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NSY PORTSMOUTH
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LETTER AND U S NAVY RESPONSE TO U S EPA REGION I AND MAINE DEPARTMENT OF
ENVIRONMENTAL PROTECTION COMMENTS REGARDING DRAFT MEMORANDUM ON
SEEP SAMPLING AND SEEP IDENTIFICATION SITE VISIT SUMMARY NSY PORTSMOUTH
ME
11/22/1996
NAVFAC NORTHERN



DEPARTMENT OF THE NAVY

NORTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND

10 INDUSTRIAL HIGHWAY

MAIL STOP, #82

LESTER, PA 19113-2090

IN REPLY REFER TO

5090
Code 1823/FE

NOV 22 1996

Ms. Meghan Cassidy
Environmental Protection Agency
Region I
JFK Building
Boston, MA 02203

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

Subj: SEEP TECHNICAL MEMORANDUM FOR THE INSTALLATION RESTORATION PROGRAM, PORTSMOUTH NAVAL SHIPYARD, KITTERY, ME

Dear Ms. Cassidy/Mr. McLeod:

The U.S. Navy is pleased to submit to the U.S. Environmental Protection Agency Region 1 (USEPA) and Maine Department of Environmental Protection (MEDEP) our responses to:

- USEPA's Follow-Up Comments dated October 15, 1996 draft Memorandum On Seep Sampling and Comments on Seep Identification Site Visit Summary
- MEDEP's Follow-Up Comments dated October 8, 1996 draft Memorandum On Seep Sampling
- MEDEP's Comments dated October 24, 1996 Seep Identification Site Visit Summary

The Navy plans on finalizing the Memorandum on Seep Sampling on December 5, 1996 based on the enclosed responses and our previous responses.

If additional information is required, please contact Mr. Fred Evans at 610-595-0567 x159 or Ms. Marty Raymond at 207-438-2536.

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 Bldg 44
Attn: Marty Raymond
Portsmouth, NH 03804-5000

Sincerely,



FREDERICK J. EVANS, P.E.
Remedial Project Manager
By direction of the
Commanding Officer

Encl:

(1) Responses to USEPA's and MEDEP's Comments

Distribution:

NOAA (K. Finkelstein)
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**EPA FOLLOW-UP COMMENTS DATED 10/15/96
DRAFT MEMORANDUM ON SEEP SAMPLING
AND COMMENTS ON SEEP IDENTIFICATION SITE VISIT SUMMARY
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE**

Follow-up Comment 1: During the September site visit, approximately 17 seep areas were observed. This estimate does not take into account the number of small seep areas along the back channel which have never been sampled. Clarify how these seeps will be characterized. Seep locations 1004.4 and 1004.7 were previously identified but not detected during the site visit. In a summary provided by the Navy, location 1004.4 and 1004.7 were previously identified but not detected during the site visit. In a summary provided by the Navy, location 1004.4 is not intended to be included in future sampling because it "can only be seen at lowest tide". EPA feels that this location should be proposed and efforts should be made to locate and sample this location during the sampling event (proposed during expected monthly lowest tide).

The Navy also dropped location 1004.6 and 1004.7 since they are not associated with a known site. Provide additional rationale to support this assertion. These seeps could provide useful information and may be associated with sites yet to be investigated.

Follow-up Response:

The Navy believes the selected seeps will adequately characterize the seeps in the areas currently under investigation. We recognize additional seep sampling may be warranted for new sites and will note this in the plan.

For informational purposes, the low tide at the time of the site visit (September 26, 1996) was -1.1 ft, compared with the expected low tide ranging from -0.2 ft to -1.3 ft for the upcoming December 1996 seep sampling event. Also, the drive point will be used whenever possible. Please refer to attachment (1) for the proposed method(s) for installing the drive point(s).

Follow-up Comment 1: During the September site visit, it was agreed that dissolved samples should be analyzed for inorganics following centrifugation in contrast to filtration. The Navy should provide information as to where the centrifugation will occur.

Follow-up Response: The Navy agrees centrifugation of inorganic samples prior to preservation was discussed during the September site visit. Our suggestion was to centrifuge the sample in lieu of doing filtered and unfiltered samples. However, it was our understanding no decision was reached. We are willing to discuss this in more detail for future sampling events. However, we believe use of the drive points will also negate the need for filtered and unfiltered inorganic samples. As discussed in Attachment 1, the Navy is suggesting only filtered seep samples collected when a pit is dug to collect a seep sample.

Follow-up Comment 2: The Navy should maintain a photographic record of the seep locations to document any physical changes over time.

Follow-up Response: The Navy will attempt to make a photographic record of the seep locations to document any physical changes over time. However, photographs will be required to be cleared through PNS and may not be available for the seep sampling results report.

Follow-up Comment 3: Visual observations made during the site visit clearly indicate the abundance of blue mussels (*Mytilus edulis*) attached in seep areas. The presence and abundance of the mussels clearly supports the need to evaluate the contaminants from the seeps in relationship to their potential ecological risk to epibenthic organisms. This information may also indicate the need to sample mussels in association with seep areas as part of future ecological monitoring programs.

Follow-up Response: Agree. A qualitative evaluation will be included in the Seep Sampling Report. The plan will note this and specify visual documentation of blue mussels (and other biota). An evaluation will also be included in the contaminant fate and transport modeling report (Phase II evaluation when seep sampling results are available and ecological Preliminary Remediation Goals have been developed).

Follow-up Comment 4: The Navy does not intend to measure seep flow rates because they cannot relate the rates with any degree of accuracy to groundwater discharge rates. However, some data is better than no data in this regard. This type of information would be valuable to the proposed groundwater/surface water model.

Follow-up Response: In the draft work plan, the Navy proposed a simple method of using a bucket and timer to quantifying flow. Based on discussions during the May 30, 1996 RAB meeting the Navy agreed to only qualitatively assess flow rates due to the uncertainties in trying to quantitatively assess flow rates. The Navy will attempt to develop a method to measure seep flow rates during the December event following collection of representative samples for laboratory analysis.

Follow-up Comment 5: Consider taking some flow rates over at least one tidal cycle or more if possible. This would provide useful information for characterizing the average rate of net discharge of groundwater to the surface waters.

Follow-up Response: See response to Follow-up Comment 4.

General Comment: Please keep this office informed as to the schedule for seep/sediment sampling in order that we may provide field oversight.

Follow-up Response: The schedule groundwater and seep/sediment sampling was faxed to EPA and MEDEP on Monday, November 18, 1996. A copy of the schedule is also attached. Please note the seep/sediment sampling is scheduled from December 11, 1996 to December 14, 1996 which coincides with the lowest tides of the month. However, if time permits and if the seeps are accessible for sampling earlier than December 11, 1996 the Navy may take the opportunity sample the seeps at that time.

**MEDEP FOLLOW-UP COMMENTS DATED 10/8/96
DRAFT MEMORANDUM ON SEEP SAMPLING
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE**

MEDEP General Comments on Seep Sampling

Follow-up General Comment 1: It is the MEDEP's clear understanding that seep, sediment, and groundwater sampling will be conducted concurrently to the extent possible. It is the MEDEP's understanding that the Navy wishes to expedite the sampling effort and get the first event completed in November 1996. The MEDEP supports this schedule and will work to expedite any review that is required prior to the sampling event. Provided that the MEDEP receives a detailed workplan soon, the MEDEP will make every effort to meet the November sampling timeframe.

The MEDEP was told that the Navy delayed sending their responses on the Seep Sampling Report until after the Navy could determine whether the seep sampling devices proposed for use would actually work in the field. I could not, however, find any mention of the results of the pilot study in the Navy's responses and therefore cannot see any justification for delaying the issuance of the responses.

Follow-up Response: The Navy appreciates the MEDEP's efforts in expediting the Seep Plan. Extensive changes are being made to the Plan to accommodate regulatory agency requests, including incorporation of the seep identification visit, addition of more water quality parameters, addition of sediment samples and presentation of the seep sampling devices. This comment response letter addressing MEDEP follow-up comments must suffice for now since the Navy is trying to conduct the field effort before cold weather sets in. The field work schedule has been developed and the plans, which have been lagging, need to be completed. The revised detailed Seep Sampling Technical Memorandum will be issued on December 5, 1996, assuming concurrence on these responses. A "marked up" version could be submitted to the MEDEP and EPA if would be of assistance.

The effort to come up with an alternate seep sampling device for shallow seeps was not realized until the need became apparent during the seep identification site visit. Since that time, the Navy has been developing a new alternate device, which was only tested this week (the week of November 18th). The alternate seep device was successful in achieving low turbidities (refer to attachment 1).

MEDEP Specific Comments on Seep Sampling Responses

Follow-up Comment to Response #3: The MEDEP believes that the seeps should be analyzed for TPH (gasoline and diesel range), phenols, and TCL (Volatiles) plus Freon. It is our strong recommendation that these parameters be included in at least this first round of sampling. The objective of sampling the seeps is not exclusively to examine off-shore concerns, as the response suggests. The objective of sampling seeps is to determine if contamination is moving from onshore areas to offshore areas via seeps.

Follow-up Response: The seeps will not be analyzed for TPH (gasoline and diesel range), phenols, and TCL (Volatiles) plus Freon during the December sampling event. However, the Navy is willing to discuss whether these analytes should be analyzed during future sampling events.

Follow-up Comment to Response #5: The in-text table is not clear in its correlation of McLaren/Hart Station Numbers and URI Seep Station Numbers. Please clarify if possible. The Navy's response to EPA's General Comment #1 states that all eight of the stations sampled by UNH will be included. Only seven stations are included in the table. In the Navy's response to EPA General Comment #1 the text states that five seeps were sampled by URI in the fall of 1993. The table is unclear, but according to the table it looks like only two seep locations were sampled. A figure should accompany the revised table.

Follow-up Response: Agree that the table needs further clarification. Additionally, Seep 1005 needs to be added as the missing station from the UNH sampling. The table will also be expanded to show sampling dates and Cruise Numbers for URI sampling. For the URI sampling, it will be clarified that 2 stations were sampled at various times for a total of 5 collected seep samples. As requested, we have attached a figure showing all proposed seep sampling locations. Field sketches on a more magnified scale will be included as additional figures in the Seep Technical Memorandum. These figures will also include locations of seeps not currently slated for sampling.

**MEDEP COMMENTS DATED 10/24/96
SEEP IDENTIFICATION SITE VISIT SUMMARY
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE**

Comment 1: On September 26, 1996, the MEDEP located 15 seeps using Global Positioning System (GPS) equipment. The MEDEP provided Geographic Information Systems maps showing the GPS located seeps to the Navy and the EPA. The Selection of Seeps for Sampling map shows 29 seep locations. Obviously, the MEDEP did not GPS locate all the Seeps that were noted by the Navy, so we cannot verify those locations. Seep Locations 1006, 1007, and 1008 on the Navy map do not correlate with our GPS locations for the same points.

Response: The Navy appreciates MEDEP's effort to generate the Seep Location Maps and believes MEDEP's maps more accurately reflect Seep Locations 1007 and 1008. The MEDEP provided maps will be used to assist us in preparing the additional figures discussed in our response to MEDEP Follow-up Comment to Response #5 of October 8, 1996.

Comment 2: Please define "Reference Station" included in the Comments section.

Response: "Reference Station(s)" were determined by reviewing the seep locations with the Map D, Groundwater Elevations - Low Tide, and Map E, Groundwater Elevations - High Tide, of the Data Gap Report dated November 1995.

Comment 3: Seep Location 1012 may not be an appropriate background location given its proximity to the Jamaica Island Landfill. It may be useful to sample 1012, but we don't believe it should be called a background location.

Response: Reference Stations are not necessarily background locations. Please see our response to comment 2 above for selection of reference stations.

Comment 4: Seep Location 1014 should be sampled instead of, or in addition to, 1015. Location 1014 appears to be located near a filled area between two islands. Location 1014 may provide more useful information than 1015.

Response: No additional seep sample locations are planned at this time. To respond to the MEDEP request, Seep Location 1014 will be sampled instead of 1015. The plan will be changed to reflect this.

Comment 5: The Navy proposed centrifuging samples prior to analysis. The MEDEP agrees that this method is appropriate provided the Navy can provide a specific method for our review. It is the MEDEP's understanding that centrifugation is not capable of removing colloidal material, but may be able to remove suspended solids. Centrifugation must be done prior to acidification for inorganics analysis.

Response: The Navy does not plan to perform centrifugation of inorganic samples at this time. Please see our response to EPA Follow-up Comment 1 for additional information.

Comment 6: It is a little difficult to make out all the details of the sampling apparatus drawing. Would it be possible to provide a clearer drawing and details about how the Navy plans to use the apparatus.

Response: Figure 4-2 (pre-packed well screen) did not work in the field since the seep bypassed the device; this figure will be removed from the plan. Figure 4-3 is believed to adequately represent the device; the device is essentially a commercially available well drive point. The alternate device (tested the week of November 18th) is also a commercially available well drive point).

Comment 7: Please provide a schedule for submittal of a workplan and dates for field work. The MEDEP will provide oversight during field activities.

Response: Please see our response to EPA's General Comment.

ATTACHMENT
SUBJECT: SEEP SAMPLING PROTOCOLS

DATE: 20 November 1996

Background:

Previous investigators (at various locations) have conducted seep sampling by digging a small pit and allowing that pit to fill with water prior to obtaining a sample. The Navy believes this to be a poor method since it severely disturbs the sediment/pore water/seep matrix and artificially elevates the chemicals of concern as a result of increased suspended and colloidal sediment particles. As a result, when the sample is analyzed in a laboratory, resulting data do not provide a true measure of the seep or leachate water samples. Another method which was originally considered at PNS involved the use of a "pore water sipper." This technique employed a syringe-like device containing a filter which operated by inserting the sipper into the sediment and withdrawing the sample by the negative pressure generated by a plunger. This method however, did not generate enough sample volume to conduct all the analyses necessary for this investigation.

In order to develop methods more appropriate for the data collection activities necessary for PNS, the Navy has evaluated several alternate approaches. These included a 2-inch diameter PVC prepacked well screen; a 1-1/4 inch diameter stainless steel driven well screen; and a 4-inch diameter PVC sampling cell fabricated by the Navy out of commercially available materials.

Evaluation of Seep Devices:

Three seep sampling devices have been tested at PNS on two separate occasions. The first event occurred during the summer of 1996. At that time, the **prepacked well screen** was determined to be too difficult to install in the rocky matrix which surrounds many areas of PNS. This is primarily because the device requires excavation to be installed and typically this excavation is in saturated materials which easily collapse. Additionally, there are concerns presented by digging through the rock fragment substrates. Moreover, the seep bypasses the device rather than passing through it.

The **stainless steel well screen** was successfully deployed at two locations (the JILF and Jamaica Cove areas). The screen was easily installed by hammering it horizontally into the shoreline seep locations. Because there is a threaded end covered with a protective cap during installation, threaded PVC fittings which can aid in sampling can be easily added to the end. Turbidities ranging from 1 NTU to 10 NTU have typically been measured from samples taken from these devices. Flow rates as high as 1/2 gallon per minute have been estimated as well. The limitation to this driven well screen is that it requires a sloping shoreline to be installed and therefore might not work in shallow, flat areas nor should it be used in fine-grained sediments that result in excessive turbidities.

The **PVC sampling cell** developed by the Navy was designed to be used in applications where the slopes were too shallow to allow the installation of a drivepoint. The cell is meant to be gently pushed directly into the seep. Because the cell has a number of large holes drilled into it,

ATTACHMENT (1)

it does not appear to significantly modify the seep flow discharge. The sample is obtained by 1/4 inch diameter tubing which is directly attached to the sampling device by a hose fitting and is pumped by use of a peristaltic pump. During November 1996, turbidities of 4 NTUs were obtained from this device. The turbidity of the seep was checked as a control measure by carefully inserting the turbidity cell into the seep without disturbing the underlying sediment and four NTU measurements were also recorded. The flow rate of the peristaltic pump was varied from 300 to 700 ml/minute with no change in turbidity readings. There were two difficulties experienced with this device however. One limitation is that the device cannot be effectively pushed into gravelly or rocky matrices but is excellent for soft sediments. Another limitation was the difficulty in working with the sampling tubing at near freezing temperatures since the tubing becomes less flexible at lower temperatures.

Suggestions for Sampling

During November 1996, The Navy also evaluated where the best location was for obtaining a sample within a given seep. In some areas, significant erosion of the sediment occurs as a result of the seep. For example, at one seep, turbidities ranged from 1 to 100 NTU. In general, the seeps appear to be clearer as one moves farther shoreward away from the tidal flat areas.

If neither of the seep sampling devices are able to be used at a given location, a pit may be dug to obtain a sample. However, the sample will be filtered with a 0.45 micron filter prior to analysis. At locations where the pit method is used, no unfiltered samples will be collected since these samples would not be reflective of the actual seep water which is discharging to the nearshore marine environment for reasons discussed above.

Where tubing is required, dedicated teflon-lined tubing will be used. In addition, all sampling devices will be scrubbed with Alconox detergent, followed by a tap water rinse and finally a distilled water rinse prior to use in the field. All drive points will be left in place for future sample requirements. All sampling cells will be numbered and dedicated for a particular location and will be cleaned and stored at PNS for future sampling events.