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Health and Safety Plan Addendum
for
Interim Offshore Monitoring Program

PORTSMOUTH NAVAL SHIPYARD
Kittery, Maine

Northern Division
Naval Facilities Engineering Command
Contract Number N62472-90-D-1298
Contract Task Order 0201

August 2000

TETRA TECH NUS, INC.

2000-224-001

TETRA TECH NUS, INC.
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PITT 08-0-036

Project Number 5003

August 11, 2000

Ms. Meghan Cassidy
U.S. Environmental Protection Agency, Region I
JFK Federal Building HBT
Boston, Massachusetts 02203-2211

Mr. Iver McLeod
Maine Department of Environmental Protection
State House Station 17
Augusta, Maine 04333-0017

Subject: Sampling and Analytical Operating Procedures
For The Interim Offshore Monitoring Program
At Portsmouth Naval Shipyard, Kittery, Me.

Dear Ms. Cassidy/Mr. McLeod:

On behalf of the U.S. Navy, Tetra Tech NUS, Inc. is pleased to provide 4 copies of the Navy's responses to Maine Department of Environmental Protection's comments dated August 9, 1999, U.S. Environmental Protection Agency's comments dated August 11, 1999, and Seacoast Anti-Pollution League's comments dated August 11, 1999 on the Sampling and Analytical Standard Operating Procedures (SOPs) for Round 1 and 2 of Interim Offshore Monitoring for OU4 along with the revised sampling SOPs (SOP 1.01, 1.02, and 1.03). The laboratory and sampling SOPs for Rounds 1 and 2 will be used as the SOPs for Rounds 3 and 4. In addition, the Health and Safety Plan (HASP) for Rounds 1 and 2 will be used for Rounds 3 and 4. An addendum to the HASP was prepared because of a few personnel changes. This addendum also is attached to this letter.

If additional information is required, please contact Fred Evans at 610-595-0567, x159.

For the Community Restoration Advisory Board (RAB) members; if you have any comments or questions on these issues, they can be provided to the Navy at a RAB meeting, by calling the Public Affairs Office at (207) 438-1140 or by writing to:

Portsmouth Naval Shipyard
Code 106.3R, Building 44
Attn: Marty Raymond
Portsmouth, NH 03804-5000

Sincerely,

Pradeep Kumar, P.E.

for Deborah Cohen, P. E.
Project Manager
Tetra Tech NUS, Inc.

Enclosures:

1. Interim Offshore Monitoring Sampling and Analytical Standard Operating Procedures Responses to Comments for OU4.

2. Revised Sampling Standard Operating Procedures SOPs 1.01, 1.02, and 1.03.

3. Health and Safety Plan Addendum for Interim Offshore Monitoring at OU4.

cc: Mr. Frederick J. Evans, P.E. (4 copies)
NOAA (K. Finkelstein)
MEDMR (D. Card)
Mr. Doug Bogen
Ms. Michele Dionne
Ms. Mary Marshall
Mr. Jack McKenna
Mr. Onil Roy
Dr. Roger Wells
PNS (Code 100PAO)
PNS (Code 106.3R, M. Raymond)(4 copies)
US FWS (K. Munney)
NHFG (McBane)
Mr. Jeff Clifford
Ms. Eileen Foley
Mr. Phil McCarthy
Ms. Mary Menconi
Ms. Johanna Lyons
Ms. Carolyn Lepage
COMSUBGRU TWO (R. Jones)

HEALTH AND SAFETY PLAN ADDENDUM
for
INTERIM OFFSHORE MONITORING PROGRAM

PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Northern Division
Environmental Branch Code 18
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop #82
Lester, Pennsylvania 19113-2090

Submitted by:
Tetra Tech NUS, Inc.
600 Clark Avenue, Suite 3
King of Prussia, Pennsylvania 19406-1433

CONTRACT NUMBER N62472-90-D-1298
CONTRACT TASK ORDER 201

August 2000

APPROVED BY:

DEBORAH COHEN
PROJECT MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

APPROVED FOR SUBMISSION BY:

MATTHEW M. SOLTIS, CIH, CSP
CLEAN HEALTH AND SAFETY MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

HEALTH AND SAFETY PLAN ADDENDUM

This Health and Safety Plan (HASP) Addendum has been developed to address minor revisions to the December 1999 Tetra Tech NUS, Inc. HASP and the University of Rhode Island HASP (which was included at Attachment IV) prepared for the remaining activities involved with the Interim Offshore Monitoring Program at the Portsmouth Naval Shipyard (PNS), Kittery, Maine. This Addendum is to be used in conjunction with the December 1999 HASP and with the TtNUS Health and Safety Guidance Manual. Each of these documents must be present at the site during the performance of all site activities. The Guidance Manual addresses TtNUS Standard Operating Procedures (SOPs), applicable portions of which are specified in the final HASP.

The following sections of the December 1999 HASP have been revised and are to be replaced by this Addendum:

Section 1.2 of the Tetra Tech NUS, Inc. HASP	Site Information and Personnel Assignments
Table 2-1 of the Tetra Tech NUS, Inc HASP	Emergency Reference Portsmouth Naval Shipyard
Section 2.1 of the Univ. of RI HASP	Project Organization

Replacement pages are provided in this Addendum to address the minor revisions specified above.

- Compliance with the requirements stipulated in this HASP is monitored by the SSO and coordinated through the TtNUS HSM.

Note: In some cases one person may be designated responsibilities for more than one position. For example, for the PNS Interim Offshore Monitoring activities, the FOL may also be responsible for SSO duties. This action will be performed only as credentials, experience, or the tasks involved permits.

1.2 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: Portsmouth Naval Shipyard
Kittery, Maine

Client Contact: Marty Raymond
Phone Number: (207) 438-2536

Scheduled Activities: This activity will be divided into a multi-task operation, including the tasks of sediment and biota sampling. Further detail on these and other site tasks can be found in Section 4.0 of this HASP.

Dates of scheduled activities: Site activities are expected to begin in the Summer 1999 and continue until project completion.

Project Team:

TtNUS Management Personnel:	Discipline/Tasks Assigned:
Deborah Cohen	Project Manager (PM)
Aaron Bernhardt	Field Operations Leader (FOL)
Aaron Bernhardt	Site Safety Officer (SSO)
Matthew M. Soltis, CIH, CSP	CLEAN Health and Safety Manager
Thomas M. Dickson, CSP	Project Health and Safety Officer (PHSO)

Non-TtNUS Personnel	Affiliation/Discipline/Tasks Assigned
University of Rhode Island personnel	Sampling technicians
Texas A&M University	Analytical Laboratory

TABLE 2-1
EMERGENCY REFERENCE
PORTSMOUTH NAVAL SHIPYARD

Police (Shipyard)	(207) 438-2444*
Fire Department (Shipyard)	(207) 438-2333*
Ambulance (Shipyard)	(207) 438-2555*
U.S. Coast Guard	(603) 433-7324
Hospital: Portsmouth Regional Hospital	 (603) 433-4042
Poison Control Center: Maine New Hampshire	 1-800-442-6305 1-800-562-8236
Base Contact: Marty Raymond	(207) 438-2536
TtNUS Project Manager Deborah Cohen	(412) 921-7118
TtNUS Project Health and Safety Officer Thomas M. Dickson, CSP	(412) 921-8457
CLEAN Health and Safety Manager Matthew M. Soltis, CIH, CSP	(412) 921-8912
Agency for Toxic Substances and Disease Registry (ATSDR)	(404) 639-6300

*Phone calls from Base use last 4 digits.

2.6 EMERGENCY ROUTE TO HOSPITALS

Directions to the hospitals:

On Base: Ambulatory service will be available to provide transportation to the off base Hospital in response to emergencies.

Off Base: Portsmouth Regional Hospital

Exit the Shipyard through Gate No. 1. At signal light, continue straight down Walker Street. Proceed to second set of signal lights, and continue straight until road ends at Route 1 Bypass. Enter underpass rotary on left side. Go under Route 1 Bypass and loop onto Route 1 Bypass South. Cross bridge and continue straight to traffic circle. At traffic circle, go around to the right 270 degrees, 3/4 circle from entrance to traffic circle. Exit right. Go straight through first set of lights. At second set of traffic lights, turn right onto Borthwick Ave. Ext. Follow Borthwick Ave. Ext. 1/2 to 1 mile. Portsmouth Regional Hospital will be on the right side.

A map indicating the travel route from the site to the Hospital(s) is presented as Figure 2-2.

1.0 INTRODUCTION

This Health and Safety Plan (HASP) establishes procedures and general guidelines for worker and public safety to be used by University of Rhode Island (URI) personnel and subcontractors during field operations for collection of chemistry samples, namely sediment, pore-water, and organisms, in Portsmouth Naval Shipyard (PNS), an environment with low to moderate levels of hazardous substances. This HASP is an attachment to the HASP proposed for the Interim Offshore Monitoring Program.

1.1 Scope and Applicability

This HASP covers only the field collection activities conducted in support of the Interim Offshore Monitoring Plan for PNS, monitoring related to the scope of Task Order #201, under Navy CLEAN Contract No. N62472-90-D-1298, Contract Task Order 201 to Tetra Tech NUS, Inc. Laboratory safety and health requirements applicable to this project are described in other documents.

1.2 Site and Project Scope of Work Overview

The scope of work will require that project personnel collect organisms and sediments to support the Interim Offshore Monitoring Program for PNS. These collections will occur during scheduled cruises presently planned for August, 2000 and April-May, 2001. In addition, SCUBA diving methods may be employed for organism collection.

1.3 Site Description

Fourteen locations in the nearshore area of PNS are shown in Figure 1 and four reference sample locations are shown in Figure 2. URI efforts related to sediment and organism collections will be accomplished from a small boat (12 foot V-hull), a 22 foot pontoon boat, or a 36 foot lobster boat. Other sediment and organism collection in the intertidal zone may also be done from the shore.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

2.1 Project Organization

TetraTech NUS Project Manager:	Ms. Deborah Cohen 412-921-7118
University of Rhode Island Project Manager: and Program Manager	Dr. John King 401-874-6182
Site Safety and Health Officer:	Ms. Kathryn Ford 401-874-6182
Contractor on Site:	NONE
Remedial Project Manager:	Mr. Fred Evans

Field Team Leaders:

Dr. John King (URI)
401-874-6182
Ms. Kathryn Ford (URI)
401-874-6182

All field team members are required to follow the requirements of this plan. Each field team member must sign the "Acknowledgment of Understanding" indicating they have read and fully understand these requirements. Field team members include:

Dr. John King
Mr. Brad Hubeny
Ms. Kathryn Ford
Mr. Clifford Heil
Mr. Gary Goodridge

2.2 Responsibilities

The URI Program Manager has overall responsibility for the safe performance of tasks designated in the Work Plan, and is responsible for providing the resources needed to implement this plan and for enforcing its requirements.

The Site Safety and Health Officer is responsible for notifying the Project Manager when there are either unexpected hazardous conditions, or deviations from this plan; maintaining project safety and health records; ensuring that protective clothing and equipment are properly used and maintained; ensuring that personnel performing field work have completed the required training; and conducting a post field activity debriefing to identify problems encountered and lessons learned. If the Site Safety and Health Officer determines that conditions in the field are unsafe, she has the authority to suspend field operations until the problem is corrected.

Each employee is responsible for:

- knowing emergency response procedures;
- wearing and maintaining personal protective equipment as specified in this plan;
- reporting to the Site Safety and Health Officer any hazards not documented or inadequately controlled by this plan;
- immediately reporting any occupational illness or injury to the appropriate supervisor and/or to Personnel, including any potential exposure to hazardous substances for which protection was not provided.

The URI Standard Operating Procedure "Safety Standards for URI/GSO; Small Boat Fleet (1997) (provided in Appendix 1) requires that where boats are used, a person shall remain on shore who knows the details of the trip,

MEDEP COMMENTS DATED AUGUST 9, 1999 ON SAMPLING AND ANALYTICAL STANDARD OPERATING PROCEDURES FOR ROUNDS 1 AND 2 OF INTERIM OFFSHORE MONITORING FOR OU4

SOP Number 1.01, Intertidal & Subtidal Surface/Sediment Chemistry Sampling

1. **Comment:** Please specify the minimum amount of sediment that must be collected for acid volatile sulfide (AVS) samples. Similarly, specify the minimum amount of material that will be needed for the bulk chemistry samples, pore-water extractions and toxicity tests.

   Response: The amount of sediment required for the above-listed analyses are presented in Table 6-3 of the interim offshore monitoring plan.

2. **Comment:** It is not clear that there are plans to process samples for total organic carbon (%TOC) or grain size analysis. There should be.

   Response: The sediment samples will be analyzed for TOC and grain size as provided in Table 6-1 of the interim offshore monitoring plan.

3. **Comment:** It is noted that samples will be stored on wet ice during collection. Please indicate if additional holding times are anticipated. If so, comment on the duration and conditions under which material will be held (e.g., under nitrogen, frozen, etc.).

   Response: The sediment samples will be stored on wet ice during collection and shipped to the laboratory either on wet ice or frozen blue ice packs. The maximum time that it is anticipated that samples will be held prior to shipping is two or three days (for samples collected over the weekend).

SOP Number 1.02, Mussel Sampling and Processing

4. **Comment:** Specify what shell dimension(s) to measure for determining mussel size. MEDEP analyzes mussels in the size range of 50-60 mm (length).

   Response: The size of the mussels (at least 5 cm in length) is provided in SOP 1.02 and in Section 5.1.2 of the interim offshore monitoring plan. The target size of the mussels will be 5 to 6 cm (length). Mussels that are larger or smaller than the target range may be used based on availability. This will be reflected in the SOP.

5. **Comment:** "Clean all mussels..."Be careful not to let idle mussels take in turbid water from cleaning.

   Response: The following sentence will be added to SOP 1.02:

   "The mussels will not idle in turbid water while cleaning."

6. **Comment:** Please explain the rationale for wrapping mussels in aluminum foil. Mussels to be analyzed for metals should not be in contact with aluminum foil (or any other metal).

   Response: The rationale for wrapping the mussels in aluminum foil is based on pages 6-47 and 6-48 of the Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume 1, Fish Sampling and Analysis, (USEPA, 1995). It is not expected that metals from the aluminum foil will leach through the mussel shell and contaminate the mussel tissue. However, because the samples will not be analyzed for phthalates, the mussels for both the organics and metals will be placed in reclosable plastic bags. This will be reflected in SOP 1.02 and is in Section 5.1.2 of the interim offshore monitoring plan.

7. **Comment:** Note that if clam rakes are needed to obtain subtidal mussels, raking should not proceed until the necessary sediment samples have been collected.

   Response: Because the locations where mussels are available cannot be determined until after the sediment is raked, the sediment samples will be collected after the mussels are collected. However, because the Section 5.1.2 of the interim offshore monitoring plan states that sediment will be collected within 10 meters of the mussels, the sediment associated with that mussel sample will be collected in an area that was not raked.

8. **Comment:** Indicate the anticipated minimum number of mussels needed for a sample.

   Response: The minimum number of mussels (25 to 50) required for analyses is presented in Section 5.1.2 of the interim offshore monitoring plan.

SOP Number 1.03 Juvenile Lobster Sampling and Processing

9. **Comment:** See Comment 5.

   Response: The following sentence will be added to SOP 1.03:

   "The lobsters will not idle in turbid water while cleaning."

10. **Comment:** The SOP indicates that lobsters will be wrapped in foil and placed in sealed plastic bags while still alive. The lobsters should be frozen immediately or at least euthanized before sealing the plastic.

    Response: The lobsters will not be frozen because of the concern that the organs may rupture and contaminate the muscle portion of the lobster that will be analyzed. This is referenced on page 6-48 of the following USEPA document: Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume 1, Fish Sampling and Analysis, Second Edition. EPA 823-R-95-007. September 1995. The guidance does not specifically indicate that lobsters should be euthanized prior to packaging. However, euthanization is not preferred because the internal organs will begin to break down and could contaminate the muscle samples. Note that the intestines will be removed from the lobster tail prior to analysis.

11. **Comment:** Sex and weight of each lobster should be recorded in the field log.

    Response: The sex and carapace length of the lobsters will be recorded in the field book. The weight of the muscle from each lobster will be recorded by the laboratory. However, the weight of the whole lobsters will not be recorded because this information is not required as part of the monitoring program.

12. **Comment:** Indicate the anticipated minimum number of lobsters needed for a sample.

    Response: The minimum number of lobsters (3 to 10) required for analyses is presented in Section 5.1.3 of the interim offshore monitoring plan.

SOP Number 1.04, Techniques for Vacuum Extraction of Sediments from Pore Water

13. **Comment:** Please indicate what analyses/tests will be conducted with water extracted by this method.

    Response: The analyses that will be conducted with the porewater are indicated in Table 6-3 of the interim offshore monitoring plan.

14. **Comment:** Indicate whether pore-water is to be extracted on-site, or at a laboratory. If the latter is the case, state conditions under which sediments should be transported/held prior to pore-water extraction (e.g., under nitrogen, acidified, freezing/cooling, etc.). Also, indicate limits on holding/transport time (ideally, less than 24 hours).

    Response: Field extraction of the porewater is no longer being considered. The porewater will be extracted at the laboratory for the reasons presented in Section 5.1.1 of the interim offshore monitoring plan. Please see the laboratory SOP (SOP F10.9) for extraction of porewater.

15. **Comment:** Indicate minimum quantities of pore-water needed for each type of sample.

    Response: The volume requirements are presented in Section 6.0 (Table 6-3) of interim offshore monitoring plan.

16. **Comment:** Indicate which, if any, samples should be acidified, frozen and/or stored under nitrogen. Briefly describe methods for achieving the desired conditions.

    Response: The samples will not be preserved in the field. Section 6.0 (Table 6-3) of the interim offshore monitoring plan and the laboratory SOPs present the storage and handling methods that will be used.

17. **Comment:** Indicate limits on holding times for pore-water samples.

Response: The holding times for the porewater samples are presented in Section 6.0 (Table 6-3) of the interim offshore monitoring plan.

SOP Number 1.05, Centrifiguation/Vacuum Extraction of Porewater Samples

18. **Comment:** Please indicate what analyses/tests will be conducted with water extracted by this method.

    Response: The analyses that will be conducted with the porewater are presented in Table 6-3 of the interim offshore monitoring plan.

19. **Comment:** Indicate what force (g) should be achieved with the 2500-rpm spin. Also, indicate the size of the centrifuge head that will be needed.

    Response: This porewater extraction method is no longer being proposed. Please see the laboratory SOP (SOP F10.9) for extraction of porewater and a discussion of the centrifugation of the porewater after it is extracted from the sediment.

20. **Comment:** Indicate the total volume of pore-water that will be needed for each sample.

    Response: The volume requirements are provided in Section 6.0 (Table 6-3) of the interim offshore monitoring plan.

21. **Comment:** Pore-water samples collected for chemical analyses are to be acidified to pH<2.0 (Step 4a.2). If the pore-water sample is to be used for toxicity tests, it should be frozen instead.

    Response: Section 6.0 (Table 6-3) of the interim offshore monitoring plan and the laboratory SOPs present the handling methods that will be used. Porewater samples will be frozen prior to toxicity tests in accordance with the laboratory SOP (SOP F10.9.) for extraction of porewater.

22. **Comment:** Filtration may result in the loss of some dissolved contaminants through sorption onto the filter. Consequently, a subset of nonfiltered samples should be collected as controls, at least for a fraction of the samples.

    Response: This porewater extraction method is no longer being proposed. Please see the laboratory SOP (SOP F10.9) for extraction of porewater.

23. **Comment:** It is not clear whether the pore-water extraction and sample storage require an inert atmosphere. If so, provide instructions.

    Response: The porewater extraction and sample storage will not be conducted in an inert environment.

24. **Comment:** One general concern about the method(s) used for pore water extraction is that results obtained from the various analyses/tests of extracted material be as comparable as possible. If possible, one extraction method should be used for all samples. MEDEP recognizes that such may not be feasible. However, if it can be done, it should be done.

Response: Agree. As provided in Section 5.1.1 of the interim offshore monitoring plan, one extraction method is being proposed. Please see the laboratory SOP (SOP F10.9) for extraction of porewater.

U.S. EPA COMMENTS DATED AUGUST 11, 1999
SAMPLING AND ANALYTICAL STANDARD OPERATING PROCEDURES FOR ROUNDS 1 AND 2 OF THE INTERIM OFFSHORE MONITORING FOR OU4

1. **Comment:** The SOPs (for sampling) submitted were SOPs from the U.S. Fish and Wildlife Service. These SOPs are being used for several other sites in Region 1. EPA has a cooperative agreement with the Fish and Wildlife Service regarding the use of these SOPs. These SOPs will yield acceptable data, but the data will have to be carefully scrutinized and validated in order to fully understand the results. EPA does note that the congener-specific PCB analysis must include the 12 World Health Organization congeners.

   Response: The 12 WHO congeners (PCB 77, PCB 81, PCB 126, PCB 169, PCB 105, PCB 114, PCB 118, PCB 123, PCB 156, PCB 157, PCB 167, PCB 189) was added to the list of analytes, and Section 3.1.2 (Table 3-2) of the interim offshore monitoring plan has been revised accordingly.

SEACOAST ANTI POLLUTION LEAGUE (SAPL) COMMENTS DATED AUGUST 21, 1999 ON SAMPLING AND ANALYTICAL STANDARD OPERATING PROCEDURES FOR ROUNDS 1 AND 2 OF THE INTERIM OFFSHORE MONITORING FOR OU4

1. **Comment: General Comment.** We have many of the same concerns and questions expressed by the Maine Department of Environmental Protection (MEDEP) in their August 9, 1999, comment letter. Rather than duplicate these comments, we state our concurrence with the MEDEP comments and look forward to the Navy's response.

   Response: Comment noted. Please refer to the Navy's responses to the MEDEP comments above.

2. **Comment: General Comment.** The roles of the various parties involved and the decision-making processes are not readily apparent from the SOPs. For example, the sample collection SOPs (numbers 1.01 – 1.05) are identified as URI/GSC procedures, yet the Troubleshooting sections in each SOP say to contact the Tetra Tech NUS Field Oversight Leader. The analytical procedures appear to be the Geochemical and Environmental Research Group's (presumably the laboratory that will do the analysis). We assume that roles and decision-making authority will be spelled out in the Draft Final Interim Offshore Monitoring Plan, which will be reviewing in the next couple of weeks. Also, we recall revising Tetra Tech NUS's November 1996 Standard Operating Procedures Manual almost two years ago. Will any of the SOPs from the 1996 SOP manual be used during the interim offshore monitoring?

   Response: The information on roles is provided in Section 4.0 of the interim offshore monitoring plan.

   As provided in Section 5.0 of the interim offshore monitoring plan, several SOPs in the 1996 SOP manual will be used for the monitoring program.

3. **Comment: General Comment.** The Navy's cover letter identified the SOPs as pertaining to rounds 1 and 2. Will the SOPs be altered for subsequent monitoring rounds?

   Response: The SOPs are specific to the subcontractors that will be conducting the sampling and analysis for Rounds 1 and 2. The SOPs meet the requirements outlined in the interim offshore monitoring plan. If different subcontractors are used for subsequent rounds, different SOPs may be required. If different (or revised SOPs) are used for other rounds, the SOPs will be provided to the regulators and RAB for review.

4. **Comment: SOP 1.01, Intertidal & Subtidal Surface/Sediment Chemistry Sampling.** We note there are some differences in the current version of SOP 1.01 versus the one we reviewed in 1997 for the development of site-specific sediment partitioning coefficients for metals. The 1997 SOP specified coring, rather than grab samples, and stressed minimizing disturbance of the sediment sample. Why has the SOP been changed for the up-coming sampling? What are the potential effects on the analytical results if the sample is disturbed while using the grab sampler?

Response: The SOPs were modified to account for the larger volume of sediment that must be collected during the interim monitoring, especially for the round where sediment for the PRG development is collected. Based on the analytical parameters, AVS could be affected if the sample is disturbed, leading to lower AVS concentrations because the sample could be oxidized. To minimize this, the AVS samples will be collected from the 0 to 2 cm prior to the sample being homogenized.

5. <u>Comment:</u> **SOP 1.01, Intertidal & Subtidal Surface/Sediment Chemistry Sampling.** What is the accuracy of the global positioning system to be used to determine sample locations?

   Response: The accuracy of the GPS will be within 1 meter.

6. <u>Comment:</u> **SOP 1.02, Mussel Sampling and Processing.** If sediment samples are to be collected at the same sampling location as mussels, the sediment sample should be collected first.

   Response: Please refer to Response to MEDEP Comment 7.

7. <u>Comment:</u> **SOP 1.04, Techniques for Vacuum Extraction of Sediments from Pore Water.** The title of this SOP is a bit confusing. The steps outlined in Section IV indicate the pore water is extracted from the sediments, not the other way around. Please clarify. In addition, the procedure for filtering samples (Step 20 in Section IV) should be identified.

   Response: This SOP is no longer proposed for use. Please see the laboratory SOP (SOP F10.9) for extraction of porewater.

8. <u>Comment:</u> **SOP 1.04, Techniques for Vacuum Extraction of Sediments from Pore Water.** This is the only one of the five sampling SOPs to cite safety concerns. Because all the SOPs involve handling materials that may be contaminated with hazardous biological or chemical constituents, each SOP should touch upon safety concerns. It would also be appropriate to cite the Health and Safety Plan for the Interim Offshore Monitoring Program (currently in draft form) in each SOP as this document should address the physical hazards of sample collection, not just chemical and biological hazards.

   Response: This SOP is no longer proposed for use. Please see the laboratory SOP (SOP F10.9) for extraction of porewater.

9. <u>Comment:</u> **SOP 1.04, Techniques for Vacuum Extraction of Sediments from Pore Water, and SOP 1.05, Centrifugation/Vacuum Extraction of Porewater Samples.** The criteria for choosing one or the other of these SOPs should be clearly identified in the Interim Offshore Monitoring Plan. To reduce uncertainty regarding the comparability of analytical results, it would be preferable to use one SOP consistently.

   Response: Please refer to Response to MEDEP Comment 24.

FIELD SAMPLING STANDARD OPERATING PROCEDURES
INTERIM OFFSHORE MONITORING PROGRAM
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

The attached Standard Operating Procedures will be used to collect sediment, mussel, and lobster samples during the first two rounds of the Interim Offshore Monitoring Program at Portsmouth Naval Shipyard, Kittery, Maine.

- SOP 1.01 is for the collection of intertidal and subtidal surficial sediment samples
- SOP 1.02 is for the collection and processing of mussel samples
- SOP 1.03 is for the collection and processing of juvenile lobster samples

The following bullets present the sections in the Interim Offshore Monitoring Program that relate to the sampling activities:

- Section 5.1 – Technical Approach which includes the following:
  - Section 5.1.1 - Sediment Sampling
  - Section 5.1.2 - Mussel Sampling
  - Section 5.1.3 - Juvenile Lobster Sampling
  - Section 5.1.4 – Surveying
- Section 5.2 – Sample Identification System
- Section 5.3 – Sampling Handling and Management
- Section 5.4 – Equipment Decontamination
- Section 5.5 – Residue Management
- Section 5.6 – Field Documentation and Documentation Responsibilities
- Section 5.7 – Calibration Procedures and Preventative Maintenance
- Section 6.0 - Laboratory Sample Analysis Plan which includes the following:
  - Number of samples per round and media
  - Sample containers, volume requirements, preservation methods, and holding times

POINT OF CONTACT:

John W. King
URI/Graduate School of Oceanography
South Ferry Rd.
Narragansett, RI 02882-1197

I. OBJECTIVE

Collection of intertidal and subtidal surface sediments from either research vessels, or by hand for chemical and toxicological analysis.

II. NECESSARY MATERIALS AND EQUIPMENT

The materials and equipment required or available for sediment sampling may vary depending on the vessel used for sampling. The investigator should determine the deployment capabilities of the vessel to be used and the equipment available prior to planning the sampling event. The Smith-MacIntyre grab may be deployed from a vessel with suitable winches, and an A-Frame or Davit arrangement.

Additional equipment needed:

- 22' pontoon boat with davit, sponson, and electric winch, 40 H.P. motor
- 10' aluminum boat with oars and 5 H.P. motor
- Smith-MacIntyre (small) grab sampler (16 cm x 35 cm x 17 cm), stainless steel construction
- Smith-MacIntyre (large) grab sampler (30 cm x 30 cm x 17 cm), stainless steel construction
- Stands - for the grabs
- Lead weights - 4 lead weights for Smith-Macs
- Cocking bar for Smith-Macs
- Ekman grab (15 cm x 15 cm x 15 cm) with 10' trigger pole, stainless steel construction
- Respirator - if conditions dictate
- Standard safety equipment (i.e. - first aid kit)
- Stainless steel tubs - into which to homogenize sediment
- Titanium scoop and titanium sampling tools
- Buckets (2-3) - for rinsing
- Duct tape
- Tools - screw drivers, wrenches, hammer, other
- Sample containers
- Coolers with ice, or other means of cold storage
- Water-proof sample notebook
- Water-proof markers
- Suitable protective clothing (from weather as well as contaminants)
- Foul weather gear
- 2' x 8' x 1/2" plywood planks

- Boots
- Exposure suits (orange work suits) for winter sampling
- Gloves - appropriate gloves for suspected conditions
- Differential GPS for navigation and to locate stations
- Bathymetry unit for water depth

Whenever possible, back-up equipment should be carried on board.

III. METHODS

Subtidal Sampling

1. A 22' pontoon boat with sponson, heavy duty davit, electric winch and generator is used to deploy and recover the Smith-MacIntyre grab sampler. The bathymetry transducer is located adjacent to the davit and the DGPS antenna is mounted on top of the davit to obtain accurate depth and position information. A crew of three is needed to operate the boat and gear. The boat can operate in depths of $\geq$1m.

2. a) The grab sampler is deployed using the electric winch and davit off of the right rear quarter of the boat between the right pontoon and the sponson. It is cocked using the cocking bar in the grab stand, a safety pin is placed in the cocked sampler, the sampler is lifted clear of the stand with the winch and rotated clear of the deck with the davit. Once clear of the deck, the safety pin is removed and the grab is lowered to the bottom with the winch and it triggers and obtains a grab upon contact of the trigger feet with the bottom. After triggering the grab is retrieved and returned to the grab stand with the winch and davit.

   b) The top doors of the grab are raised and the grab is examined for quality. A successful grab fills the grab evenly to a depth of at least 10 cm and has an undisturbed sediment water interface. The overyling water is drained using a clean stainless steel "turkey baster", if necessary.

3. The top 10 cm of an undisturbed Smith-MacIntyre grab sample is sampled using a clean Teflon-coated titanium scoop for chemistry and toxicity analysis. Depending on sampling depth and grab size, multiple Smith Mac grabs are needed to collect a composite sample. A small portion of each grab is collected from the 0-2 cm interval using the Teflon-coated titanium scoop as soon as the grab is opened and the overlying water removed. This material is placed directly into a sample container for AVS analysis. The remaining surface material (0-10 cm) is collected from the grabs and placed in a clean stainless steel container. The sediment in the stainless steel container will be stirred with a titanium stirrer for 1 minute, and then subsampled into precleaned containers for organic, inorganic chemistry, and toxicity studies (if being conducted). Rinse the scoop and stainless steel container with alconox, distilled water, 10% nitric acid, distilled water, and isopropanol between samples. The grab sampler

is "washed-down" with seawater between samples and decontaminated with alconox, distilled water, and isopropanol between stations. The samples are stored on wet ice during collection, storage, and transport to the laboratory.

Intertidal Sampling

1. Intertidal stations can be sampled by walking to them at low tide. It may be necessary to use either plywood planks or an aluminum boat to provide a safe working surface on mud flats.

2. Stations that are exposed at low tide are sampled to 10 cm depth using clean Teflon-coated titanium scoops and the sediments composited in clean stainless steel bowls or containers. A small portion of sediment is collected from the 0-2 cm interval using the Teflon-coated titanium scoop. This material is placed directly into a sample container for AVS analysis. Sediment from 0-10 cm is collected from the same area as the sediment collected from 0-2 cm and is placed into the clean stainless steel bowl. The sediment in the bowl is mixed for 1 minute and then subsampled into precleaned containers for chemistry and toxicity studies. The scoops and stainless steel bowls are cleaned between samples with alconox, distilled water, 10% nitric acid, distilled water, and isopropanol.

3. A small Ekman grab with extension pole may be used for shallow locations ($\leq$1 m) that are not exposed at the existing tidal stage. Water is carefully drained off each grab, and samples are collected as in the subtidal sampling from the top using the Teflon-coated titanium tools. Decontamination (as in 2) will be done between locations.

IV. TROUBLESHOOTING

When using the Smith-MacIntyre grab in very soft sediments, it may be necessary to attach wood "shoes" to the landing pads. Untreated fir planks are used for this purpose. This is necessary to increase the sensitivity of the "firing" mechanism.

V. STATISTICAL ANALYSIS AND DATA USAGE

Not applicable.

VI. REFERENCES

None.

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I. OBJECTIVE

This document describes the methods used to conduct sampling of mussels (5 cm or larger) for assessment of chemical exposure. Mussels in the 5 to 6 cm range will be targeted for collection.

II. NECESSARY MATERIALS AND EQUIPMENT

- Boats (22' pontoon, 10' aluminum)
- DGPS unit
- Waders, gloves, scrub brush
- Oyster tongs, clam rakes (Teflon-coated)
- Smith-MacIntyre grab sampler
- Smith-MacIntyre stand, weights, and cocking bars
- Water-proof field book and markers
- Coolers with blue ice
- Aluminum foil
- 1 gallon plastic ziplock bags
- Dive gear (optional)
- Waterproof field book and markers
- Aquascope

III. SAMPLING METHODS

Intertidal Sampling Methods

1. Collect mussels by hand. Nitrile gloves will be worn during the handling of mussels.

2. Use oyster tongs to sample in shallow water (<1 m) if station has been inundated by rising tide. Tongs will be used to gently grab mussels and lift them from the sediment. Place mussels in clean stainless steel bowl prior to cleaning mussels.

3. Examine mussels to determine they are alive by attempting to pry valves apart. Discard mud-filled valves and mussels that can be opened by hand. Clean all mussels with a brush and sea water or potable water and measure and record the length of at least 25% of the mussels. Mussels in the 50-60 mm range are preferred. Larger or smaller mussels may be collected and retained, based on availability. The mussels will not idle in turbid water while cleaning.

4. The mussels will be placed in reclosable plastic bags. Label samples according to TtNUS protocol. Store either on ice for overnight shipment, or on dry ice for storage greater than 48 hours.

5. Decon tongs and stainless steel bowls with alconox, distilled water, 10% nitric acid, distilled water, and isopropanol between stations.

Subtidal Sampling Methods

1. Save any mussels obtained during sediment sampling. If mussels are abundant, then sample using Smith-MacIntyre grab sampler.

2. If mussels are not abundant, then use clam rakes to sample. Locate mussels using Aquascope. Rakes can be used in water depths up to 2 m. Rakes will only penetrate 10 cm into bottom sediment because mussels are epifaunal. Mussels will be placed into a clean stainless steel bowl prior to cleaning.

3. Repeat steps 3-5 in Intertidal Sampling Methods section.

IV. TROUBLESHOOTING

Consult TtNUS Field Oversight Leader (FOL) if not enough mussels can be collected.

V. STATISTICAL ANALYSIS AND DATA USAGE

Not applicable.

VI. REFERENCES

None.

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I. OBJECTIVE

Collection of juvenile lobsters (carapace length 30-60 mm) for assessment of chemical exposure.

II. NECESSARY MATERIALS AND EQUIPMENT

- Lobster boat and local captain
- DGPS unit
- custom lobster traps made from PVC-coated 1" x 1" mesh
- Lines and floats
- Bait
- Aluminum foil
- Ziplock plastic bags
- Waterproof field book and markers
- Dive gear (optional)

III. SAMPLING METHODS

Sampling Methods

1. Custom traps are small commercial traps (30" x 18"x 12") that have been modified as follows for the project: (1) blocked escape vent, (2) small 1" x 1" mesh, (3) 4 weights because of fast tidal currents, and (4) entry vents lowered 1.5" for small lobsters. Prepare custom trap arrays (3 traps per station) line, and float. Label floats with "NAVY", "PNS", and the MDEP permit number.

2. Bait traps and deploy them, record DGPS position.

3. Check traps regularly and empty lobsters into a clean plastic tub prior to size classification. Retain juvenile lobster in the 30-60 mm carapace length size range. Lobsters in the 50-60 mm range are preferred. All other lobsters will be returned to the water.

4. Juvenile lobsters will be cleaned using potable water and a brush, if necessary. The lobsters will not idle in turbid water while cleaning.

5. Each lobtser that is retained for chemical analysis will be measured, and the sex of the lobster will be recorded.

6. The lobsters will be wrapped individually in aluminum foil, placed in plastic reclosable bags, labeled according to TtNUS protocol, and placed on wet ice and shipped overnight or on dry ice for storage greater than 48 hours.

IV. TROUBLESHOOTING

Consult TtNUS Field Oversight Leader (FOL) if not enough lobsters can be collected at a station.

V. STATISTICAL ANALYSIS AND DATA USAGE

Not applicable.

VI. REFERENCES

None.