of receipt at the laboratory to sample extraction, therefore, holding time from sample collection to sample extraction is not an issue.

Samples were reported on a dry weight basis. This is consistent with historical data from this site.

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: The laboratory was not able to meet quality control criteria for the continuing calibration of several compounds.

Standard Reference Material (SRM) % recovery of benzo(A)fluoranthene was not within quality control limits.

Other Factors Affecting Data Quality: Field duplicate RPDs exceeded 50% for several compounds.

MS / MSD % recoveries and Relative Percent Differences (RPDs) of several compounds were not compliant with quality control limits.

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Douglas S. Schloer
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

PORTSMOUTH NAVAL SHIPYARD FIELD DUPLICATES

SDG		M3021	M3021		M3024		M3025	
FRACTION	COMPOUND	OU4-SD-M05-100A RESULT ng/g	OU4-FD-002-000A RESULT ng/g	RPD	OU4-SD-M12-200A RESULT ng/g		OU4-FD-006-000A RESULT ng/g	RPD
PAH								
	1,6,7-Trimethylnaphthalene	6.47	13.37	-69.6	32.12		35.49	-10.0
	1-Methylnaphthalene	12.72	25.37	-66.4	118.3		115.38	2.5
	1-Methylphenanthrene	22.47	36.29	-47.0	265.74		346.28	-26.3
	2,6-Dimethylnaphthalene	8.44	15.89	-61.2	59.33	J	60.72	-2.3
	2-Methylnaphthalene	19.69	38.18	-63.9	153.31		153.37	0.0
	Acenaphthene	13.85	26.48	-62.6	1239.02		1032.17	18.2
	Acenaphthylene	46.16	107.28	-79.7	190.95		242.22	-23.7
	Anthracene	62.91	175.25	-94.3	1031.43		1074.55	-4.1
	Benzo(A)anthracene	180.8	365.03	-67.5	3619.98		3230.13	11.4
	Benzo(A)pyrene	209.33	105.85	65.7	4054.8		3903.25	3.8
	Benzo(B)fluoranthene	302.97	573.82	-61.8	4172.34		4334.29	-3.8
	Benzo(E)pyrene	172.87	290.41	-50.7	2126.36		1978.35	7.2
	Benzo(G,H,I)perylene	155.94	284.54	-58.4	2123.25		1874.81	12.4
	Benzo(K)fluoranthene	112.64	209.24	-60.0	1852.14		1363.96	30.4
	Biphenyl	5.01	8.19	-48.2	42.63		40.99	3.9
	C1-Chrysenes	150.31	285.05	-61.9	1288.26		1606.49	-22.0
	C1-Dibenzothiophenes	10.04	20.3	-67.6	116.31		117.09	-0.7
	C1-Fluoranthenes/Pyrenes	169.48	430.58	-87.0	1931.4		2006.55	-3.8
	C1-Fluorenes	18.09	36.93	-68.5	318.19		269.49	16.6
	C1-Naphthalenes	32.41	63.55	-64.9	271.61		268.75	1.1
	C1-Phenanthrenes/Anthracenes	89.1	170.75	-62.8	1106.65		1230.64	-10.6
	C2-Chrysenes	52.43	112.52	-72.9	362.23		404.49	-11.0
	C2-Dibenzothiophenes	14.49	31.79	-74.8	52.56		57.43	-8.9
	C2-Fluorenes	20.05	54.6	-92.6	122.42		179.72	-37.9
	C2-Naphthalenes	29.21	65.32	-76.4	163.66		251.7	-42.4
	C2-Phenanthrenes/Anthracenes	65.23	137.44	-71.3	465.26		565.9	-19.5
	C3-Chrysenes	5.22	7.54	-36.4	16.77	J	9.14	58.9
	C3-Dibenzothiophenes	9.76	28.94	-99.1	37.44	J	36.97	1.3
	C3-Fluorenes	10.81	35.49	-106.6	77.26		154.82	-66.8
	C3-Naphthalenes	23.75	71.18	-99.9	113.75		129.1	-12.6
	C3-Phenanthrenes/Anthracenes	31.39	115.06	-114.3	183.47		208.82	-12.9
	C4-Chrysenes	6.61	7.72	-15.5	4.82	J	109.23	-183.1
	C4-Naphthalenes	11.15	38.75	-110.6	47.49		60.08	-23.4
	C4-Phenanthrenes/Anthracenes	14.77	71.53	-131.5	46.97	J	66.96	-35.1
	Chrysene	139.99	376.73	-91.6	3317.36		3310.36	0.2
	Dibenzo(a,h)anthracene	33.71	73.7	-74.5	539.87		474.84	12.8
	Dibenzothiophene	8.37	17.46	-70.4	278.99		276.13	1.0
	Fluoranthene	351.25	730.97	-70.2	8199.58		8279.87	-1.0
	Fluorene	18.71	42.78	-78.3	1057.01		1055.22	0.2
	Indeno(1,2,3-c,d)pyrene	157.61	326.49	-69.8	2233.75		2322.06	-3.9
	Naphthalene	40.16	57.43	-35.4	354.22		327.39	7.9
	Perylene	54.38	136.94	-86.3	847.66		653.07	25.9
	Phenanthrene	145.24	294.42	-67.9	5882.69		5510.96	6.5
	Pyrene	310.65	666.71	-72.9	6639.18		6640.66	0.0

ND - Compound not detected.
NC - RPD not calculated.

APPENDIX A

QUALIFIED LABORATORY RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3025

SAMPLE NUMBER:	OU4-FD-006-000A	OU4-SD-R02-300A	OU4-SD-R03-400A	
SAMPLE DATE:	08/29/00	08/29/00	08/29/00	/ /
LABORATORY ID:	C36852	C36842	C36847	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	56.1 %	57.2 %	67.6 %	100.0 %
UNITS:	NG/G	NG/G	NG/G	
FIELD DUPLICATE OF:	OU4-SD-M12-200A-D			

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1,6,7-TRIMETHYLNAPHTHALENE	35.5			17.1			13.1	J	D			
1-METHYLNAPHTHALENE	115			35.7			10.2	J	D			
1-METHYLPHENANTHRENE	346			102			90.6	J	D			
2,6-DIMETHYLNAPHTHALENE	60.7			28.4			9.11	J	D			
2-METHYLNAPHTHALENE	153			73.9			14.8	J	D			
ACENAPHTHENE	1032	J	C	36.0	J	C	27.3	J	CD			
ACENAPHTHYLENE	242	J	C	180			87.0	J	D			
ANTHRACENE	1075			355			181	J	D			
BENZO(A)ANTHRACENE	3230			715			499	J	D			
BENZO(A)PYRENE	3903	J	C	797			721	J	D			
BENZO(B)FLUORANTHENE	4334			1227			671	J	D			
BENZO(E)PYRENE	1978	J	C	558	J	C	309	J	CD			
BENZO(G,H,I)PERYLENE	1875			438			269	J	D			
BENZO(K)FLUORANTHENE	1364	J	CE	258	J	CE	192	J	CDE			
BIPHENYL	41.0			16.8			4.02	J	D			
C1-CHRYSENES	1606			524			5.77					
C1-DIBENZOTHIOPHENES	117			47.8			28.7					
C1-FLUORANTHENES/PYRENES	2007			822			111					
C1-FLUORENES	269			88.3			53.2					
C1-NAPHTHALENES	269			110			25.0					
C1-PHENANTHRENES/ANTHRACENES	1231			312			275					
C2-CHRYSENES	404			189			0.19	J	P			
C2-DIBENZOTHIOPHENES	57.4			99.1			36.1					
C2-FLUORENES	180			114			75.0					
C2-NAPHTHALENES	252			115			31.7					
C2-PHENANTHRENES/ANTHRACENES	566			320			211					
C3-CHRYSENES	9.14	J	GP	6.03			0.87	J	P			
C3-DIBENZOTHIOPHENES	37.0			96.0			22.8					
C3-FLUORENES	155	J	G	126			58.0					
C3-NAPHTHALENES	129			102			48.9					
C3-PHENANTHRENES/ANTHRACENES	209			228			130					
C4-CH[illegible]NES	109	J	G	7[illegible]			6.20					
C4-NA[illegible]ALENES	60.1			6[illegible]			38.8					

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3025

SAMPLE NUMBER:	OU4-FD-006-000A			OU4-SD-R02-300A			OU4-SD-R03-400A					
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			/ /		
LABORATORY ID:	C36852			C36842			C36847					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	56.1 %			57.2 %			67.6 %			100.0 %		
UNITS:	NG/G			NG/G			NG/G					
FIELD DUPLICATE OF:	OU4-SD-M12-200A-D											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
C4-PHENANTHRENES/ANTHRACENES	67.0			74.5			37.7					
CHRYSENE	3310	J	C	665			431	J	D			
DIBENZO(A,H)ANTHRACENE	475			131			68.5	J	D			
DIBENZOTHIOPHENE	276			44.8			19.3	J	D			
FLUORANTHENE	8280			1396	J	C	943	J	CD			
FLUORENE	1055			111			49.8	J	D			
INDENO(1,2,3-CD)PYRENE	2322	J	C	561			345	J	D			
NAPHTHALENE	327			155			28.8	J	D			
PERYLENE	653			192			133	J	D			
PHENANTHRENE	5511			345			367	J	D			
PYRENE	6641			1285	J	C	812	J	CD			

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **D. COHEN** **DATE: DECEMBER 6, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PCBs and PESTICIDES**
CTO 201 - PORTSMOUTH NAVAL SHIPYARD, PORTSMOUTH, MAINE
SDG – M3025

SAMPLES: 3/Sediment/

OU4-FD-006-000A OU4-SD-R02-300A OU4-SD-R03-400A

Overview

The sample set for the CTO 201 Portsmouth Naval Shipyard, Maine, SDG M3025 consisting of three sediment samples were included in this SDG. Samples were analyzed for pesticides and PCBs. One field duplicate was included in this SDG: OU4-FD-006-000A and OU4-SD-M12-200A (in SDG 3024).

The samples were collected by Tetra Tech NUS on August 29, 1999 and were analyzed by Texas A&M University under Naval Facility Engineering Services Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Analyses were conducted using GERG SOP 9810 and 9805 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- Data Completeness
- Holding Times
- Calibration
- Method Blank Results
- Surrogate Standard Recoveries
- Instrument Performance
- Compound Identification
- Compound Quantitation
- Matrix Spike/Matrix Spike Duplicate Results
- Standard Reference Materials
- Field Duplicate Results

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report.

BLANKS

The maximum concentration of contaminants found in the laboratory method blank analysis is summarized below.

Compound	Maximum Concentration	Sediment Action Level
Tetrachlorobenzene, 1245-	0.18 ng/g	0.9 ng/g
Pentachlorobenzene	0.46 ng/g	2.3 ng/g
Pentachloroanisole	0.03 ng/g	0.15 ng/g
PCB 8/5	0.05 ng/g	0.25 ng/g
PCB 28	0.09 ng/g	0.45 ng/g
PCB 153/132	0.06 ng/g	0.30 ng/g
PCB 138/160	0.07 ng/g	0.35 ng/g
PCB180	0.03 ng/g	0.15 ng/g
PCB170/190	0.21 ng/g	1.05 ng/g
PCB 169	0.01 ng/g	0.05 ng/g

Samples Affected: All

Blank Actions:

Dilution factors, percent solids, and sample aliquot used for analysis were taken into consideration prior to the application of all action levels. Positive results for all compounds, except 1,2,4,5-tetrachlorobenzene, below the blank action level were qualified at the reported concentration. The blank had a dry weight of 9.34 g. Sample aliquots ranged from 11.3 to 13.8 g dry weight.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS) recovery of 1,2,4,5-tetrachlorobenzene fell below the lower quality control limit. Matrix spike (MSD) recovery of Endosulfan II fell below the lower quality control limit. MS recovery of PCB 29 exceeded the upper quality control limit. No qualifiers were assigned on this basis. Relative percent differences (RPDs) exceeded the quality control limit for 1,2,4,5-tetrachlorobenene and PCB 153/132. No qualifiers were assigned on this basis. MS/MSD recovery of PCB 170/190 was less than 10%. Interference was noted for this compound in both the MS/MSD and standard reference materials (SRMs). Positive results were qualified as estimated, J, for this compound in the unspiked sample, OU4-SD-R03-400A.

STANDARD REFERENCE MATERIAL RESULTS

Recovery of a-BHC fell below the lower quality control limit. Positive results were qualified as estimated, J, in all samples. Recoveries of a-Chlordane, cis-Nonachlor, trans-Nonachlor, 4,4'-DDT, PCB 195/208, and PCB 209 exceeded the upper quality control limit. Positive results for these compounds were qualified as estimated, J, in all samples. Recovery of g-Chlordane exceeded the upper quality control limit. This compound was not detected in the samples; therefore, no qualifiers were assigned on this basis. Recovery of PCB 156 was less than 10%. Positive results in all samples were qualified as estimated, J. Recovery of PCB 170/190 exceeded the upper quality control limit. Interference with quantitation of this PCB was noted on the Form 1s. Positive results for this compound were qualified as estimated, J.

COMPOUND QUANTITATION

Sample results reported on the Form 1s contained from two to four significant figures. Sample results reported on the electronic deliverable (EDD) contained four significant figures. The EDD was amended by TtNUS to contain three significant figures. This caused slight discrepancies between the EDD and Form 1s; however, these discrepancies were not considered significant.

PCB 201/157/173 was present on the Form 1s but not on the electronic data deliverable. The reviewer amended the EDD to include these results.

Interference was noted for PCB 170/190 in all samples due to co-elution with other target compounds.

FIELD DUPLICATE RESULTS

Several results exceeded the 50% RPD criteria in the field duplicate pair OU4-FD-006-000A and OU4-SD-M12-200A. Results were qualified as estimated, J and UJ, for those compounds which exceeded the criteria.

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated, (J).

The text of this report has been formulated to address only those problem areas affecting data quality.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank analyses. An interference was noted for the analysis of PCB 170/190.

Other Factors Affecting Data Quality: Field duplicate results exceeded the 50% RPD criteria.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (12/96). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Tetra Tech NUS

Linda Karsonovich
Chemist/Data Validator

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

	OU4-FD-006-000A SDG M3025	OU4-SD-M12-200A SDG M3024	RPD
1,2,3,4-Tetrachlorobenzene	0.17 J	0.06 J	96
1,2,4,5-Tetrachlorobenzene	2.81	1.02 U*	200
2,4'-DDD	5.82	7.13	-20
2,4'-DDE	0.1 U	0.1 U	NA
2,4'-DDT	0.34	0.17	67
4,4'-DDD	2.37	1.76	30
4,4'-DDE	1.34	1.21	10
4,4'-DDT	0.9	0.98	-9
Aldrin	0.03 J	0.05 J	-50
a-BHC	0.22	0.2	10
a-Chlordane	0.92	0.68	30
b-BHC	0.24 U	0.25 U	NA
Chlorpyrifos	0.34 U	0.76 U*	NA
cis-Nonachlor	0.5	0.37	30
d-BHC	0.05 U	0.05 U	NA
Dieldrin	0.08 U	0.08	200
Endosulfan II	0.11 U	0.4	200
Endrin	0.16 U	0.16 U	NA
g-BHC	0.29 U	0.29 U	NA
g-Chlordane	0.08 U	0.15	200
Heptachlor	0.21 U	0.21 U	NA
Heptachlor epoxide	0.04 U	0.04 U	NA
Hexachlorobenzene	0.01 J	0.05 U	NC
Mirex	0.04 U	0.04 U	NA
Oxychlordane	0.31	0.02 U	200
PCB-101/90	6.69	4.13	47
PCB-105	3.78	0.9 J	123
PCB-114	0.21 U	0.22 U	NA
PCB-118	5.06	4.54	11
PCB-126	0.21 U	0.22 U	NA
PCB-128	1.33	1.08	21
PCB-138/160	14.55	7.59	63
PCB-149/123	9.71	5.01	64
PCB-153/132	25.19	11.92	72
PCB-156	2.05	2.32	-12
PCB-167	2.5	1.75	35
PCB-169	0.01 U*	0.03 U*	NA
PCB-170/190	67.73	57.26	17
PCB-18/17	1	0.11 U	200
PCB-180	16.52	10.75	42
PCB-187	10.72	5.59	63
PCB-189	0.82	0.77	6
PCB-195/208	3.36	3.26	3
PCB-206	5.31	4.44	18
PCB-209	1.59	2.15	-30
PCB-28	1.91	1.96	-3
PCB-44	1.92	1.34	36
PCB-52	2.15	3.42	-46
PCB-66	2.14	2.55	-17
PCB-77	0.02 J	0.2 U*	NC
PCB-8/5	2.23	2.12	5
PCB-81	0.32	0.21 J	42
Pentachloroanisole	0.08 U*	0.56 U	NA
Pentachlorobenzene	0.53 U*	0.35 U*	NA
trans-Nonachlor	0.05	0.05 U	200
PCB-201/157/173	2.06	2.46	-18

NA - Not Applicable, nondetected results.
NC - Not Calculated, positive result less than associated RL.
200 - Positive result greater than associated RL.
U* - Positive result qualified as nondetected due to blank contamination.

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3025

SAMPLE NUMBER:	OU4-FD-006-000A			OU4-SD-R02-300A			OU4-SD-R03-400A					
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			/ /		
LABORATORY ID:	C36852			C36842			C36847					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	56.1 %			57.2 %			67.6 %			100.0 %		
UNITS:	NG/G			NG/G			NG/G					
FIELD DUPLICATE OF:	OU4-SD-M12-200A-D											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
1,2,3,4-TETRACHLOROBENZENE	0.17	J	GP	0.19	J	P	0.46					
1,2,4,5-TETRACHLOROBENZENE	2.8	J	G	2.4			3.1					
2,4'-DDD	5.8			3.0			2.4					
2,4'-DDE	0.098	U		0.097	U		0.081	U				
2,4'-DDT	0.34	J	G	0.026	U		0.020	J	P			
4,4'-DDD	2.4			0.48			0.71					
4,4'-DDE	1.3			0.29			0.75					
4,4'-DDT	0.90	J	E	0.17	J	E	0.44	J	E			
ALDRIN	0.030	J	GP	0.030	J	P	0.12					
ALPHA-BHC	0.22	J	E	0.12	J	E	0.15	J	E			
ALPHA-CHLORDANE	0.92	J	E	0.52	J	E	0.33	J	E			
BETA-BHC	0.24	U		0.24	U		0.20	U				
CHLORPYRIFOS	0.34	U		0.33	U		0.28	U				
CIS-NONACHLOR	0.50	J	E	0.21	J	E	0.22	J	E			
DELTA-BHC	0.054	U		0.053	U		0.044	U				
DIELDRIN	0.080	UJ	G	0.079	U		0.066	U				
ENDOSULFAN II	0.11	UJ	G	0.33			0.64					
ENDRIN	0.16	U		0.16	U		0.13	U				
GAMMA-BHC (LINDANE)	0.29	U		0.28	U		0.24	U				
GAMMA-CHLORDANE	0.080	UJ	G	0.079	U		0.066	U				
HEPTACHLOR	0.21	U		0.20	U		0.17	U				
HEPTACHLOR EPOXIDE	0.036	U		0.035	U		0.029	U				
HEXACHLOROBENZENE	0.010	J	P	0.050	J	P	0.030	J	P			
MIREX	0.036	U		0.035	U		0.029	U				
OXYCHLORDANE	0.31	J	G	0.080			0.050					
PCB-101/90	6.7			0.79			1.5					
PCB-105	3.8	J	G	0.25	J	P	0.75	J	P			
PCB-114	0.21	U		0.21	U		0.18	U				
PCB-118	5.1			0.83			1.3					
PCB-126	0.21	U		0.21	U		0.18	U				
PCB-128	1.3			0.053	U		0.22					
PCB-138/160	15	J	G	0.42	U	A	1.5					
PCB-149/123	9.7	J	G	0.24			0.73					

CTO201-PORTSMOUTH
SOIL DATA
GERG
SDG: M3025

SAMPLE NUMBER:	OU4-FD-006-000A			OU4-SD-R02-300A			OU4-SD-R03-400A					
SAMPLE DATE:	08/29/00			08/29/00			08/29/00			/ /		
LABORATORY ID:	C36852			C36842			C36847					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	56.1 %			57.2 %			67.6 %			100.0 %		
UNITS:	NG/G			NG/G			NG/G					
FIELD DUPLICATE OF:	OU4-SD-M12-200A-D											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
PCB-153/132	25	J	G	0.20	U	A	1.3					
PCB-156	2.1	J	E	0.87	J	E	0.37	J	E			
PCB-167	2.5			3.1			2.3					
PCB-169	0.010	U	A	0.010	U	A	0.010	U	A			
PCB-170/190	68	J	EQ	9.0	J	EQ	13	J	EQ			
PCB-18/17	1.0	J	G	0.11	U		0.088	U				
PCB-180	17			0.14	U	A	0.64					
PCB-187	11	J	G	0.16	J	P	0.46					
PCB-189	0.82			0.18	J	P	0.24					
PCB-195/208	3.4	J	E	0.080	J	E	0.27	J	E			
PCB-201/157/173	2.06			0.37			0.49					
PCB-206	5.3	J	E	0.17	J	E	0.28	J	E			
PCB-209	1.6			0.27			1.0					
PCB-28	1.9			0.24	U		0.14	U	A			
PCB-44	1.9			0.18	U		0.64					
PCB-52	2.2			0.050	J	P	0.38					
PCB-66	2.1			0.44			0.34					
PCB-77	0.020	J	P	0.010	J	P	0.030	J	P			
PCB-8/5	2.2			0.20	U	A	0.32	U				
PCB-81	0.32			0.21	U		0.18	U				
PENTACHLOROANISOLE	0.080	U	A	0.040	U	A	0.060	U	A			
PENTACHLOROBENZENE	0.53	U	A	0.60	U	A	0.62	U	A			
TRANS-NONACHLOR	0.050	J	EG	0.070	J	E	0.13	J	E			

CTO2 PORTSMOUTH
SOIL DATA
GERG
SDG: M3025

SAMPLE NUMBER:	OU4-FD-006-000A	OU4-SD-R02-300A	OU4-SD-R03-400A	
SAMPLE DATE:	08/29/00	08/29/00	08/29/00	/ /
LABORATORY ID:	C36852	C36842	C36847	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	56.1 %	57.2 %	67.6 %	100.0 %
UNITS:				
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
% LIPID	0			0			0					

APPENDIX G

ADDITIONAL ANALYTICAL DATA

APPENDIX G.1

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR MUSSEL SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 01		Monitoring Station 02			Monitoring Station 03		Monitoring Station 04	Monitoring Station 05	
Parameter	200A	300A	100A	200A	300A	100A	200A	100A	100A	300A
Polyaromatic Hydrocarbons (ug/kg)										
C1-CHRYSENES	30.3	23.8	10.5 J	22	22.6	9.42 J	11.2	8.53 J	29.1	8.12 J
C1-DIBENZOTHIOPHENES	4.1	1.94 J	1.25 J	2.4 J	2.8 J	1.38 J	0.89 J	1.43 J	2.16 J	1.21 J
C1-FLUORANTHENES/PYRENES	42.2	44.4	15.6	26.7	24	13.9	19	15.8	37.8	12
C1-FLUORENES	12.9 J	36.7	27.1	11.7 J	20	17.8	6.37 J	13.7 J	9.67 J	11.8 J
C1-NAPHTHALENES	13.4	14.5	7.68 J	12.1	10.9	7.62 J	8.49	7.37 J	8.04	9.81
C1-PHENANTHRENES/ANTHRACENES	23.5	19.7	8.73 J	16.3	15.8	9.12 J	10.6	11.4	21.4	10.5
C2-CHRYSENES	22.7	12 J	7.48 J	0.9 J	10.9 J	4.11 J	6.13 J	5.06 J	12	4.72 J
C2-DIBENZOTHIOPHENES	6.8	3.48 J	2.17 J	4.1 J	4.5	1.92 J	2.3 J	1.82 J	2.53 J	2.07 J
C2-FLUORENES	21.1	23.4	11.6 J	10.5 J	10.4 J	9.77 J	11.6 J	12.5 J	14.5 J	15.7 J
C2-NAPHTHALENES	16.2	11.1 J	5.17 J	13.7 J	16.3	4.83 J	6.41 J	5.75 J	6.22 J	6.42 J
C2-PHENANTHRENES/ANTHRACENES	26.8	21.8	10.6 J	22.9	24.1	8.67 J	11.9	12.3	14.4	10.1
C3-CHRYSENES	0.02 J	0.26 J	0.13 J	0.3 J	0.1 J	0.08 J	0.32 J	0.04 J	0.09 J	0.19 J
C3-DIBENZOTHIOPHENES	9.6	4.77 J	2.79 J	5.1	6.7	2.98 J	2.99 J	2.48 J	2.64 J	2.52 J
C3-FLUORENES	29.8	29.6	5.73 J	25.6	34.4	7.73 J	13.7 J	14.9 J	11.5 J	17.9
C3-NAPHTHALENES	20.8	11.9 J	6.55 J	20.7	22.2	4.35 J	5.58 J	5.42 J	5.59 J	5.87 J
C3-PHENANTHRENES/ANTHRACENES	17.9	16.8	6.25 J	19.3	18.1	6.78 J	10.3	8.49 J	8.37 J	6.23 J
C4-CHRYSENES	0.1 J	0.07 J	0.12 J	0.2 J	0.2 J	0.06 J	0.04 J	1.14 J	3.73 J	0.1 J
C4-NAPHTHALENES	23.7	10.3 J	5.99 J	12.9	16.1	4.26 J	5.21 J	4.6 J	5.2 J	6.07 J
C4-PHENANTHRENES/ANTHRACENES	13.5	6.97 J	5.72 J	14.1	10.6	3.42 J	4.93 J	4.76 J	4.79 J	4.01 J

Notes:
- All results are presented in dry weight
-This table includes the following monitoring station samples:
  - OU4-MU-M01-200A and 300A
  - OU4-MU-M02-100A, 200A and 300A
  - OU4-MU-M03-100A and 200A
  - OU4-MU-M04-100A
  - OU4-MU-M05-100A and 300A
  - OU4-MU-M06-100A, 200A and 300A
  - OU4-MU-M07-100A and 300A
  - OU4-MU-M08-100A, 200A and 300A
  - OU4-MU-M09-100A and 200A
  - OU4-MU-M10-100A, 100A-FD, 200A, and 300A
  - OU4-MU-M11-100A, 200A, 200A-FD and 300A
  - OU4-MU-M12-100A, 100A-FD and 200A
  - OU4-MU-M13-100A, 100A-FD and 300A
  - OU4-MU-M14-100A and 200A

-This table includes the following reference station samples:
  - OU4-MU-(R01 through R04)-(300A and 400A)

APPENDIX G.1

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR MUSSEL SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 06			Monitoring Station 07		Monitoring Station 08			Monitoring Station 09	
Parameter	100A	200A	300A	100A	300A	100A	200A	300A	100A	200A
Polyaromatic Hydrocarbons (ug/kg)										
C1-CHRYSENES	9.2 J	12.8	6.5 J	23.2	9.44 J	37.8	28.7	18	28.1	13.7 J
C1-DIBENZOTHIOPHENES	0.93 J	1.23 J	0.86 J	1.5 J	1.1 J	5.2	3.2 J	2.4 J	3.5 J	1.06 J
C1-FLUORANTHENES/PYRENES	14.2	19.4	11.7	24.7	11.6	62.2	38.4	24	42.3	16.5
C1-FLUORENES	22.4	17.4	30.5	20.2	10.1 J	22	19.7 J	13.6 J	16.6	12.9 J
C1-NAPHTHALENES	8.49	14.2	6.46 J	9.6	8.46	12.2	11.4	8.2 J	10.2	4.49 J
C1-PHENANTHRENES/ANTHRACENES	7.75 J	12.9	7.78 J	15.3	6.24 J	36.2	20.2	16.2	26.5	9.86 J
C2-CHRYSENES	5.73 J	8.37 J	4.36 J	10.1 J	5.98 J	15.2	16.6	9.2 J	18.3	6.92 J
C2-DIBENZOTHIOPHENES	2.39 J	2.55 J	2.21 J	4.6 J	1.42 J	5.9	7	4.1 J	6	1.74 J
C2-FLUORENES	10.2 J	13.6 J	9.95 J	11 J	7.28 J	11.1 J	15.6 J	7.9 J	12.5 J	11.6 J
C2-NAPHTHALENES	5.68 J	7.72 J	5.68 J	10.1 J	5.13 J	11.6 J	13.8 J	10 J	12.5 J	3.8 J
C2-PHENANTHRENES/ANTHRACENES	8.71 J	14.6	8.3 J	24.1	8.88 J	36.2	33.9	22.4	39.2	11.9
C3-CHRYSENES	0.03 J	0.29 J	0.03 J	0.5 J	0.08 J	0.2 J	0.1 J	0.03 J	0.1 J	13.8 U
C3-DIBENZOTHIOPHENES	2.37 J	3.48 J	1.73 J	5.6	1.88 J	8.9	9.5	5.9	9.8	1.88 J
C3-FLUORENES	8.23 J	10.5 J	4.61 J	23	6.94 J	27.3	38.1	20.5 J	25.7	9 J
C3-NAPHTHALENES	6.05 J	7.32 J	5.29 J	10.2 J	4.59 J	18.3	15.8	12.1 J	14.8	2.82 J
C3-PHENANTHRENES/ANTHRACENES	7.23 J	10.9	3.99 J	16.3	6.43 J	24.4	27.9	16	32.1	5.48 J
C4-CHRYSENES	0.1 J	0.04 J	0.12 J	0.1 J	0.04 J	0.2 J	0.1 J	0.2 J	0.1 J	3.22 J
C4-NAPHTHALENES	6.4 J	6.84 J	8.28 J	11.8 J	4.82 J	17	20.1	12.8 J	18	3.14 J
C4-PHENANTHRENES/ANTHRACENES	4.3 J	5.28 J	2.34 J	10.1 J	3.44 J	12.8	15.6	8.7 J	15.4	5.28 J

Notes:
- All results are presented in dry weight
-This table includes the following monitoring station samples:
  - OU4-MU-M01-200A and 300A
  - OU4-MU-M02-100A, 200A and 300A
  - OU4-MU-M03-100A and 200A
  - OU4-MU-M04-100A
  - OU4-MU-M05-100A and 300A
  - OU4-MU-M06-100A, 200A and 300A
  - OU4-MU-M07-100A and 300A
  - OU4-MU-M08-100A, 200A and 300A
  - OU4-MU-M09-100A and 200A
  - OU4-MU-M10-100A, 100A-FD, 200A, and 300A
  - OU4-MU-M11-100A, 200A, 200A-FD and 300A
  - OU4-MU-M12-100A, 100A-FD and 200A
  - OU4-MU-M13-100A, 100A-FD and 300A
  - OU4-MU-M14-100A and 200A

-This table includes the following reference station samples:
  - OU4-MU-(R01 through R04)-(300A and 400A)

APPENDIX G.1

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR MUSSEL SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Monitoring Station 10				Monitoring Station 11				Monitoring Station 12		
	100A	100A-DUP	200A	300A	100A	200A	200A-DUP	300A	100A	100A-DUP	200A
Polyaromatic Hydrocarbons (ug/kg)											
C1-CHRYSENES	7.4 J	10.1 J	14	23.7	7.5 J	21 J	12 J	18.4	229 J	69.1 J	59.8
C1-DIBENZOTHIOPHENES	1.31 J	1.65 J	1.49 J	3.55 J	1.6 J	3 J	1.31 J	3.1 J	27.3 J	9.77 J	5 J
C1-FLUORANTHENES/PYRENES	11.2	15.5	16.1	38.2	14.5	27.7	19.6	21.5	450 J	145 J	116
C1-FLUORENES	11.9 J	8.6 J	9.81 J	11.8 J	14 J	21.7	14.1 J	21.8	76.5 J	43.7 J	29
C1-NAPHTHALENES	3.58 J	7.11 J	4.44 J	5.66 J	15	20.6 J	7.33 J	12.5	109 J	56.1 J	21.4
C1-PHENANTHRENES/ANTHRACENES	8.15 J	12.8	10.8 J	20.9	8.8	16.4	11.9	16.5	283 J	108 J	60.6
C2-CHRYSENES	5.41 J	7.58 J	5.92 J	10 J	0.3 J	1 J	7.47 J	9.3 J	121 J	23.1 J	38.5
C2-DIBENZOTHIOPHENES	1.7 J	3.13 J	2.68 J	8.94	3 J	4.5 J	2.51 J	5.2	22.3 J	5.61 J	7.4
C2-FLUORENES	7.84 J	11.8 J	10.4 J	16.8	7.7 J	15.5 J	13.2 J	10.8 J	37.7 J	21.3 J	13.3 J
C2-NAPHTHALENES	3.07 J	5.22 J	4.73 J	5.9 J	14.7	20.3 J	6.45 J	14.4 J	93.9 J	26.7 J	24.5
C2-PHENANTHRENES/ANTHRACENES	8.24 J	12.9	12.8	23.6	19.3	26.3 J	14.9 J	22.3	155 J	47.6 J	51.7
C3-CHRYSENES	0.06 J	0.05 J	0.07 J	0.07 J	0.4 J	0.3 J	0.07 J	0.6 J	0.1 J	0.14 J	0.1 J
C3-DIBENZOTHIOPHENES	1.8 J	2.56 J	2.93 J	10.6	5	8.6 J	3.45 J	7.8	22 J	6.28 J	9.9
C3-FLUORENES	11.5 J	15.8 J	11.6 J	13.7 J	15.7	36.2 J	15.4 J	18.5	56.9 J	25.6 J	40.8
C3-NAPHTHALENES	4.71 J	5.07 J	5.99 J	8.24 J	17	26 J	7.14 J	16.6	59.2 J	14.5 J	23.3
C3-PHENANTHRENES/ANTHRACENES	6.51 J	8.59 J	9.34 J	18.9	12.2	23.5 J	9.23 J	21.2	70.7 J	22.5 J	34
C4-CHRYSENES	0.05 J	0.06 J	0.17 J	0.09 J	0.02 J	0.2 J	0.05 J	0.1 J	9.2 J	1.5 J	0.1 J
C4-NAPHTHALENES	3.34 J	7.4 J	6.28 J	10.9 J	15.2	22 J	8.01 J	11.6 J	41.1 J	9.98 J	18.9
C4-PHENANTHRENES/ANTHRACENES	3.36 J	4.65 J	6.11 J	7.6 J	7.4 J	16.8 J	6.15 J	8.2 J	24.1 J	6.08 J	16.5

Notes:
- All results are presented in dry weight
-This table includes the following monitoring station samples:
  - OU4-MU-M01-200A and 300A
  - OU4-MU-M02-100A, 200A and 300A
  - OU4-MU-M03-100A and 200A
  - OU4-MU-M04-100A
  - OU4-MU-M05-100A and 300A
  - OU4-MU-M06-100A, 200A and 300A
  - OU4-MU-M07-100A and 300A
  - OU4-MU-M08-100A, 200A and 300A
  - OU4-MU-M09-100A and 200A
  - OU4-MU-M10-100A, 100A-FD, 200A, and 300A
  - OU4-MU-M11-100A, 200A, 200A-FD and 300A
  - OU4-MU-M12-100A, 100A-FD and 200A
  - OU4-MU-M13-100A, 100A-FD and 300A
  - OU4-MU-M14-100A and 200A

-This table includes the following reference station samples:
  - OU4-MU-(R01 through R04)-(300A and 400A)

APPENDIX G.1

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR MUSSEL SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 13			Monitoring Station 14		Reference Station 01		Reference Station 02		Reference Station 03	
Parameter	100A	100A-DUP	300A	100A	200A	300A	400A	300A	400A	300A	400A
Polyaromatic Hydrocarbons (ug/kg)											
C1-CHRYSENES	2071	1661	40.7	6.93 J	18.8	23.4	22.5	29.7	2236	17.2	29
C1-DIBENZOTHIOPHENES	113	87.3	3.94 J	1.21 J	1.75 J	2.3 J	1.24 J	2.9 J	119	4.1 J	5.4
C1-FLUORANTHENES/PYRENES	2924	2474	70.5	15.8	32.6	37.7	34.4	42.8	2937	31.5	38
C1-FLUORENES	578	556	22.9	5.85 J	17.7	10.1 J	37.6	16.1	618	17.8	18.6
C1-NAPHTHALENES	270	218	48	9.93	9.27	12.1	15.6	15.5	254	19.5	14.6
C1-PHENANTHRENES/ANTHRACENES	1767	1522	44.2	8.67 J	13.4	13.9	11.2	17.5	1809	23.4	34.7
C2-CHRYSENES	500	341	24.5	1.95 J	12.6	31.1	8.64 J	14.6	607	12	26.7
C2-DIBENZOTHIOPHENES	67.9	57.8	7.74	0.04 J	2.81 J	4.3 J	3.2 J	6	73.8	8.1	11.9
C2-FLUORENES	236	226	27.2	5.4 J	16.2 J	10 J	18	11.1 J	266	26.2	30.1
C2-NAPHTHALENES	301	240	20.6	3.93 J	8.15 J	10.5 J	9.1 J	14.2 J	294	21.6	20.1
C2-PHENANTHRENES/ANTHRACENES	694	569	37.9	5.31 J	17.4	29.1	15	32.9	688	38.2	52.7
C3-CHRYSENES	12.9	6.98 J	1.93 J	0.43 J	0.12 J	0.1 J	0.33 J	0.1 J.	12.1 J	0.2 J	0.2 J
C3-DIBENZOTHIOPHENES	37.9	29.5	10.1	0.04 J	4.97	8.6	5.2	7.8	42.1	12.3	14.2
C3-FLUORENES	129	122	37.3	2.21 J	13.1 J	17.9	10.2 J	31.7	203	35.2	56.2
C3-NAPHTHALENES	225	190	17.5	2.84 J	7.98 J	9.9 J	7.37 J	17.3	224	27.6	33.2
C3-PHENANTHRENES/ANTHRACENES	284	242	26.3	2.59 J	16.1	26.9	11.8	31	289	24.9	34.3
C4-CHRYSENES	112	37 J	1.98 J	0.35 J	0.23 J	0.1 J	0.11 J	0.1 J	112	0.04 J	0.1 J
C4-NAPHTHALENES	105	98	15.8	1.07 J	10.1 J	13.9	6.94 J	20	89.5	32.7	43.8
C4-PHENANTHRENES/ANTHRACENES	88.2	67	15.7	0.07 J	7.52 J	14.2	6.31 J	17	105	15	15.3

Notes:
- All results are presented in dry weight
-This table includes the following monitoring station samples:
  - OU4-MU-M01-200A and 300A
  - OU4-MU-M02-100A, 200A and 300A
  - OU4-MU-M03-100A and 200A
  - OU4-MU-M04-100A
  - OU4-MU-M05-100A and 300A
  - OU4-MU-M06-100A, 200A and 300A
  - OU4-MU-M07-100A and 300A
  - OU4-MU-M08-100A, 200A and 300A
  - OU4-MU-M09-100A and 200A
  - OU4-MU-M10-100A, 100A-FD, 200A, and 300A
  - OU4-MU-M11-100A, 200A, 200A-FD and 300A
  - OU4-MU-M12-100A, 100A-FD and 200A
  - OU4-MU-M13-100A, 100A-FD and 300A
  - OU4-MU-M14-100A and 200A

-This table includes the following reference station samples:
  - OU4-MU-(R01 through R04)-(300A and 400A)

APPENDIX G.1

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR MUSSEL SAMPLES
FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Reference Station 04	
Parameter	300A	400A
Polyaromatic Hydrocarbons (ug/kg)		
C1-CHRYSENES	9.5 J	10.3
C1-DIBENZOTHIOPHENES	2.5 J	2.25 J
C1-FLUORANTHENES/PYRENES	16.7	16.2
C1-FLUORENES	12.5 J	13.3 J
C1-NAPHTHALENES	11	10.1
C1-PHENANTHRENES/ANTHRACENES	16.2	18
C2-CHRYSENES	12.9	5.04 J
C2-DIBENZOTHIOPHENES	3.8 J	5.42
C2-FLUORENES	13.6 J	21.6
C2-NAPHTHALENES	13.1 J	8.56 J
C2-PHENANTHRENES/ANTHRACENES	23.4	19.5
C3-CHRYSENES	0.1 J	0.07 J
C3-DIBENZOTHIOPHENES	5.5	5.57
C3-FLUORENES	22.6	14.3 J
C3-NAPHTHALENES	17.9	10.6
C3-PHENANTHRENES/ANTHRACENES	15.1	12.4
C4-CHRYSENES	0.1 J	0.19 J
C4-NAPHTHALENES	20.3	12.4
C4-PHENANTHRENES/ANTHRACENES	8.7 J	8.32

Notes:
- All results are presented in dry weight
-This table includes the following monitoring station samples:
  - OU4-MU-M01-200A and 300A
  - OU4-MU-M02-100A, 200A and 300A
  - OU4-MU-M03-100A and 200A
  - OU4-MU-M04-100A
  - OU4-MU-M05-100A and 300A
  - OU4-MU-M06-100A, 200A and 300A
  - OU4-MU-M07-100A and 300A
  - OU4-MU-M08-100A, 200A and 300A
  - OU4-MU-M09-100A and 200A
  - OU4-MU-M10-100A, 100A-FD, 200A, and 300A
  - OU4-MU-M11-100A, 200A, 200A-FD and 300A
  - OU4-MU-M12-100A, 100A-FD and 200A
  - OU4-MU-M13-100A, 100A-FD and 300A
  - OU4-MU-M14-100A and 200A

-This table includes the following reference station samples:
  - OU4-MU-(R01 through R04)-(300A and 400A)

APPENDIX G.2

PERCENT MOISTURE FOR THE MUSSEL SAMPLES FOR THE MONITORING AND REFERENCE STATIONS
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Percent Moisture
Monitoring Stations	
OU4-MU-M01-200A	85.38
OU4-MU-M01-300A	90.89
OU4-MU-M02-100A	90.14
OU4-MU-M02-200A	87.24
OU4-MU-M02-300A	87.2
OU4-MU-M03-100A	88.32
OU4-MU-M03-200A	85.78
OU4-MU-M04-100A	89.07
OU4-MU-M05-100A	86.12
OU4-MU-M05-300A	87.63
OU4-MU-M06-100A	88.83
OU4-MU-M06-200A	85.54
OU4-MU-M06-300A	90.87
OU4-MU-M07-100A	88.55
OU4-MU-M07-300A	88.03
OU4-MU-M08-100A	86.09
OU4-MU-M08-200A	90.13
OU4-MU-M08-300A	90.32
OU4-MU-M09-100A	86.04
OU4-MU-M09-200A	90.19
OU4-MU-M10-100A	87.52
OU4-MU-M10-100A-LD	88.43
OU4-MU-M10-200A	89.93
OU4-MU-M10-300A	86.95
OU4-MU-M11-100A	85.71
OU4-MU-M11-200A	89.61
OU4-MU-M11-200A-LD	88.51
OU4-MU-M11-300A	88.84
OU4-MU-M12-100A	89.89
OU4-MU-M12-100A-LD	88.47
OU4-MU-M12-200A	89.11
OU4-MU-M13-100A	87.39
OU4-MU-M13-100A-LD	86.96
OU4-MU-M13-300A	87.31
OU4-MU-M14-100A	90.38
OU4-MU-M14-200A	87.56
Reference Stations	
OU4-MU-R01-300A	88.26
OU4-MU-R01-400A	87.94
OU4-MU-R02-300A	87.07
OU4-MU-R02-400A	88.98
OU4-MU-R03-300A	87.99
OU4-MU-R03-400A	88.08
OU4-MU-R04-300A	88.25
OU4-MU-R04-400A	85.63

APPENDIX G.3

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR LOBSTER SAMPLES FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

	Monitoring Station 01		Monitoring Station 02	Monitoring Station 03	Monitoring Station 04
Parameter	100A	100A-DUP	100A	100A	100A
Polyaromatic Hydrocarbons (ug/kg)					
C1-CHRYSENES	3.2 J	3.56 J	7.79 J	3.22 J	7.86 J
C1-DIBENZOTHIOPHENES	0.91 J	1.26 J	0.68 J	0.66 J	1.46 J
C1-FLUORANTHENES/PYRENES	5.15 J	5.11 J	8.85 J	5.22 J	9.39 J
C1-FLUORENES	3.79 J	3.95 J	3.16 J	3.33 J	5.01 J
C1-NAPHTHALENES	8.28 J	7.77 J	6.24 J	8.81 J	4.41 J
C1-PHENANTHRENES/ANTHRACENES	4.46 J	3.63 J	3.93 J	3.58 J	7.8 J
C2-CHRYSENES	1.55 J	1.13 J	3.34 J	0.7 J	6.19 J
C2-DIBENZOTHIOPHENES	0.11 J	0.02 J	0.88 J	0.06 J	0.18 J
C2-FLUORENES	3.57 J	0.49 J	4.48 J	4.23 J	4.6 J
C2-NAPHTHALENES	4.12 J	3.1 J	3.01 J	4.24 J	3.29 J
C2-PHENANTHRENES/ANTHRACENES	3.45 J	3.55 J	3.76 J	2.76 J	4.76 J
C3-CHRYSENES	0.27 J	0.07 J	0.06 J	0.16 J	0.21 J
C3-DIBENZOTHIOPHENES	0.05 J	0.03 J	0.04 J	0.06 J	0.03 J
C3-FLUORENES	0.55 J	1.62 J	0.66 J	2.58 J	5.69 J
C3-NAPHTHALENES	3.12 J	2.48 J	2.07 J	2.77 J	3.21 J
C3-PHENANTHRENES/ANTHRACENES	1.72 J	0.3 J	1.8 J	1.67 J	2.88 J
C4-CHRYSENES	0.62 J	0.12 J	0.04 J	0.45 J	0.02 J
C4-NAPHTHALENES	0.3 J	3.98 J	0.13 J	1.75 J	2.37 J
C4-PHENANTHRENES/ANTHRACENES	0.46 J	0.06 J	0.02 J	0.64 J	0.07 J

Notes:
- All results are presented in dry weight
-This table includes the following monitoring station samples:
  - OU4-LJ-(M01 through M14)-100A
  - OU4-LJ-M01-100A-FD
  - OU4-LJ-M11-100A-FD

-This table includes the following reference station samples:
  - OU4-LJ-(R01 through R04)-100A

APPENDIX G.3

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR LOBSTER SAMPLES FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Monitoring Station 05	Monitoring Station 06	Monitoring Station 07	Monitoring Station 08
	100A	100A	100A	100A
Polyaromatic Hydrocarbons (ug/kg)				
C1-CHRYSENES	4.63 J	1.31 J	8.3 J	15.1 J
C1-DIBENZOTHIOPHENES	0.85 J	0.06 J	1.27 J	2.2 J
C1-FLUORANTHENES/PYRENES	5.43 J	3.94 J	9.47 J	25.3
C1-FLUORENES	2.5 J	2.68 J	3.48 J	26.6
C1-NAPHTHALENES	5.37 J	6.82 J	6.17 J	11.6 J
C1-PHENANTHRENES/ANTHRACENES	4.16 J	3 J	4 J	15.2
C2-CHRYSENES	2.71 J	0.11 J	3.32 J	8.76 J
C2-DIBENZOTHIOPHENES	1.15 J	0.06 J	0.53 J	4.25 J
C2-FLUORENES	2.06 J	0.19 J	3.96 J	15.8 J
C2-NAPHTHALENES	3.07 J	3.54 J	2.78 J	7.98 J
C2-PHENANTHRENES/ANTHRACENES	3.53 J	2.08 J	3.76 J	19.9
C3-CHRYSENES	0.08 J	0.31 J	0.06 J	0.1 J
C3-DIBENZOTHIOPHENES	0.04 J	0.09 J	0.3 J	4.03 J
C3-FLUORENES	0.21 J	0.11 J	3.82 J	14.6 J
C3-NAPHTHALENES	2.6 J	0.06 J	3.62 J	9.48 J
C3-PHENANTHRENES/ANTHRACENES	0.91 J	0.12 J	1.86 J	13.6 J
C4-CHRYSENES	0.08 J	1.19 J	0.06 J	0.09 J
C4-NAPHTHALENES	2.9 J	0.09 J	1.5 J	10.9 J
C4-PHENANTHRENES/ANTHRACENES	0.02 J	0.02 J	0.57 J	8.49 J

Notes:
- All results are presented in dry weight
-This table includes the following monitoring
  - OU4-LJ-(M01 through M14)-100A
  - OU4-LJ-M01-100A-FD
  - OU4-LJ-M11-100A-FD

-This table includes the following reference
  - OU4-LJ-(R01 through R04)-100A

APPENDIX G.3

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR LOBSTER SAMPLES FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Monitoring Station 09	Monitoring Station 10	Monitoring Station 11		Monitoring Station 12
	100A	100A	100A	100A-DUP	100A
Polyaromatic Hydrocarbons (ug/kg)					
C1-CHRYSENES	5.22 J	2.98 J	0.1 J	1.86 J	1.54 J
C1-DIBENZOTHIOPHENES	1.19 J	0.7 J	0.74 J	0.06 J	0.97 J
C1-FLUORANTHENES/PYRENES	9.03 J	6.1 J	3.58 J	2.48 J	3.67 J
C1-FLUORENES	3.69 J	5.23 J	3.61 J	4.44 J	5.61 J
C1-NAPHTHALENES	8.12 J	10.2 J	6.65 J	4.68 J	17.7
C1-PHENANTHRENES/ANTHRACENES	4.02 J	4.53 J	3.22 J	4.41 J	3.64 J
C2-CHRYSENES	1.52 J	1.22 J	0.07 J	0.09 J	0.02 J
C2-DIBENZOTHIOPHENES	0.02 J	0.03 J	0.02 J	0.02 J	0.02 J
C2-FLUORENES	4.29 J	2.99 J	2.38 J	1.78 J	3.97 J
C2-NAPHTHALENES	3.91 J	5.69 J	3.55 J	3 J	10.9 J
C2-PHENANTHRENES/ANTHRACENES	3.64 J	3.29 J	2.13 J	2.93 J	2.29 J
C3-CHRYSENES	0.05 J	0.05 J	0.17 J	0.11 J	0.24 J
C3-DIBENZOTHIOPHENES	0.04 J	0.03 J	0.05 J	0.06 J	0.03 J
C3-FLUORENES	0.15 J	0.04 J	0.09 J	0.39 J	0.49 J
C3-NAPHTHALENES	2.56 J	4.08 J	1.82 J	2.82 J	7.24 J
C3-PHENANTHRENES/ANTHRACENES	1.38 J	1.11 J	0.08 J	0.24 J	0.06 J
C4-CHRYSENES	0.03 J	0.06 J	0.02 J	0.22 J	0.07 J
C4-NAPHTHALENES	0.22 J	0.11 J	0.11 J	2.05 J	0.19 J
C4-PHENANTHRENES/ANTHRACENES	0.01 J	0.06 J	0.04 J	0.11 J	0.06 J

Notes:
- All results are presented in dry weight
-This table includes the following monitoring
  - OU4-LJ-(M01 through M14)-100A
  - OU4-LJ-M01-100A-FD
  - OU4-LJ-M11-100A-FD

-This table includes the following reference
  - OU4-LJ-(R01 through R04)-100A

APPENDIX G.3

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR LOBSTER SAMPLES FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Monitoring Station 13	Monitoring Station 14	Reference Station 01	Reference Station 02
	100A	100A	100A	100A
Polyaromatic Hydrocarbons (ug/kg)				
C1-CHRYSENES	11.3 J	8.05 J	0.11 J	4.06 J
C1-DIBENZOTHIOPHENES	1.94 J	1.05 J	0.81 J	0.52 J
C1-FLUORANTHENES/PYRENES	26.6	11.9 J	4.67 J	8.81 J
C1-FLUORENES	7.36 J	4.9 J	4.15 J	4.21 J
C1-NAPHTHALENES	24.7	31.3	13.1	10.5 J
C1-PHENANTHRENES/ANTHRACENES	21.5	8.66 J	2.97 J	4.38 J
C2-CHRYSENES	3.99 J	4.27 J	0.2 J	1.8 J
C2-DIBENZOTHIOPHENES	1.38 J	0.04 J	0.03 J	0.3 J
C2-FLUORENES	0.14 J	6.25 J	2.46 J	2.36 J
C2-NAPHTHALENES	18.1 J	18.6 J	5.52 J	4.23 J
C2-PHENANTHRENES/ANTHRACENES	10.7 J	5.48 J	3.22 J	3.85 J
C3-CHRYSENES	0.09 J	0.03 J	0.15 J	0.03 J
C3-DIBENZOTHIOPHENES	1.56 J	0.06 J	0.03 J	0.16 J
C3-FLUORENES	0.49 J	0.62 J	0.97 J	0.3 J
C3-NAPHTHALENES	11.6 J	8.57 J	4.71 J	3.06 J
C3-PHENANTHRENES/ANTHRACENES	5.22 J	1.83 J	0.99 J	1.2 J
C4-CHRYSENES	0.06 J	0.06 J	0.06 J	0.11 J
C4-NAPHTHALENES	5.89 J	1.58 J	1.74 J	1.79 J
C4-PHENANTHRENES/ANTHRACENES	0.12 J	0.03 J	0.08 J	0.05 J

Notes:
- All results are presented in dry weight
-This table includes the following monitoring
  - OU4-LJ-(M01 through M14)-100A
  - OU4-LJ-M01-100A-FD
  - OU4-LJ-M11-100A-FD

-This table includes the following reference
  - OU4-LJ-(R01 through R04)-100A

APPENDIX G.3

SUMMARY OF ROUND 3 ALKYLATED PAH DATA FOR LOBSTER SAMPLES FOR EACH MONITORING AND REFERENCE STATION
ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Parameter	Reference Station 03	Reference Station 04
	100A	100A
Polyaromatic Hydrocarbons (ug/kg)		
C1-CHRYSENES	2.72 J	0.13 J
C1-DIBENZOTHIOPHENES	0.89 J	0.28 J
C1-FLUORANTHENES/PYRENES	5.98 J	3.19 J
C1-FLUORENES	3.86 J	5.27 J
C1-NAPHTHALENES	8.35 J	19.3
C1-PHENANTHRENES/ANTHRACENES	5.36 J	3.21 J
C2-CHRYSENES	0.83 J	0.13 J
C2-DIBENZOTHIOPHENES	0.03 J	0.03 J
C2-FLUORENES	3.38 J	3.81 J
C2-NAPHTHALENES	3.85 J	13 J
C2-PHENANTHRENES/ANTHRACENES	4.3 J	2.9 J
C3-CHRYSENES	0.08 J	0.18 J
C3-DIBENZOTHIOPHENES	0.09 J	0.03 J
C3-FLUORENES	0.27 J	0.24 J
C3-NAPHTHALENES	3.19 J	10.2 J
C3-PHENANTHRENES/ANTHRACENES	0.06 J	0.04 J
C4-CHRYSENES	0.08 J	0.13 J
C4-NAPHTHALENES	0.13 J	0.16 J
C4-PHENANTHRENES/ANTHRACENES	0.05 J	0.03 J

Notes:
- All results are presented in dry weight
-This table includes the following monitoring
  - OU4-LJ-(M01 through M14)-100A
  - OU4-LJ-M01-100A-FD
  - OU4-LJ-M11-100A-FD

-This table includes the following reference
  - OU4-LJ-(R01 through R04)-100A

APPENDIX G.4

PERCENT MOISTURE FOR THE LOBSTER SAMPLES FOR THE MONITORING AND REFERENCE STATIONS ROUND 3 - INTERIM OFFSHORE MONITORING PROGRAM PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Sample Number	Percent Moisture
Monitoring Stations	
OU4-LJ-M01-100A	80.16
OU4-LJ-M01-100A-LD	79.81
OU4-LJ-M02-100A	79.82
OU4-LJ-M03-100A	76.76
OU4-LJ-M04-100A	80.07
OU4-LJ-M05-100A	81.12
OU4-LJ-M06-100A	77.26
OU4-LJ-M07-100A	80.79
OU4-LJ-M08-100A	76.88
OU4-LJ-M09-100A	78.49
OU4-LJ-M10-100A	79.29
OU4-LJ-M11-100A	80.13
OU4-LJ-M11-100A-LD	79.93
OU4-LJ-M12-100A	79.5
OU4-LJ-M13-100A	78.57
OU4-LJ-M14-100A	78.68
OU4-LJ-R01-100A	77.61
OU4-LJ-R02-100A	78.55
OU4-LJ-R03-100A	78.69
OU4-LJ-R04-100A	78.72
OU4-LJ-M01-100A	80.2
OU4-LJ-M01-100A-LD	79.8
OU4-LJ-M02-100A	79.8
OU4-LJ-M03-100A	76.8
OU4-LJ-M04-100A	80.1
OU4-LJ-M05-100A	81.1
OU4-LJ-M06-100A	77.3
OU4-LJ-M07-100A	80.8
OU4-LJ-M08-100A	76.9
OU4-LJ-M09-100A	78.5
OU4-LJ-M10-100A	79.3
OU4-LJ-M11-100A	80.1
OU4-LJ-M11-100A-LD	79.9
OU4-LJ-M12-100A	79.5
OU4-LJ-M13-100A	78.6
OU4-LJ-M14-100A	78.7
Reference Stations	
OU4-LJ-R01-100A	77.6
OU4-LJ-R02-100A	78.5
OU4-LJ-R03-100A	78.7
OU4-LJ-R04-100A	78.7