N00129.AR.000124
NSB NEW LONDON
5090.3a

ATLANTIC
ENVIRONMENTAL SERVICES, INC.

February 11, 1993

engineers
geologists
scientists

Mr. Andrew F. Miniuks
Geologist
United States Environmental Protection Agency
Federal Facilities Superfund Section
Region I
JFK Federal Building (HAN-CAN1)
Boston, MA 02203

RE: Phase II RI Work Plan
Naval Submarine Base - New London
Groton, Connecticut
Atlantic Project No: 1256-18

Dear Mr. Miniuks:

This letter was prepared on behalf of the Navy in response to your comments of January 8, 1993 regarding the Draft Phase II Remedial Investigation dated November 1992 and reflects our discussions during our phone conference on January 29, 1993.

Concurrent with your review, the Navy Environmental Health Center (NEHC) has commented on the draft work plan. Based upon the review by NEHC, several areas of the report will be clarified and or justified, and a new exposure pathway will be added to the risk assessment. The new exposure pathway will address consumption of shellfish and/or fish from the Thames River.

Our responses to your comments are attached and are numbered to correspond to your comments.

Should you have any specific questions please feel free to contact me or Deborah Stockdale.

Sincerely,

ATLANTIC ENVIRONMENTAL
SERVICES, INC.

Barry Giroux

Barry L. Giroux
Project Manager

Paul Burgess

Paul Burgess, P.E.
Principal

BLG/PB:js

cc: Deborah Stockdale - NORDIV
William Mansfield - NSBNLON

P.O. BOX 297 188 NORWICH AVENUE COLCHESTER, CONNECTICUT 06415 (203) 537-0751 FAX (203) 537-6347

NAVY RESPONSE TO EPA COMMENTS (JANUARY 8, 1993) ON DRAFT PHASE II REMEDIAL INVESTIGATION WORK PLAN (NOVEMBER 1992)

PROPOSED WORK PLAN

GENERAL COMMENTS

1. TBC is an acronym for "to be considered." TBCs are non-promulgated advisories or guidance issued by Federal or State government that are not legally binding and do not have the status of potential ARARs. The most significant TBC regarding this project are CTDEP's soil cleanup guidance values. TBCs will be used primarily as a screening tool to identify potential areas of concern. In addition, TBCs will be considered along with ARARs and the risk assessment in determining remedial action objectives. The work plan text will be revised to include the above discussion regarding TBC.

2. Site-specific analytical methods will be highlighted in the tables provided in the laboratory QA/QC plan and text will be checked to insure consistency.

3. Site-specific methods and their quantitation limits for dioxins and radiological parameters will be clarified in the text.

4. The work plan will be revised accordingly.

5. Attachment 1 to these comments are proposed data reporting sheets. The summary tables will be presented in the body of the report and the comprehensive data reports will be included in the appendix.

   Regarding field screening, qualitative results such as those from the photoionization detector will be shown in boring or sample logs. Quantitative results (XRF and GC) and soil gas data will be summarized in the body of the report with complete results tabulated in an appendix.

   Complete data packages for any analytical results will be available upon request of a reviewer. For CLP parameters, the data packages will be adequate to allow EPA Level IV data validation.

6. The inhalation pathway has been evaluated for all of these constituents in the risk assessment conducted during the Phase I RI. In the human health risk assessment, we addressed the inhalation pathway for exposure to fugitive dust for all appropriate receptors. Based upon surficial soil data and PM10 information, the exposure point concentrations for

dust were calculated. Conservative exposure assumptions were used in the calculation of risk to receptors at the site. Even under these conservative conditions, all of the carcinogenic risks and non carcinogenic hazard indices calculated for receptor exposure to site contaminants found in dust resulted in de minimus health risks. However, as we discussed, air monitoring for these constituents during any remediation activities, as part of a health and safety plan, may be warranted and will be considered at that time.

7. This information is provided in the Phase I RI Report. Rationale for sample selection based on Phase I RI results are indicated in Section 7.0 of the work plan. This comment and several subsequent comments either request detailed data previously presented in the Phase I RI Report be repeated in this work plan (e.g., present all previous data) or request presentation in the work plan of items that will be produced from implementation of the work plan (e.g., provide a bedrock contour map). If the Phase I RI Report had not been prepared, we agree that all available data should be presented in the work plan. However, we have summarized the findings of the Phase I RI Report in this work plan and have referred to the Phase I RI Report for details. Listed below is a summary of comments in these categories.

   - **General Comment 12:** Provide ground water elevation maps.
   - **General Comment 13:** Provide a discussion of release mechanisms.
   - **General Comment 21:** Include specific values for the exceedance of the ARAR/TBC values.
   - **General Comment 23:** Include a discussion of the restrictions imposed by each location-specific ARAR.
   - **Specific Comment 3:** Include a summary tabulation and data interpretation narrative of previous analytical results.
   - **Specific Comment 63:** Provide maps showing ground water elevation, bedrock elevation and extent of contamination.

   Phase I information was summarized in the work plan. It could be repeated in the work plans, however, its inclusion provides no constructive use as it is readily available in the Phase I report. More importantly, providing any of the requested information that is out of the scope of the existing contract will delay the start of field work due to contractual requirements. In the responses that follow, we have indicated when the requested information is provided in the Phase I RI Report or where we feel it is a product of this work plan.

8. The investigation work plans for these two sites are presently being prepared. It is our intention to include these in the final work plan. The work plan for these sites will be submitted for review when completed. They were not included in this version of the work plan as a contract modification could not be completed in time to allow their inclusion.

9. All references to background will be qualified as suggested.

10. We agree that sampling activities at all sites should be optimized by evaluating these sites in relationship to each other. Plate 1 (Field Sampling Plan - Area A) was prepared for this purpose. This plate shows all existing and proposed sample locations and the ground water flow direction. We do not agree, however, that consolidating the investigation and changing the designation of operable units is appropriate at this time. The current site designations allows the work plan to address the perceived risk and contaminants at each site, which are different, in an organized manner.

11. Evaluation at the Pistol Range under CERCLA is presently under negotiation as part of the FAA between EPA, CTDEP, and the Navy. The Navy will comply with the final FAA.

12. These are provided in the Phase I RI Report and the interpreted direction of ground water flow is indicated in the work plan.

13. As we discussed during our phone conference, Section 3.0 does include a conceptual site model, a summary of contaminants detected (which includes source areas) and an evaluation of potential migration pathways of chemicals in the environment. Minor revisions will be made to the text to clarify source areas. Potential receptors are identified in Sections 4.0 and 5.0 regarding human health and ecological risk assessment. Release mechanisms were presented in Section 5.0 of the Phase I RI Report and have been summarized in the work plan.

14. The work plan will be revised to include development of a base-wide bedrock elevation map. Elevations to construct this map will be from existing and proposed borings/wells, bedrock outcrops, and available borings from Navy files. As this database will provide a large number of data points, we are not proposing seismic refraction surveys. We will have enough bedrock elevations to adequately construct a bedrock contour map.

15. Appendix C will be modified to include more detail regarding the derivation of risk-based remediation levels and a table will be included in this section which provides chemical-specific ARAR values.

16. The work plan text will be clarified to make it clear that constituents being tested are from the CLP, TAL and TCL whenever appropriate. This clarification, for example, will make it understood that when we specify VOC, we mean all VOC listed in the CLP TCL.

17. We have excluded several CLP parameters from the scope of this work plan based on an evaluation of Phase I results. As the Phase I database is fairly extensive, we feel the exclusion of these parameters from further testing is justified. Approximately 32 sediment samples were collected during Phase I in Area A and analyzed for all CLP parameters and an ecological risk assessment was performed. Based on this extensive sampling and the risk assessment, the only concerns identified with sediments was regarding DDTR concentrations. The purpose of the Phase II work is to define the extent of this contamination and the risk it presents; not to determine if Area A may be contaminated

with other hazardous constituents. The work plan will be revised to include analysis for TOC and grain size in all sediment samples. The work plan presently requires analysis of hardness; however, the text will be clarified regarding this analysis.

18. The Navy did consider use of the Connecticut Arboretum as a background sample location. However, we decided that sediment and surface water should be collected upstream for background determination. Regarding soil samples, it was decided that these samples should be collected on the base or as close to the base as possible in similar soils. Based upon TRC comments, proposed background soil sample locations have been revised to move three sample locations offsite as shown in Attachment 2.

19. There are several issues brought up in this comment. To address a few of these issues, the following modifications will be made to the work plan.

    - A table providing chemical-specific ARARs will be added to the work plan.

    - A table containing remedial technology data requirements which will include rationale regarding parameters selected on a site-specific basis will be included in the work plan.

    RAO regarding ground water at a few sites (DRMO, Goss Cove and Lower Subase) were not presented as the Navy does not feel it is an objective to remediate these areas to provide potable water and as the contaminant levels do not appear to be having an adverse impact on water quality in the Thames River. As stated previously, ground water is not a potential source of drinking water at DRMO, Goss Cove and Lower Base due to salt water intrusion. However, as the effects on the Thames River have not been verified, the remedial action objectives will be revised to include ground water remediation as necessary to protect water quality.

20. The text will be revised to clarify that screen placement did consider the different physical characteristics and mobilities of the contaminants at each unit.

    The work plan will be revised to include the installation of one bedrock well at Bunker A-86. If ground water is present in the overburden at the location of the bedrock well, a nested well will be installed in the overburden.

21. This data is presented in the Phase I RI Report; however, we will provide a table showing chemical-specific ARARs in this report.

22. A table containing remedial technology data requirements will be provided. This table will be site-specific and include rationale regarding selection of specific parameters.

23. This discussion regarding location-specific ARARs is provided in the Phase I RI Report.

24. Appendix C will be modified to provide the requested information.

25. SOPs will be prepared for the following activities:

- field analysis for PCB and DDTR using GC methods
- field analyses for lead using XRF methods
- air sampling for VOCs using EPA Method TO1

SPECIFIC COMMENTS

1. A purpose and scope section will be added to the work plan.

2. The figure will be included to show the location of the Former Incinerator/Berth 16, Pier 33 sites and Area A downstream. The fuel farm is not part of the RI at this site, and therefore will not be shown. Information regarding contamination at this site will consist of a reference to the appropriate report.

3. This information is provided in the Phase I RI Report. A summary of contaminants detected and site-specific geology was provided in the work plan.

4. No EPA comment provided.

5. Figure 2-8 shows the inferred ground water flow direction. No data is available to prepare a ground water contour map at this location.

6. This issue has previously been discussed several times. Each time the Navy, EPA and CTDEP agreed that classification of the CTDEP guidelines regarding soil remediation as a TBC is appropriate.

7. EPA and CTDEP will be provided with copies of the GZA report. Samples are proposed to be collected from 7MW5D and will be used to confirm the GZA results.

   The Navy has not proposed sampling for dioxin at this site as no dibenzofuran were detected during the Phase I RI and chlorinated materials were not burned at this site. Further detail regarding this issue is presented in the responses to Comment 51 below.

8. The work plan will be revised to include all available information regarding collection of these samples. As the purpose of this sampling was to determine whether structurally unsuitable soils removed during a construction project were contaminated, any available information is limited.

9. The reference to background levels will be removed.

10. Phase I data will be re-evaluated in light of the new MCL for cadmium. The table of chemical-specific ARARs in the work plan will include this new value.

    This table (chemical-specific ARARs) will include the EPA DWEL of 20 mg/l and the

CTDOHS notification level of 28 mg/l for sodium.

11. This revision will be made.

12. Manhole MH-83 will be shown in Figure 2-15.

13. This figure will be revised to show the potential for fill directly in contact with bedrock.

14. Figure 3-2 will be modified to show source areas and the potential transport pathway to bedrock. The transport pathway to sediments and surface waters is shown.

    Figure 7-4 will be revised to show drainage lines. It is not feasible to show the information in Paragraph 2 of this comment in a conceptual diagram.

15. We will revise this figure to better depict the bedrock surface. As this is a discharge area, bedrock contamination is only possible in the eastern portion of this site, and any such contamination will be localized and quickly discharged to the overburden. Deep overburden wells have been provided to detect any such contamination.

16. The work plan will be revised to reflect this fact.

17. The location of those sites will be added to this figure.

18. We will revise the text of the work plan as follows: "The risk assessment will provide estimates of potential risks to human health. Risks will be estimated for representative groups...."

19. This comment is directed towards paragraph 4, not 5.

    We feel that it is premature to state the background concentrations at this point as they will be determined by additional sampling. However, we will revise the text of the work plan as follows: "Sampling is required for supplemental investigations at these Step II sites. The outcome of the sampling will dictate the final list of compounds of concern. Prior to implementation of this work plan, sampling and analysis to define inorganic concentrations in soils will be conducted. Background sampling is conducted to distinguish site-related contamination from naturally occurring or other non-site-related levels of compounds. In addition, compounds of concern will be selected for the Rubble Fill ....."

    In addition: 4.2.1 Evaluation of the Quality of Available Data (Page 70, ¶1)

    "The selection..... field blank concentrations (USEPA, 1992).

    USEPA, 1992. Guidance for Data Useability in Risk Assessment (Part A). Office of Emergency and Remedial response. 9285.7-09A.

20. We will present the compounds of concern as media specific in the work plan.

21. We will revise the text of the work plan as follows:

The compounds of potential concern are those judged to be important site-related contaminants with regard to potential human health risks. Selection of compounds of potential concern was made based on a review of available data and consideration of the following criteria:

- Only compounds for which positive data (i.e., analytical results for which measurable concentrations are reported) were available in at least one sample from each medium were considered as compounds of concern for the site. If there were no positive data and information existed to indicate that the compound was present (e.g., fate and transport characteristics of the compound, or detection of the compound in other media) then that compound was included.

- The quantitation limit of a compound must have been less than corresponding standards, criteria, or concentrations derived from toxicity reference values.

- The presence of an inorganic compound was at concentrations above its natural range of elemental abundance (Shacklette and Boerngen, 1984).

- The spatial extent of contamination was considered by the evaluation of the selection of sampling locations, presence of potential hot spots and a sufficient number of samples collected over the time frame of the investigation.

22. We will revise the text of the work plan as follows: "The identification of exposed populations and exposure routes under current and future land conditions will be explained and justified in the Phase II Remedial Investigation risk assessment report. Future receptor at the sites include: workers....."

23. Table 4-2 will be revised to reflect EPA's comments.

24. The exposure equations in this section of the work plan will be revised.

We will revise the text of the work plan to read:

"Exposure assumptions used in the calculation of average daily doses will be developed based on discussions with USEPA Region I personnel and guidance presented in: 1) *Supplemental Guidance to Risk Assessment Guidance: Standard Default Exposure Factors* (1991); 2) *Risk Assessment Guidance* (USEPA 1989); 3) *Dermal Exposure Assessment: Principles and Applications* (USEPA 1992); 4) Region I specific guidance; and 5) the *Exposure Factors Handbook* (USEPA 1989).

25. Although we do not agree with EPA, we will change the text of the work plan as follows:

As reference doses for phenanthrene and acenaphthylene are not available, following Region 1 guidance, the RfD for naphthalene will be used as a surrogate RfD for the noncarcinogenic PAHs which do not yet have verified RfDs.

26. Although we discussed this point with EPA, we are not satisfied with the explanation. It is agreed that the most sensitive population to the adverse health effects of lead are children and that the IU/BK model was derived for evaluation of lead exposure in children, however, by adjusting the input parameters to reflect adult pharmacokinetic data, a similar approach can be used to evaluate lead exposures in adults. By eliminating this receptor group, a potential risk might go unnoticed. We will contact toxicologist Anne Marie Burke at Region 1 for discussion of this point.

27. We will revise the text of the work plan as follows:

"...until further guidance is recommended. For dermal exposures from soils, the percentages of 2,3,7,8-tetrachlorodibenzo-p-dioxin, 3,3,4,4-tetrachlorobiphenyl and cadmium absorbed are 0.1-3%, 0.6-6%, and 0.1-1.0%, respectively (USEPA 1992). For the percentage of other compounds absorbed through the dermal route from soil, EPA Region 1 will be contacted. For estimating the dermally absorbed dose per event from water, the permeability coefficient from water through skin (cm/hr) can be obtained from Table 5-7 in the dermal guidance document (EPA, 1992). If there are no published values for specific compounds, the default value of 10^{-3} cm/hr will be used for an inorganic compound. For absorption of organics from water, the partition coefficient between octanol and water will be used as determined first, from Table 5-7 or second, from other databases".

NOTE: This paragraph should also be added to the dermal guidance for noncarcinogenic effects. (Page 82, ¶3).

28. The text of the work plan will be changed to include the current CPF for benzo(a)pyrene as follows:

"As per EPA Region I guidance, the EPA-derived cancer potency factor of 7.3 $(mg/kg/day)^{-1}$, or the most current CPF will be used as a surrogate for all polyaromatic hydrocarbon carcinogens until further guidance is recommended.".

We will be presenting the relative toxicity equivalent factor approach to provide a complete picture of potential risks due to exposures of receptors to carcinogenic PAHs. Since Region I is adamant about its inappropriateness, we would like to present this approach in the uncertainty section.

29. The work plan will be revised to include analysis of earthworms exhibiting sub-lethal effects as well as healthy earthworms. The first sentence on page 99, paragraph 3 will

be amended as follows:

Introduced Earthworm Bioaccumulation: After 28 days, the remaining living earthworms and approximately 0.5 kg of soil will be removed from the site chambers for five of the bioassay stations.

The substrate for the reference earthworm bioassays will be revised. The fourth sentence in paragraph 2 on page 99 will be amended as follows:

A reference chamber is also employed using an artificial soil composed of sterile silica sand (68%), kaolin clay (20%), peat moss (10%), and pulverized calcium carbonate (2%) as substrate (Callahan and Wilborn, 1988).

The reference is:

Callahan, C.A. and D.C. Wilborn, 1988. Earthworm Toxicity Test for Solid Waste and Superfund Sites, Health and Environmental Review Division, Office of Solid Wastes, Office of Hazardous Wastes/Superfund, Environmental Protection Agency, Washington, D.C.

30. Earthworms were chosen for the sediment bioassays to provide a cost effective survey in terms of time and equipment. The sediment bioassays can be performed at the same time using the same equipment as the terrestrial earthworm bioassays.

The earthworm bioassays are intended to provide an indication of the toxicity of the sediments to biological systems in general, not to a particular organism. Earthworms may be used as a surrogate organism in this manner because they are sensitive to the primary contaminant in the sediments, DDT isomers, and they are known to bioaccumulate it.

The sediment bioassays will occur concurrently with chemical analyses, terrestrial earthworm bioassays, and with sediment sampling for benthic organisms. Therefore, there will be a basis of comparison among contaminant concentrations, results of the soil and sediment bioassays, and the benthic analyses. The results of these different methods will provide a weight of evidence as to the toxicity of the sediments.

Lumbricus terrestris have been used for toxicity testing in a wide range of moisture conditions including total submersion. Mac et al. (1990) performed bioaccumulation assays with freshwater sediments using *L. terrestris*. They chose this organism as a surrogate for freshwater benthic organisms because of its size and its physiological similarity to aquatic organisms. The size is an important factor because larger organisms provide more mass for chemical analysis. Physiologically, earthworms need a moist environment for respiration and excretion functions which make them similar to aquatic organisms.

One of the problems with using earthworms for toxicity testing in media with greater than optimum moisture content is the depletion of oxygen during the test rather than the presence of excess moisture (Callahan, C.A., personal communication, 1993). Since the sediments to be tested are expected to be aerobic, this is unlikely to represent a problem during the test. Frequent observations will be made during the bioassay to ensure that the worms are burrowing into the sediment and that their exposure is more representative of organisms living in the medium. If the sediment is too moist or too rocky and the worms don't burrow into it, it will be mixed with a known amount of artificial soil.

Mac, M.J., Noguchi, G.E., Hesselberg, R.J., Edsall, C.D., Shoesmith, J.A. and J.D.Bowker, 1990. A bioaccumulation bioassay for freshwater sediments, Environmental Toxicology and Chemistry, Volume 9, pp. 1405-1414.

31. Page 100, ¶ 4 of the work plan will be revised to indicate the species of frog collected. The following sentences will be added to this section after the first sentence:

    The species of frog will be recorded. The collection effort will focus on year-round resident species such as Green Frog. This species was observed in Area A during previous work at the site in April 1990.

    What is now the second sentence in this section will begin a new paragraph.

32. The work plan will be revised to indicate that the Hilsenhoff Biotic Index will be used to assess the relative health of the aquatic communities. The following sentences will be inserted after the second sentence in ¶ 5 on page 101:

    In addition, the Hilsenhoff Biotic Index will be calculated for each sampling station. Information will be obtained from the Connecticut DEP regarding the use of this index in Connecticut and tolerance values assigned to particular taxa in this geographic area.

33. The reference to the Federal Manual for Identifying and Delineating Jurisdictional Wetlands on page 102, paragraph 1 will be changed to 1987, rather than 1989.

34. Table 5-2 on page 105 will be revised to include the analysis of the two upriver (upgradient) water samples for pesticides.

35. Page 108, ¶3 under Section 5.3.4.4 will be revised. The fourth sentence of this paragraph will be revised to read:

    At the end of the deployment period, the oysters will be shucked immediately and frozen. Samples will be delivered frozen to the analytical laboratory.

    The following sentence will be added at the end of the paragraph:

    Sampling holding times will conform to CLP protocols.

The tissue samples will be analyzed for VOCs by a modified Method 8240. In place of a purge and trap method, the tissue is first sonicated with a small amount of reagent water. The VOCs driven from the sample in this manner are then captured in a liquid nitrogen cold trap. From this point on, the analysis follows standard GC/MS methods. Sample handling is kept to a minimum with this method

The work plan will be revised to provide the rationale for using oysters rather than mussels as the test species. The following will be inserted on Page 108 after the first sentence of the third paragraph under Section 5.3.4.4:

Oysters will be used as test organisms rather than mussels (the organisms traditionally used in this type of test), because oysters are more tolerant of variations in salinity. There is a salinity gradient with depth in the Thames River near the subase and the use of oysters as test organisms will allow the cages to be placed in shallower, less saline water, if necessary.

36. This section gave the mistaken impression that the contaminants of concern have been chosen for the site. The second, third, and fourth sentences of Section 5.4.1 will be replaced with:

The previous investigation performed for Area A provides a preliminary list of contaminants of concern identified at the site. This list will be amended depending on the results of the analyses conducted under this work plan.

The first bullet in this section will be revised as follows:

- Concentration in sediments, surface waters, and ground water that may discharge to the Thames River. Concentrations of contaminants in Area A surface soil, sediments, surface water, and ground water.

37. A new section (Section 5.5.2.2) will be added on page 113 of the work plan to discuss exposure assessment to inorganic contaminants. The existing Section 5.5.2.2 will become Section 5.5.2.3.

Section 5.5.2.2 <u>Estimating Exposure in Soils and Sediments from Inorganic Contaminants</u>

Direct measurements of concentrations will be used to estimate exposures to inorganic contaminants in soil and sediments. These will be used on a location by location basis.

For Area A soils and sediments, inorganics with concentrations greater than background (as determined in a separate on-going study) will be treated as contaminants of concern. Soil concentrations will be compared to available information on phytotoxicity and soil invertebrate toxicity data on a location by location basis. Sediment concentrations will be compared with toxicity benchmarks developed by Long and Morgan (1990).

Exposure of benthic organisms to inorganic contaminants in Thames River sediments will be assessed via comparisons with upstream and downstream concentrations, literature concentrations for the Thames River estuary in particular and urban estuaries in general, and Long and Morgan data.

38. The following sentence will be added as the second sentence to the last paragraph on page 118:

    For non-polar organic compounds for which no EPA sediment criteria are available, the Equilibrium Partitioning approach will be used to calculate sediment based on EPA and/or Connecticut water quality criteria.

39. We will screen the Phase I data regarding any recent changes in ARARs and revise this section of the report as necessary.

    A table containing the most recent chemical-specific ARARs will be provided in the work plan and we will clarify that it is our intent to use the most recent ARAR data to evaluate all Phase II data.

40. Please refer to our response to Comment ~~5~~ 6 above.

41. Please refer to our response to General Comment 19 above.

42. This revision will be made.

43. Please refer to our response to General Comment 20 above.

44. The engineering characteristics will be revised to include pH.

    For the materials believed to be present, consolidation tests do not appear to be necessary. Standard penetration tests will be performed for borings in this area. The results of the penetration tests along with the parameters proposed will be adequate to predict the ability of soils in this site to support heavy equipment or a cap.

    The work plan will be revised to include a task to identify the extent of fill based on visual observations.

45. Sample 2WSW13 was proposed for this purpose. Its location and designation will be changed to location 4SW2.

46. As stated above, the extent of fill will be determined by visual observations and its depth will be determined by a soil boring. As we discussed, this will be adequate to determine the volume of fill.

    The work plan will be revised to include the collection of two additional surface soil samples.

47. This section will be revised to include as an objective, the determination of the extent of Otto fuel spillage; however, we don't feel delineation of PCB contamination is a goal of this investigation as PCBs have not been detected in ground water and only twice in soils at levels below 1 ppm.

48. This will be provided.

49. Inhalation is indicated as an exposure pathway in the risk assessment work plan.

50. Engineering parameters have been re-evaluated and a table will be provided containing our rationale. For the reasons presented below, we do not propose to add certain parameters:

- ***BTU*** - No free oil or other organic product contamination is present and organic content is being measured. Typically, soils have no significant BTU value.

- ***Porosity*** - This parameter can be estimated to the accuracy necessary for any calculations in which it may be used.

- ***Hydraulic Conductivity*** - *In situ* tests are proposed to measure this characteristic.

51. The torpedo shops were listed in our previous response as dibenzofurans were detected in sample 2WSD9. We now classify this area as the Weapons Center site and have proposed dioxin analyses for sample 2WCSD11 near the location of 2WSD9.

    The work plan will be revised to include engineering analysis at sample location 7MW2D.

52. There are already several wells (7MW9S, 2DMW29S and 2DMW28S and 2DMW28D) downgradient of 7MW3 that will be analyzed for VOC. These wells are shown on Plate 1. Due to the existence of these wells and as VOC levels in 7MW3 were below ARAR values, we do not feel any additional wells are necessary.

    The floor drains discharged to the Otto fuel tank. Their location will be shown in Figure 7-4.

    The areas where chemicals have been stored are at boring locations 7TB9 and 7TB7. These locations will be shown in Figure 7-4.

    The former GZA sample locations, which are all at the Otto fuel tank, will be shown. Wells 7MW5S and 7MW5D, borings 7TB11, 7TB12, 7TB13 and supplemental borings were proposed for this purpose and should adequately make this determination.

53. As we discussed in our phone conference, the background determination regarding radiological parameters will be made by performing a gamma spectrum analysis rather than by background comparison.

The text will be clarified regarding performance of the gamma spectrum analysis.

54. The details regarding sample selection are provided in the Field Sampling Plan (FSP). Please refer to Section 4.2.2.3 in the FSP.

Vertical composite sampling (except for VOCs) was proposed; it is our opinion that due to the heterogeneous nature of the landfill contents, the risk of missing significant contamination is much greater than masking significant levels of contamination due to dilution. Dilution levels assuming one sample is contaminated and all others are clean will not exceed a factor of 10. As we discussed, we feel compositing is a better approach; however, if EPA feels strongly that we collect grab samples instead, the work plan will be revised accordingly. The number of samples analyzed does not change either way. It should be noted that surface samples are not being composited.

The work plan does not propose the compositing of VOCs and is clear on this point.

55. Samples for engineering analysis were selected to be from the screened interval of a monitoring well or in areas that may require remediation. This rationale will be provided in the work plan.

We did not include the analysis of pesticides at this site as they were not detected in previous analyses.

56. A sample location is already proposed just north of this location and as this area is subject to tidal currents, significant differences between adjacent sample locations are not expected. If this particular location is of concern, the plan will be revised to show the proposed Goss Cove sample location at this location.

The work plan proposes to measure hardness in surface water. The text will be clarified to make this clear.

57. The plan will be revised to perform an additional hydraulic conductivity test in well 15MW3S.

The criteria for sample selection are provided in the FSP. Please refer to Section 4.2.2.4 in the FSP for these details.

58. The installation of a bedrock well will be added at this site.

The work plan will be revised to provide rationale for selection of samples for engineering analysis. Further detail regarding this point is provided in the response to Comment 19 above.

59. Please refer to our response to Comment 52 above.

60. As we discussed, the work plan will remain as proposed and provide for collection of samples when the lake is drained.

61. Table 7-20, Page 166 states that pesticides were not detected in ground water and for that reason, are not proposed to be analyzed for in ground water.

62. Ground water analysis was not proposed for these wells as PCBs have not been detected in ground water in this area during the Phase I RI.

63. The flow arrows are accurate; however, we agree to clarify that these arrows are for overburden ground water flow.

64. The rationale will be provided.

    Radiological background levels will be determined by use of a gamma spectrum analyses. Please refer to the response to Comment 52 above for further detail.

65. VOCs have been detected in ground water, however, no recoverable floating product layers were detected during the Phase I RI investigation. The thin layer at 13MW5 which was more of a sheen, does not indicate the presence of a pool of floating product.

    There are 24 existing wells at the Lower Subase which is located along the Thames River. This existing monitoring system does define the extent of contamination at this site as detailed in the Phase I RI Report.

66. The DRMO figure will be revised to show the extent of fill material.

67. As stated above, no floating oil was detected during the Phase I and the extent of VOC contamination has been identified.

68. This was provided to EPA in a letter dated January 8, 1993.

PROPOSED FIELD SAMPLING PLAN

GENERAL COMMENTS

1. The plan will be revised to provide for testing all sediment samples for TOC and grain size.

2. The work plan will be revised to use consistent terminology regarding soils, wetland soil, sediments and wetland sediments.

3. An SOP for air sampling will be provided.

SPECIFIC COMMENTS

1. Section 2.1 will be revised to indicate that supplemental Step I (not Step II) investigations are proposed for CBU and OBDANE.

2. This sentence should read "Resulting data will not be used **quantitatively**."

3. A discussion of detection limits for the field screening methods will be provided. Practical quantitation limits range from 1-10 ppm for DDT and PCB using GC methods and 100 - 500 ppm for lead analyses using XRF.

4. The field sampling plan provides two alternatives to a CME sampler; split spoon samplers and saturated sand samplers. We recognize the limitations of a CME sample and will only use it at sites where it will successfully recover samples.

   To define bedrock, the work plan will be revised to core five feet into bedrock at each site at specified locations. One location will be established at Rubble Fill and Spent Acid, two at Goss Cove, Torpedo Shops and DRMO, and four at Area A.

5. A description of well construction materials is provided in Section 4.1.4.1 and Appendix B of the Field Sampling Plan. PVC is compatible with low pH material.

6. The work plan specifies that all well screens be 10 feet or less in length except at the Torpedo Shops. At this site, due to the shallow depth to bedrock and potential chlorinated VOC and petroleum contamination, it was felt that it was important to screen from above the water table to the bedrock surface even if more than 10' of screen are required. We do not anticipate any screens greater than 15' in length at this site and will specify a maximum of 15 feet at this site.

7. The development procedures will be revised as suggested, except that per our discussion, well development will continue until a minimum of seven well volumes have been removed or four hour have elapsed, which ever is greater.

8. The work plan clearly specifies that ground water samples for metals analysis will be analyzed on both filtered and non-filtered samples and does not specify the filtering of any other ground water samples.

9. The additional detail regarding the proposed pump test will be provided.

10. Whether or not engineering analyses will be performed at a particular location is specified in the FSP and the specific parameters in the engineering analysis are presented in the rationale for selection of constituents for analysis tables.

Please refer to the response to Comment 44 above regarding the need for compaction tests.

The work plan will be clarified to specify only the Walkley-Black Method for TOC analysis.

These subcontractors have not been selected at this time. When this contract amendment has been finalized, EPA will be notified as to who will do the work. Whoever does the work will follow the procedures specified.

11. The Navy has agreed to develop a basewide ground water contour map and proposes to measure elevations in all wells at the base once. The only areas where it is necessary to measure on a more frequent basis are those areas where there is some uncertainty regarding ground water flow direction such as North Lake and Area A Wetlands. Regarding these areas, after further evaluation, we are proposing to change the frequency specified in the work plan from monthly to quarterly.

12. Earthworm bioassays are suitable for wetland sediment/soil where the soil may be dry enough for part of the year to support these organism. Their use in this manner has been documented by Menzie et al. (1992) among others. Callahan (1993, personal communication) and research by Mac et al. (1990) indicate that it is possible to use earthworms to assess the toxicity of aquatic sediments. Refer to the response to comment number 30 on the work plan for additional information on the use of earthworms in sediment bioassays.

13. This paragraph states that all borings will be advanced to a depth of 15 feet or the water table, whichever is greater.

14. Both the EPA and CTDEP commented on the bedrock well design. EPA suggested to drill the bedrock wells to the depth at which they are capable of providing a yield greater than 1 gpm and stated that the objective of simulating water withdrawal is not appropriate. CTDEP suggested that continuous packer tests be performed in one or two wells and that well screens be set in the highest water yielding zone. CTDEP also stated that the zones of highest yields will be representative of the primary source of water to residential wells. During our phone conference, EPA felt after discussion that the CTDEP packer testing approach was preferable. Packer testing would be capable of defining the highest yield zone in a well, however, whether or not this is the most appropriate zone to sample bears some discussion. The highest yielding zone may not be the most contaminated zone or contaminated at all. Sampling every zone is not feasible and will not substantially add to our understanding of the site. We disagree with EPA that the objective of simulating well water withdrawal does not appear to be appropriate. Remediation standard for this area will be based on MCLs which are measured at the tap not *in situ*. We feel the objectives of these wells should be to simulate residential wells and detect contamination. Packer testing and screening at the highest yielding zone may not detect contamination in low yielding zones. Drilling to the first water bearing zone could result in the non-detection of contaminants in deeper

zones. The effects of dilution of any particular water bearing zone in a deep well must be evaluated regarding contaminant detection. In a hypothetical 100 foot deep bedrock well containing ten different zones, one yielding 1.0 gpm and the others yielding 0.1 gpm, dilution factors are 1.9 to 1 for contaminants in the high yield zone and 19 to 1 for each of the low yielding zones. With this in mind and after consideration of EPA and CTDEP comments, the design in the work plan, seems preferable to either alternative as it will detect any significant contamination and it accurately simulates a residential well for comparison to MCLs.

15. The work plan will be revised to show the location of the observation wells and will provide for collection of seven samples at the intervals indicated in the comment.

16. We will perform the measurements at select locations which have well casings completed above grade at residents who agree not to use water for a minimum of an hour prior to the measurements. With casings above grade, the cover/seal can be removed. There is enough clearance in the well casing to allow insertion of a water level indicator without removing any pumping apparatus.

17. The FSP is clear on the point that samples for VOC analysis will not be composited. The plan states that deeper soil samples will be used in the risk assessment.

18. This information will be provided. Samples will be acidified to a pH less than 2 using nitric acid. To verify pH, a sample that will not be sent to the lab will be analyzed for pH as increasingly larger volumes of acid are added to the sample until its pH is ≤ 2. This volume plus 25 percent will be used to preserve all other samples.

19a. All of the methods will be performed in the field except ASTM Methods D854, D2216, D2974 and possibly D422, SW-846 Methods 9045 and 9081 and EPA T01. Whoever performs the analyses will follow the procedures indicated. Presently, it is planned that Atlantic will perform all field analyses except XRF analyses which will be performed by a subcontractor.

19b. Neither the work plan or Atlantic SOPs allow VOC to be composited. Regarding the compositing for non-VOC analyses, please refer to our response to Comment 53 above.

19c. The specified statement will be included in the work plan.

19d. Samples for inorganic analyses will be analyzed for filtered and non-filtered metals. No other samples will be filtered.

19e. To what extent does this SOP not agree with Region I protocol?

QUALITY ASSURANCE/QUALITY CONTROL
DATA MANAGEMENT PLAN

1. The plan will be revised to reference the documents specified.

2. The work plan will be revised to only reference the 3/90 SOW.

3. The data validation subcontrator has not been selected; however, the qualification for META who will be validating the Phase I and Pier 33/Berth 16 data will be provided under separate cover.

4. Use of borosilicate glass for these samples will be specified. The referenced table will be revised to include the required information for dioxins and gross alpha, gross beta and gamma spectrum analysis.

5. The plan will be revised to provide for collection of equipment rinsate at a frequency of one per day per matrix per piece of equipment for non-dedicated equipment.

6. The work plan will indicate that field duplicates are two separate samples collected from the same source.

7. Project-specific methods will be highlighted in the QA/QC plan and the FSP table will be revised to indicate when low level VOC analyses will be performed.

8. SOPs will be provided for the following activities:

   - field analysis for PCB and DDTR using GC methods
   - field analyses for lead using XRF methods
   - air sampling for VOCs by EPA Method TO1

9. The referenced dates will be included in the work plan. Please refer to the response to Comment 3 above regarding validation personnel.

10. Complete data packages for all constituents analyzed by CLP methods will be prepared and 10 percent of the CLP data will be validated using EPA Level IV validation protocols.

11. This information will be provided.

12. The project-specific QA/QC objectives will be highlighted in the applicable tables.

13. This section will be revised to reference the accuracy objective for the Phase II program.

14. Please refer to the response to Comment 5 in the work plan general comments section.

15a. The two sections will be coordinated and project-specific QA objectives will be highlighted in the laboratory QA/QC plan.

15b. Table 7-1 will be revised as indicated.

15c. All project specific analytical methods will be highlighted in this table.

15d. All project-specific detection limits will be highlighted in this table.

15e. Holding times will be measured from the time the sample is collected and the wording regarding NEESA and CLP will be clarified.

ATTACHMENT 1

DATA REPORTING FORMAT EXAMPLE

REMEDIAL INVESTIGATION
CHEMICAL ANALYSIS SUMMARY FOR VOLATILE ORGANIC COMPOUNDS

****
* SAMPLE ID: NMSSGW01D01 *
****

Lab Receipt Date: 6/21/91 Method: CLP Units: UG/L Laboratory ID: 9106257-03AX

Analyte		Lab Result or CRQL	Validation Data
1,1,1-Trichloroethane	U	5.0000	
1,1,2,2-Tetrachloroethane	U	5.0000	
1,1,2-Trichloroethane	U	5.0000	
1,1-Dichloroethane	U	5.0000	
1,1-Dichloroethene	U	5.0000	
1,2-Dichloroethane	U	5.0000	
1,2-Dichloroethene (total)	U	5.0000	
1,2-Dichloropropane	U	5.0000	
2-Butanone	U	10.0000	
2-Hexanone	U	10.0000	
4-Methyl-2-Pentanone	U	10.0000	
Acetone		53.0000	53.0000U
Benzene	U	5.0000	
Bromodichloromethane	U	5.0000	
Bromoform	U	5.0000	
Bromomethane	U	10.0000	
Carbon Disulfide	U	5.0000	
Carbon Tetrachloride	U	5.0000	
Chlorobenzene	U	5.0000	
Chloroethane	U	10.0000	
Chloroform		9.0000	
Chloromethane	U	10.0000	
Dibromochloromethane	U	5.0000	
Ethylbenzene	U	5.0000	
Methylene Chloride	U	5.0000	
Styrene	U	5.0000	
Tetrachloroethene	U	5.0000	
Toluene	U	5.0000	
Trichloroethene	U	5.0000	
Vinyl Acetate	U	10.0000	UJ
Vinyl Chloride	U	10.0000	
Xylene (total)	U	5.0000	
cis-1,3-Dichloropropene	U	5.0000	
trans-1,3-Dichloropropene	U	5.0000	

REMEDIAL INVESTIGATION
CHEMICAL ANALYSIS SUMMARY FOR SEMIVOLATILE ORGANIC COMPOUNDS

****
* SAMPLE ID: NMSSGW01D01 *
****

Lab Receipt Date: 6/25/91 Method: CLP Units: UG/L Laboratory ID: 9106259-03AX

Analyte		Lab Result or CRQL	Validation Data
1,2,4-Trichlorobenzene	U	10.0000	
1,3-Dichlorobenzene	U	10.0000	
2,4,5-Trichlorophenol	U	50.0000	
2,4-Dichlorophenol	U	10.0000	
2,4-Dinitrophenol	U	50.0000	
2,6-Dinitrotoluene	U	10.0000	
2-Chlorophenol	U	10.0000	
2-Methylphenol	U	10.0000	
2-Nitrophenol	U	10.0000	
3-Nitroaniline	U	50.0000	
4-Bromophenyl-phenylether	U	10.0000	
4-Chloroaniline	U	10.0000	
4-Methylphenol	U	10.0000	
4-Nitrophenol	U	50.0000	
Acenaphthylene	U	10.0000	
Benzo(a)Anthracene	U	10.0000	
Benzo(b)Fluoranthene	U	10.0000	
Benzo(k)Fluoranthene	U	10.0000	
Benzyl Alcohol	J	3.0000	
Chrysene	U	10.0000	
Di-n-Octyl Phthalate	U	10.0000	
Dibenzofuran	U	10.0000	
Dimethyl Phthalate	U	10.0000	
Fluorene	U	10.0000	
Hexachlorobutadiene	U	10.0000	
Hexachloroethane	U	10.0000	
Isophorone	U	10.0000	
N-Nitrosodiphenylamine (1)	U	10.0000	
Nitrobenzene	U	10.0000	
Phenanthrene	U	10.0000	
Pyrene	U	10.0000	
bis(2-Chloroethyl)Ether	U	10.0000	
bis(2-Ethylhexyl)Phthalate	U	10.0000	

Analyte		Lab Result or CRQL	Validation Data
1,2-Dichlorobenzene	U	10.0000	
1,4-Dichlorobenzene	U	10.0000	
2,4,6-Trichlorophenol	U	10.0000	
2,4-Dimethylphenol	U	10.0000	
2,4-Dinitrotoluene	U	10.0000	
2-Chloronaphthalene	U	10.0000	
2-Methylnaphthalene	U	10.0000	
2-Nitroaniline	U	50.0000	
3,3'-Dichlorobenzidine	U	20.0000	
4,6-Dinitro-2-Methylphenol	U	50.0000	
4-Chloro-3-Methylphenol	U	10.0000	
4-Chlorophenyl-phenylether	U	10.0000	
4-Nitroaniline	U	50.0000	
Acenaphthene	U	10.0000	
Anthracene	U	10.0000	
Benzo(a)Pyrene	U	10.0000	
Benzo(g,h,i)Perylene	U	10.0000	
Benzoic Acid	U	50.0000	
Butylbenzylphthalate	U	10.0000	
Di-n-Butylphthalate	U	10.0000	
Dibenz(a,h)Anthracene	U	10.0000	
Diethylphthalate	U	10.0000	
Fluoranthene	U	10.0000	
Hexachlorobenzene	U	10.0000	
Hexachlorocyclopentadiene	U	10.0000	
Indeno(1,2,3-cd)Pyrene	U	10.0000	
N-Nitroso-Di-n-Propylamine	U	10.0000	
Naphthalene	U	10.0000	
Pentachlorophenol	U	50.0000	
Phenol		19.0000	
bis(2-Chloroethoxy)Methane	U	10.0000	
bis(2-Chloroisopropyl)Ether	U	10.0000	

REMEDIAL INVESTIGATION
CHEMICAL ANALYSIS SUMMARY FOR PESTICIDE AND PCB COMPOUNDS

****
* SAMPLE ID: NMSSGW01D01 *
****

Lab Receipt Date: 6/25/91 Method: CLP Units: UG/L Laboratory ID: 9106259-03CX

Analyte		Lab Result or CRQL	Validation Data
4,4'-DDD	U	.1100	
4,4'-DDE	U	.1100	
4,4'-DDT	U	.1100	
Aldrin	U	.0540	
Aroclor-1016	U	.5400	
Aroclor-1221	U	.5400	
Aroclor-1232	U	.5400	
Aroclor-1242	U	.5400	
Aroclor-1248	U	.5400	
Aroclor-1254	U	1.1000	
Aroclor-1260	U	1.1000	
Dieldrin	U	.1100	
Endosulfan I	U	.0540	
Endosulfan II	U	.1100	
Endosulfan sulfate	U	.1100	
Endrin	U	.1100	
Endrin ketone	U	.1100	
Heptachlor	U	.0540	
Heptachlor epoxide	U	.0540	
Lindane	U	.0540	
Methoxychlor	U	.5400	
Toxaphene	U	1.1000	
alpha-BHC	U	.0540	
alpha-Chlordane	U	.5400	
beta-BHC	U	.0540	
delta-BHC	U	.0540	
gamma-Chlordane	U	.5400	

REMEDIAL INVESTIGATION
CHEMICAL ANALYSIS SUMMARY FOR INORGANIC COMPOUNDS

****
* SAMPLE ID: NMSSGW01D01 *
****

Lab Receipt Date: 6/25/91 Method: CLP Unit: UG/L Laboratory ID: 06259-03S

Analyte		Lab Result or CRDL	Validation Data
Aluminum		2100.0000	J
Antimony	U	30.0000	UJ
Arsenic	B	4.1000	J
Barium		4260.0000	J
Beryllium	U	1.0000	UJ
Cadmium	U	3.0000	UJ
Calcium		185000.0000	J
Chromium		62.9000	J
Cobalt	B	6.0000	J
Copper		29.6000	J
Cyanide	U	5.0000	UJ
Iron		1190.0000	J
Lead		5.4000	J
Magnesium	B	874.0000	J
Manganese		17.5000	J
Mercury	U	[illegible].2000	UJ
Nickel	B	31.0000	J
Potassium		149000.0000	J
Selenium	U	2.0000	UJ
Silver	U	5.0000	UJ
Sodium		614000.0000	J
Thallium	U	10.0000	UJ
Vanadium	U	5.0000	UJ
Zinc		80.4000	J

TABLE 4–34
AREA A DOWNSTREAM AND OBDA
SUMMARY OF GROUND WATER ANALYTICAL DATA (ORGANICS)

PARAMETER	ARARs/TBC	SAMPLE ID:	2DMW10D	2DMW11S	2DMW11D	2DMW15D	2DMW16S	2DMW16D	3MW12S	3MW12D
TCL VOLATILE ORGANICS (ppb)										
1,2–Dichloroethene (total)	70 ARAR	MCL	ND	ND	ND	ND	ND	13	ND	ND
Trichloroethene	5 ARAR	MCL	ND	ND	ND	ND	ND	17	ND	ND
1,1,2,2–Tetrachloroethane	0.17 TBC	WQC	ND	ND	ND	ND	ND	7	ND	ND
Total Volatile Organics								37		
TCL SEMI–VOLATILE ORGANICS (ppb)										
Phthalates										
bis(2–ethylhexyl)phthalate	--		4 J	ND	ND	ND	ND	ND	ND	ND
TCL PESTICIDES/PCBs (ppb)										
TCL Pesticides/PCBs	--		ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

1) ARARs/TBC indicates applicable or relevant and appropriate requirements; TBC indicates to be considered values (refer to Section 4.2 for further explanation). Shaded numbers exceed ARAR/TBC values.
2) Assigned letters adjacent to numerical values are data qualifiers. Refer to Section 2.11 for further explanation.
3) ppb indicates a concentration of parts per billion; ppm is parts per million.
4) ND means not detected, less than detection limit. Refer to Section 2.2 for further explanation. NA indicates not analyzed.
5) Only the parameters detected are listed above, all others were not detected.
6) The acronym adjacent to the ARAR/TBC value indicates the source of the value. Refer to Table 4–2 or glossary for further explanation.

TABLE 4–35
AREA A DOWNSTREAM AND OBDA
SUMMARY OF GROUND WATER ANALYTICAL DATA (INORGANICS AND RADIOLOGICAL)

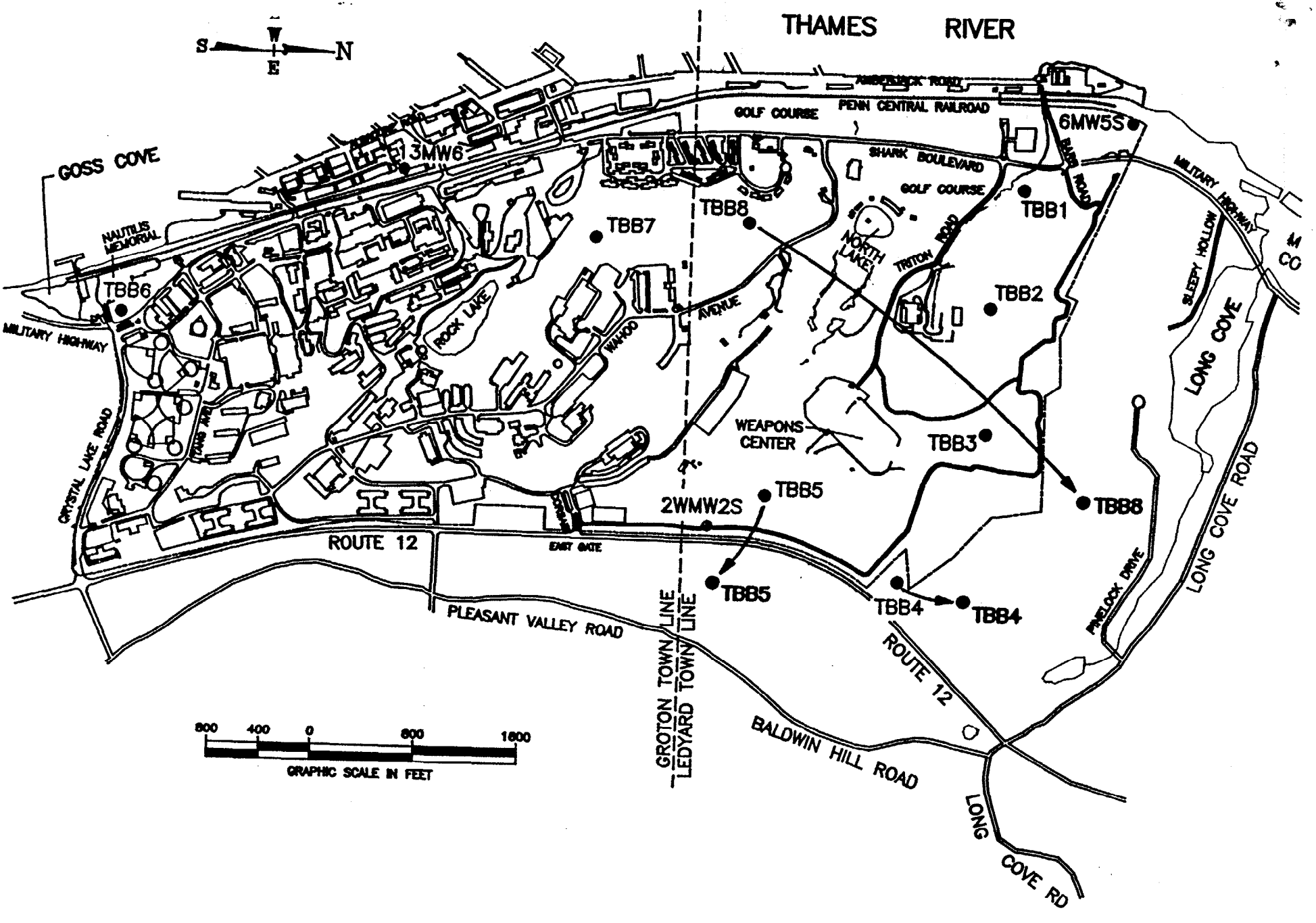
PARAMETER	ARARs/TBC	SAMPLE ID:	2DMW10D	2DMW11S	2DMW11D	2DMW15D	2DMW16S	2DMW16D	3MW12S	3MW12D
TAL INORGANICS (ppb)										
Aluminum	200 TBC	SMCL	ND J	ND	ND	44.5 BJ	ND	ND	ND	ND
Antimony	5 TBC	PMCl	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	50 ARAR	MCL	ND	ND	ND	ND	ND	ND	ND	ND
Barium[7]	1000 ARAR	MCL	39.6 B	29.4 B	104 B	31.6 B	17.1 B	97.1 B	39.2 B	44.4 B
Beryllium	1 TBC	PMCL	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	5 ARAR	MCL	ND	ND	ND	ND	ND	5.1	ND	16 J
Calcium	--		22300 J	41200	42400	7340	32400	196000	64900	69400
Chromium[7]	50 ARAR	MCL	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt	--		ND	ND	ND	ND	ND	ND	14.1 B	16 B
Copper[7]	1000 ARAR	MCL	ND J	5 BJ	ND	ND	ND	6.3 B	ND	ND
Iron	300 TBC	SMCL	287 J	101 J	16900	83.4 BJ	669 J	11600	1580	7090
Lead	15 ARAR	Action Level	ND J	ND	ND J	ND J	ND J	ND J	ND J	ND J
Magnesium	--		8960 J	15600	11400	3400 B	5260	28800	50900	52000
Manganese	50 TBC	SMCL	106 J	1150	2390	49.7	339	2190	6010	6770
Mercury	2 ARAR	MCL	ND	ND J	ND	ND	ND J	ND	ND J	ND
Nickel	100 TBC	PMCL	20.7 BJ	15.2 BJ	19.2 BJ	19.2 BJ	20.5 BJ	33.4 BJ	19.7 BJ	24.2 BJ
Potassium	--		5000	7210	7780	4440 B	2520 B	12600	14300	14900
Selenium[7]	10 ARAR	MCL	ND	ND	ND	ND	ND	1.8 B	ND	2.5 B
Silver[7]	50 ARAR	MCL	ND	ND	ND	ND	ND	ND	ND	ND
Sodium	28000 TBC	Notif. Level	88800	190000	194000	57200	44500	319000	478000	560000
Thallium	1 TBC	PMCL	ND	ND R	ND	ND	ND R	ND	ND R	ND
Vanadium	20 TBC	USEPA HA	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	5000 TBC	SMCL	8.1 BJ	6.7 BJ	6.1 BJ	4 BJ	22.8 J	23.3 J	14.4 BJ	10.4 BJ
Boron	600 TBC	USEPA HA	6900 J	7500	1600	3400	2200	11000	11000	11000
Cyanide[7]	200 ARAR	MCL	ND	ND J	ND	ND	ND J	ND J	ND J	ND
RADIOLOGICAL CONSTITUENTS (pCi/L)										
Gross Alpha[7]	5	Screening Level	3.1	18.5	8.9	2.1	0.2	1.5	25.7	29.3
Gross Beta	50	Screening Level	7.5	7.7	18.3	5.6	5.1	32.8	2.8	34.1

NOTES:

1) ARARs/TBC indicates applicable or relevant and appropriate requirements; TBC indicates to be considered values (refer to Section 4.2 for further explanation). Shaded numbers exceed ARAR/TBC values.
2) Assigned letters adjacent to numerical values are data qualifiers. Refer to Section 2.11 for further explanation.
3) ppb indicates a concentration of parts per billion; ppm is parts per million.
4) ND means not detected, less than detection limit. Refer to Section 2.2 for further explanation. NA indicates not analyzed.
5) Radiological constituent values have an assigned +/– range due to sample interference.
6) The acronym adjacent to the ARAR/TBC value indicates the source of the value. Refer to Table 4–2 or glossary for further explanation.
7) These values are base on CTDOHS MCLs which are lower than USEPA MCLs. CTDOHS may at some future time revise their MCLs to correspond to U.S. EPA's.

ATTACHMENT 2

BACKGROUND SOIL SAMPLE LOCATIONS


THAMES RIVER
S
W
E
N
GOSS COVE
NAUTILUS MEMORIAL
MILITARY HIGHWAY
CRYSTAL LAKE ROAD
TBB6
13MW6
TBB7
ROCK LAKE
WAHOO
AVENUE
GOLF COURSE
PENN CENTRAL RAILROAD
AMBERWICK ROAD
6MW5S
SHARK BOULEVARD
GOLF COURSE
TBB8
TBB1
NORTH LAKE
TRITON ROAD
TBB2
SLEEPY HOLLOW
MILITARY HIGHWAY
LONG COVE
WEAPONS CENTER
TBB3
TBB8
2WMW2S
TBB5
ROUTE 12
EAST GATE
TBB5
TBB4
TBB4
PINELOCK DRIVE
LONG COVE ROAD
PLEASANT VALLEY ROAD
GROTON TOWN LINE
LEDYARD TOWN LINE
ROUTE 12
BALDWIN HILL ROAD
LONG COVE RD
800 400 0 800 1600
GRAPHIC SCALE IN FEET