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MEMORANDUM

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FROM: Matt Cochran, Project Manager

DATE: March 15, 1995

REFERENCE: CLEAN Contract Number N62472-90-D-1298
Contract Task Order Number 0129

SUBJECT: Final Letter Work Plan for Area A Landfill/Wetland Interface
and Downstream OBDA Sampling for
Naval Submarine Base-New London, Groton, Connecticut

On behalf of the United States Navy, Northern Division Naval Facilities Engineering Command, enclosed please find the **Final Letter Work Plan for Area A Landfill/Wetland Interface and Downstream/OBDA Sampling for Naval Submarine Base-New London, Groton, Connecticut** for your files. This document has been revised based on EPA comments dated March 8, 1995. The responses to those comments are attached to this memorandum.

If you have any questions regarding the work plan, please contact me at (412) 921-8418.

Very truly yours,

Matthew G. Cochran, P.G.
Project Manger

MGC/tak

cc: Mr. Roger Boucher, NORTHDIV (Letter only)
Ms. Kathy Trapp, Halliburton NUS (1 copy)
Mr. John Trepanowski, Halliburton NUS (1 copy)
Mr. Daryl Hutson, Halliburton NUS (Letter only)
Mr. Corey Rich, Halliburton NUS (1 copy)

FILE: CTO 0129

EPA Region 1 Comments and Halliburton NUS Responses to the Letter Work Plan for Area A Landfill/Wetland Interface and Downstream/OBDA Sampling Dated March 6, 1995

**Comment: Section 3.2.2.1
Macrolnvertebrate Sampling and Taxonomy
Page 7**

EPA recommends that you explain the purpose and rationale for the sampling with dip nets, the monthly Ponar sampling, and the four rounds of macrolnvertebrate sampling. For example, it is unclear whether these dip net and ponar samples are the same as the macrolnvertebrate samples. The workplan should include the sampling activity components to be cited from the reference, *Macrolnvertebrate Field and Laboratory Methods for Evaluating The Biological Integrity of Surface Water*, for review prior to implementation of the plan.

The total number of samples will be 120 for the benthic sampling (10 water bodies x 3 sample locations x 4 sampling months). Monthly ponar samples will be collected from three locations in each of the Downstream Area ponds and streams, in addition to one reference stream - not two as mentioned in the letter work plan. This results in a total of 30 monthly ponar sampling locations (10 x 3). The addition of 12 ponar QA/QC samples brings the final ponar samples to 132 and 2 dip net QA/QC samples to 22 (5 pond locations x 4 months sampling + 2 QA/QC samples). A table would be helpful in listing the sampling locations, number of discrete sampling stations, and the QA/QC sampling to be performed. The text should clarify that the sampling location is the water body and the sampling stations are discrete points within each sampling location. ASTM methods referenced in Sections 3.2.2.1, 3.2.2.3 and 3.2.2.4 should be included in the Reference Section of the document.

This section indicates that sampling will take place in mid-channel. The rationale behind this study is the sediment triad approach that correlates toxicity testing, chemical analysis, and benthic macrolnvertebrate survey results. Areas of deposition are likely to carry the highest chemical concentrations. Mid-channel areas may, in fact, harbor the most diverse population of invertebrates but may not be depositional in nature. If these areas do not coincide, EPA recommends that the sampling location be moved to include depositional areas.

Macrolnvertebrate data should be presented as numerical metrics and should include more than outlined in this section. EPA's *Sediment Classification Compendium (EPA 823-R-92-006) Chapter 8: Freshwater Benthic Macrolnvertebrate Community Structure and Function* identifies the following two functional and six structural metrics for lotic systems (streams) that must be considered:

- 1) Taxa Richness
- 2) Modified Hilsenhoff biotic index
- 3) Ratio of scrapers and filtering collectors
- 4) Ratio of EPT and Chironomidae abundances
- 5) Percent contribution of dominant taxon
- 6) EPT Index
- 7) Community similarity index
- 8) Ratio of shredders to total number of organisms

Response to Comment:

The purpose and rationale for sampling with dip nets, monthly ponar sampling, and the four rounds of macrolnvertebrate has been added. The subject reference has been addressed in section and will be reviewed prior to the sampling activity.

Table 1 has been revised to include sample locations. Field QA/QC samples were already listed on Table 1. Clarification has been added defining water bodies, sample locations, and sampling stations.

A discussion has been added to address targeting the sample stations in depositional areas as close as possible to mid channel.

The subject references have been added to the text as suggested.

**Comment: Section 3.2.2.2
Chemical Analysis
Page 8**

One round of sediment and surface water samples will be collected for laboratory chemical analysis from each of the 30 sampling locations (10 sampling stations x 3 sample locations). All 30 sediment samples will be analyzed for TCL pesticides, total organic carbon, and grain size. Total organic carbon and grain size are important components for normalizing data in the sediment triad approach and for calculating sediment quality guidelines for pesticides based on the equilibrium partitioning approach and site-specific total organic carbon.

Response to Comment:

Grain size and TOC have been added to the list of analytes as suggested.

**Comment: Section 3.2.2.3
Toxicity Testing for *Chironomus tentans* and *Hyallela azteca*
Page 9**

Within the document: *Methods for Measuring the Toxicity and Bioaccumulation of Sediment-Associated Contaminants* (EPA/600/R-94/024, June 1994), Section 11 outlines the recommended number of replicates as eight. In addition, Section 14 states that four replicates are the absolute minimum. EPA recommends five replicates for marine sediment tests and eight for freshwater sediment tests. We should discuss this issue - and its implications - very soon.

Response to Comment:

Clarification has been added to the text stating that eight laboratory replicate analyses will be performed for each sample.

**Comment: Section 3.2.2.3
Toxicity Testing for *Chironomus tentans* and *Hyallela azteca*
Page 9**

The text should be corrected to indicate that 10 sediment samples, not 11, will be collected, including 3 reference sediments, not 4.

Response to Comment:

Clarification has been added to indicate that eleven sediment samples will be collected for the required analyses.

Comment: Section 3.2.2.4

Frog Embryo/Larval Toxicity Test
Page 9

A total of 10 sediment samples, not 11, will be collected. Please correct.

Response:

Clarification has been added to indicate that eleven sediment samples will be collected for the required analyses.

Comment: CONCLUSIONS

Ultimately all these data points (sediment chemistry, benthic community analysis and sediment toxicity tests) will be evaluated to determine whether adverse ecological effects are occurring as a result of pesticide exposure. Once we have a better understanding of the locations that are responsible for adverse affects it may be necessary to perform serial dilution tests to determine a sediment clean up level along with calculating a sediment quality criteria based on site - specific total organic carbon.

Response:

This comment will be considered when the analytical results are received and data evaluation begins.