N00129.AR.000511
NSB NEW LONDON
5090.3a

Brown & Root Environmental

A Division of Halliburton NUS Corporation

Foster Plaza VII
661 Andersen Drive
Pittsburgh, PA 15220-2745

(412) 921-7090
FAX: (412) 921-4040

C-49-03-7-283

MINUTES OF RESTORATION ADVISORY BOARD (RAB) MEETING FEBRUARY 12, 1997

To: NSB-NLON Public Meeting Attendees and RAB Members
(See attached Distribution list)

From: Corey Rich of Brown and Root Environmental CAR

Date: March 27, 1997

Subject: RAB and Public Meeting Minutes - February 12, 1997
Installation Restoration Program
Naval Submarine Base - New London (NSB-NLON)
Groton, Connecticut

Attendees of the meeting

Andy Stackpole	NSB-NLON
Mark Evans	Navy
Greta Deirocini	Navy
Jim Briggs	Navy
Kymberlee Keckler	USEPA Boston
Dick Conant	NSB-NLON
Robert Jones	COMSUBGRUTWO
Mark Lewis	CTDEP
Corey Rich	Brown & Root Environmental
Doug Cervenak	Brown & Root Environmental
Carl Tippman	Foster Wheeler Environmental Corporation
Susan Orrill	RAB Co-Chair Member
Deborah Downie	RAB Member
Bart Pearson	Community
Winifred Pearson	Community

Agenda

The agenda for the meeting was as follows.

1. Welcome and Introduction

2. Review of Minutes from Last Meeting
3. Area "A" Landfill Cap Construction Overview
4. Goss Cove Landfill Data Gap Investigation
5. Area "A" Downstream Feasibility Study
6. Spent Acid Storage and Disposal Area
   No Further Action Decision Document (NFADD)
7. Future Meeting Date/Time

Welcome and Introduction

Andy Stackpole opened the meeting at 7:10 p.m. and welcomed all attendees.

Review of November 6, 1996 Meeting Minutes

Andy Stackpole reviewed the November 6, 1996 meeting minutes.

PROGRAM UPDATE

Area "A" Landfill Cap Construction Overview:

Jim Briggs, a Civil Engineer from NORTHDIV, gave a presentation on the Area "A" Landfill cap construction.

The removal of surface vegetation started approximately three weeks ago. The actual cap construction will start the first week of March. The landfill cap should be completed in September '97.

Deborah Downie asked if the shaded areas on the chart were parking lots.

Parking designations have changed since the design was completed. The parking area which is depicted by the green rectangular area will remain.

Jim Briggs stated that he landfill composition here is more of a generic waste mass. It is not a municipal landfill. We have a small pocket on the landfill which was used for municipal trash disposal. Most of the material is not of that nature.

Mark Evans responded that we did a methane gas survey to predict what levels of methane gas would be given off. The results were low enough that a methane gas flare system was not required.

Goss Cove Landfill Data Gap Investigation:

Corey Rich from Brown and Root Environmental gave a presentation on the Goss Cove Data Gap Investigation. (Handouts are enclosed as Attachment 1).

This investigation was to focus in on the PCE contamination in the groundwater in the upgradient well. The purpose of this investigation was to determine if Goss Cove landfill itself was contributing to the contamination and to verify the source.

Borings were advanced to bedrock, and the wells were advanced into the bedrock until groundwater was encountered.

Sue Orrill asked if these were new borings.

Corey Rich said, yes. They were done 2-3 weeks ago.

Sue Orrill asked if well number nine and ten are in the road.

Corey Rich said yes.

Several wells were installed as part of the tank farm investigation that is being conducted under the Connecticut UST program.

Kymberlee Keckler stated that those are shallow wells. The contaminant that they are looking for is heavier than water and therefore would most likely not be detected in those wells.

Corey Rich stated that PCE is heavier than water so it does have a tendency to sink. It would show up dissolved in most cases if it is at high enough concentrations, but it would have a tendency to sink.

Deborah Downie asked if the water table is in the bedrock.

Corey Rich stated that the main focus is in the bedrock. As you move toward the tank farm the bedrock drops off. It use to be a lake bed and was filled in when the tank farm was built.

Deborah Downie asked if these new wells are bedrock wells.

Sue Orrill asked if the shallow wells are in bedrock.

Corey Rich stated that they are shallow wells and are in the bedrock.

Deborah Downie asked if the unsaturated soils are just contaminated from when the groundwater table rises.

Corey Rich stated, most likely. The concentrations in the soil are not high enough to get the levels in the groundwater.

Sue Orrill asked if 8MW10S will be resampled.

Corey Rich stated at the present time it will not.

To summarize, the results of the data gap investigations show low concentrations of PCE in the soil. The soil results were not high enough to give us the resulting concentrations that we saw in the groundwater, which would indicate that there is some unknown or upgradient source that is contributing to the PCE contamination. There are possible sources on-base and possible sources off-base. PCE is used in dry cleaning processes. There is a dry cleaner across the street. We did have minor detections in the tank farm. We also have many storm sewers that run through that area, and it is possible that contamination from somewhere upgradient could have migrated along the trenches to the storm sewers.

It is unlikely the landfill material is contributing to the PCE contamination. This investigation was completed to clarify if the landfill was contributing to the PCE contamination. The groundwater will be investigated and remediated as a separate operable unit, and any further investigations of the contamination and other areas of the well site will be done under a base wide groundwater operable unit.

Deborah Downie asked if there are any drinking water wells in that area.

Andy Stackpole stated no, all homes in the area are served by municipal water.

Bart Pearson asked if anything is flowing into Goss Cove.

Corey Rich stated that our data stops right in that area. We did not have anything else to further construct the groundwater contours, but the groundwater flows towards the Cove and into the river.

Bart Pearson asked if PCE can be pinpointed to a specific product. Can you fingerprint it to say it is cleaning fluid or whatever?

Corey Rich stated that PCE is one chemical in itself. Corey Rich stated you would typically find a range of contaminants in an area depending on the process that was being done. In that area we did see results of PCE.

Area "A" Downstream Feasibility Study:

Mark Evans from the Navy gave a presentation on the Feasibility Study that was done for the Area "A" Downstream Site 3. (Handouts are enclosed as Attachment 2.)

Mark Evans stated the next step will be to finalize the FS and the Navy will be proposing their preferred alternative.

Bart Pearson asked if there was an alternative for just filling and capping. Would you still have the seepage and the run-off if you did that?

Mark Evans stated yes Alternative 2 is a capping alternative, but the filling of wetlands could be an issue.

Sue Orrill asked what is the area that the downstream area compromises of. What are we talking about in acres?

Corey Rich stated it is approximately nine acres.

Spent Acid Storage and Disposal Area:

Andy Stackpole discussed Spent Acid site. He stated that the Navy wants to do a no further action ROD.

Kymberlee Keckler stated that a removal action was done and now the site poses no threat to the human health or environment. This site is not used for drinking water, and there is not any risk.

Andy Stackpole stated that the Navy will have a proposed plan on the Spent Acid Site completed by the next RAB meeting.

Future Meeting Date/Time

Next meeting will be on May 14, 1997 at the library.

Meeting Adjourned

Meeting adjourned at 8:25 p.m..

ATTACHMENT 1

DATA GAP INVESTIGATION
GOSS COVE LANDFILL
NAVAL SUBMARINE BASE - NEW LONDON
GROTON CONNECTICUT

RESTORATION ADVISORAY BOARD MEETING
FEBRUARY 12, 1997

BROWN & ROOT ENVIRONMENTAL PRESENTATION

HISTORY OF GOSS COVE LANDFILL

- FORMER LANDFILL FOR INCINERATOR ASH AND INERT RUBBLE (1946 - 1957)

- PHASE I REMEDIAL INVESTIGATION

  - test borings, monitoring wells; soil gas, soil, groundwater, and surface water sampling

- PHASE II REMEDIAL INVESTIGATION

  - test borings, monitoring wells; soil, groundwater, sediment, surface water, and air sampling

- PHASE II REMEDIAL INVESTIGATION RECOMMENDED A FEASIBILITY STUDY AND FURTHER CHARACTERIZATION OF GROUNDWATER

PURPOSE OF DATA GAP INVESTIGATION

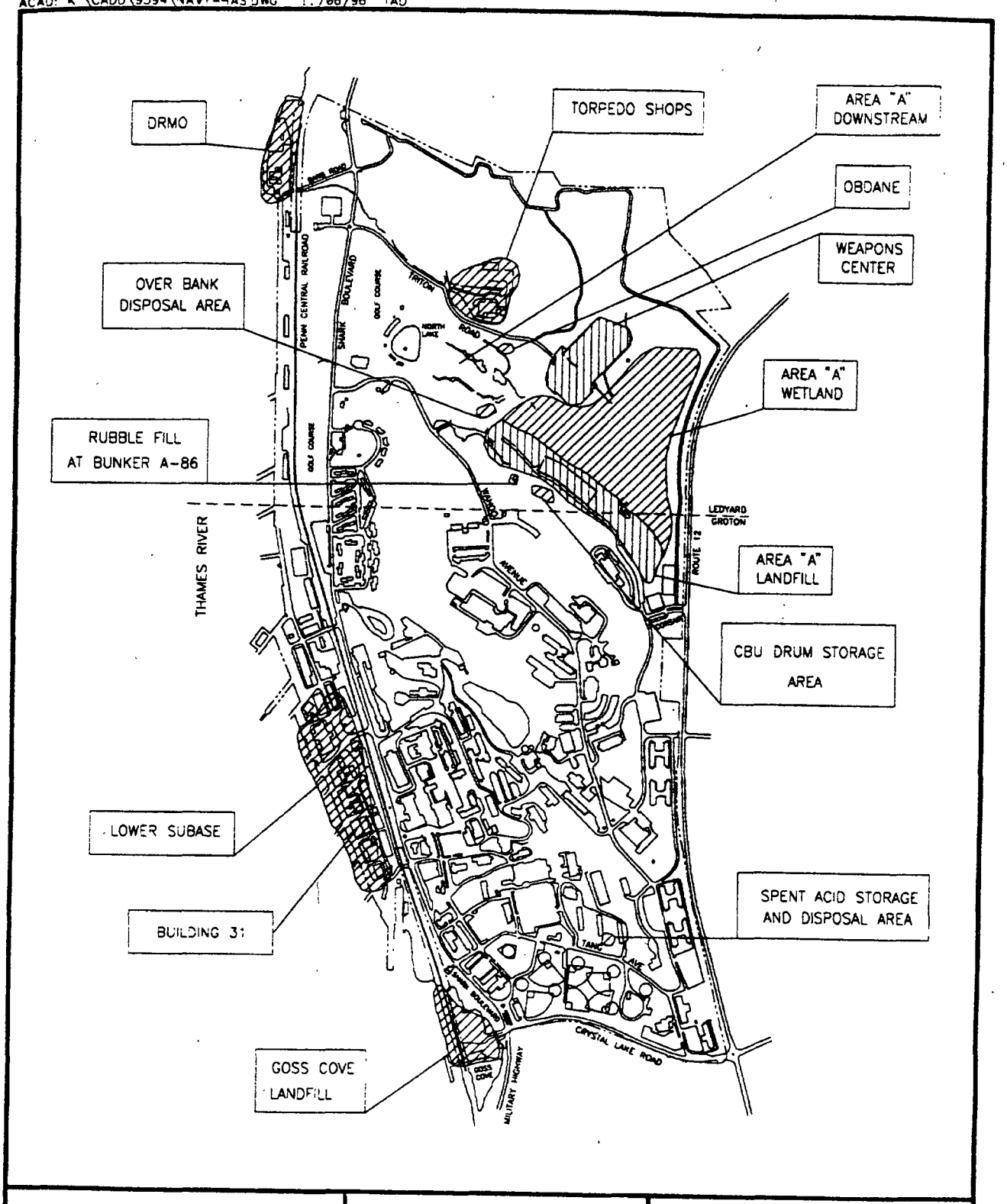
- DETERMINE IF GOSS COVE LANDFILL IS SOURCE OF PCE CONTAMINATION DETECTED AT WELL CLUSTER 8MW8S/8MW8D.

- VERIFY THE SOURCE OF THE PCE.

- DETERMINE IF THERE IS AN UPGRADIENT SOURCE OF CONTAMINATION CONTRIBUTING TO PCE CONCENTRATIONS IN GROUNDWATER.

ACAD: K \CADD\9594\NAVY-HAS.DWG 11/06/96 TAD

DRAFT



SITE MAP
NSB NLON
GROTON, CONNECTICUT

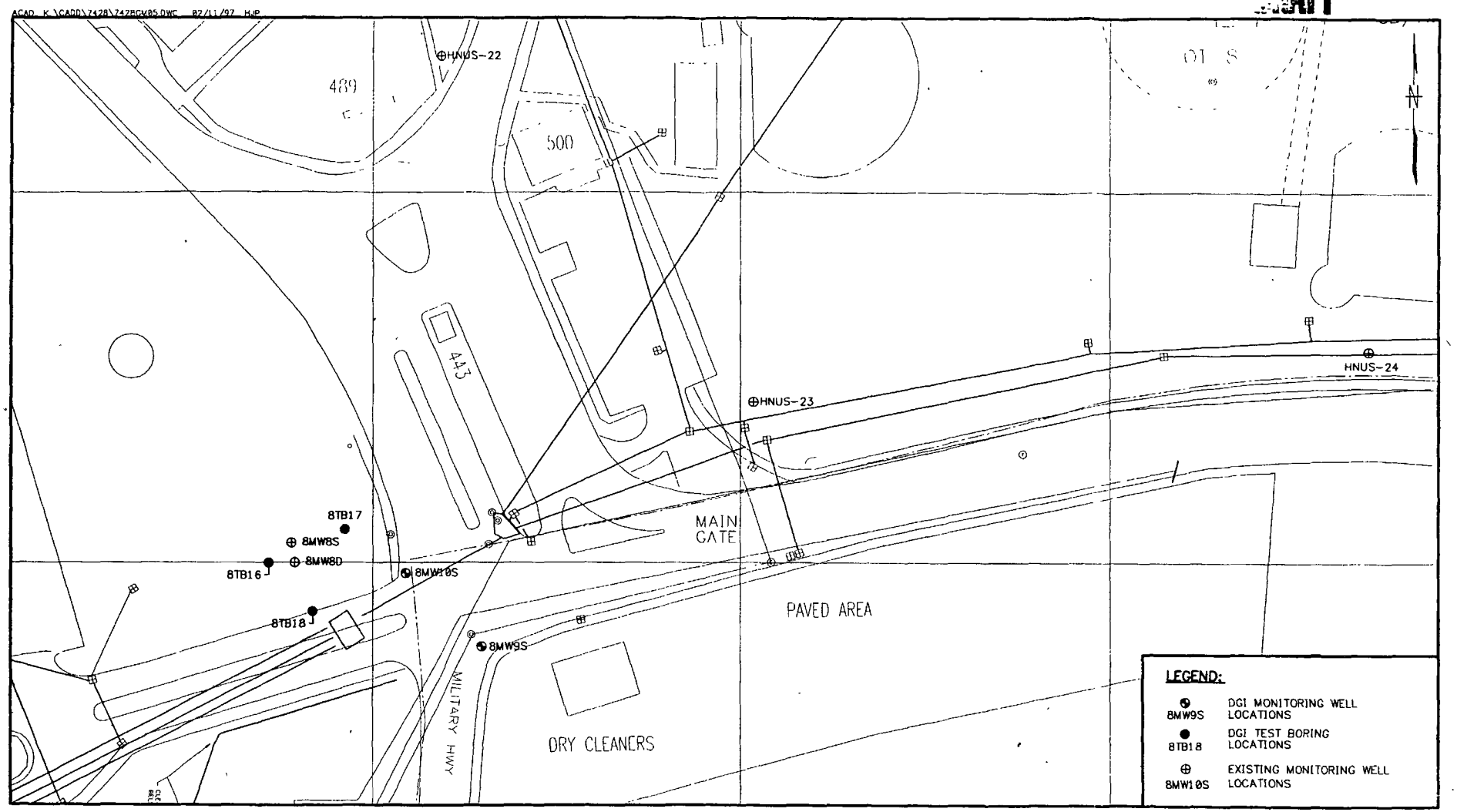
SOURCE. Naval Submarine Base
Existing Conditions
April 1985
Loureiro Engineering Associates

N

0 600 1200
GRAPHIC SCALE IN FEET

FIGURE 1
SITE LOCATION MAP

DRAFT



DRAFT

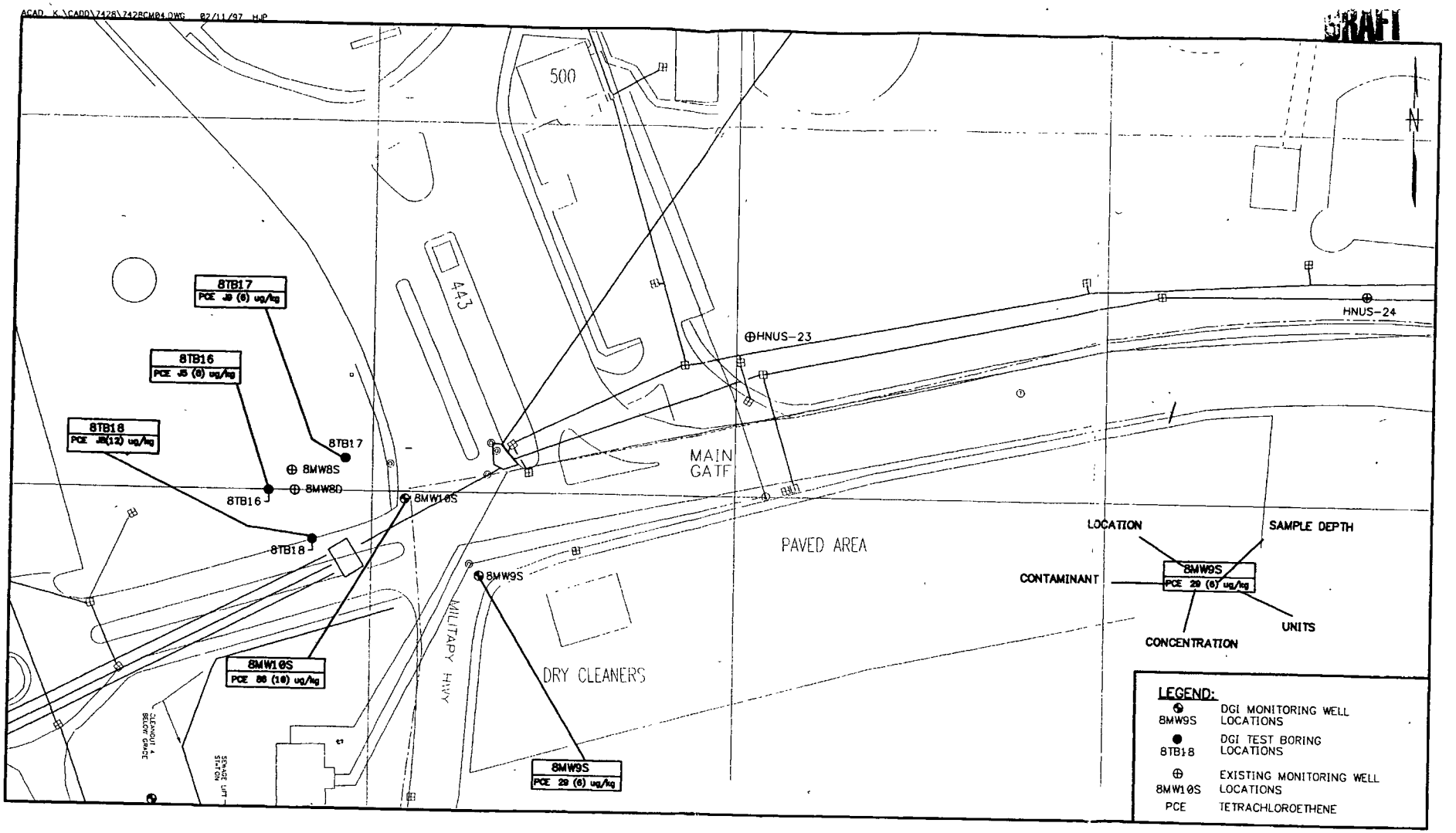
FIGURE 2

PHASE I SAMPLING LOCATIONS
GOSS COVE DATA GAP INVESTIGATION
NSB-NLON, GROTON, CONNECTICUT

0 50 100
SCALE IN FEET

Brown & Root Environmental

04591001Z



DRAFT

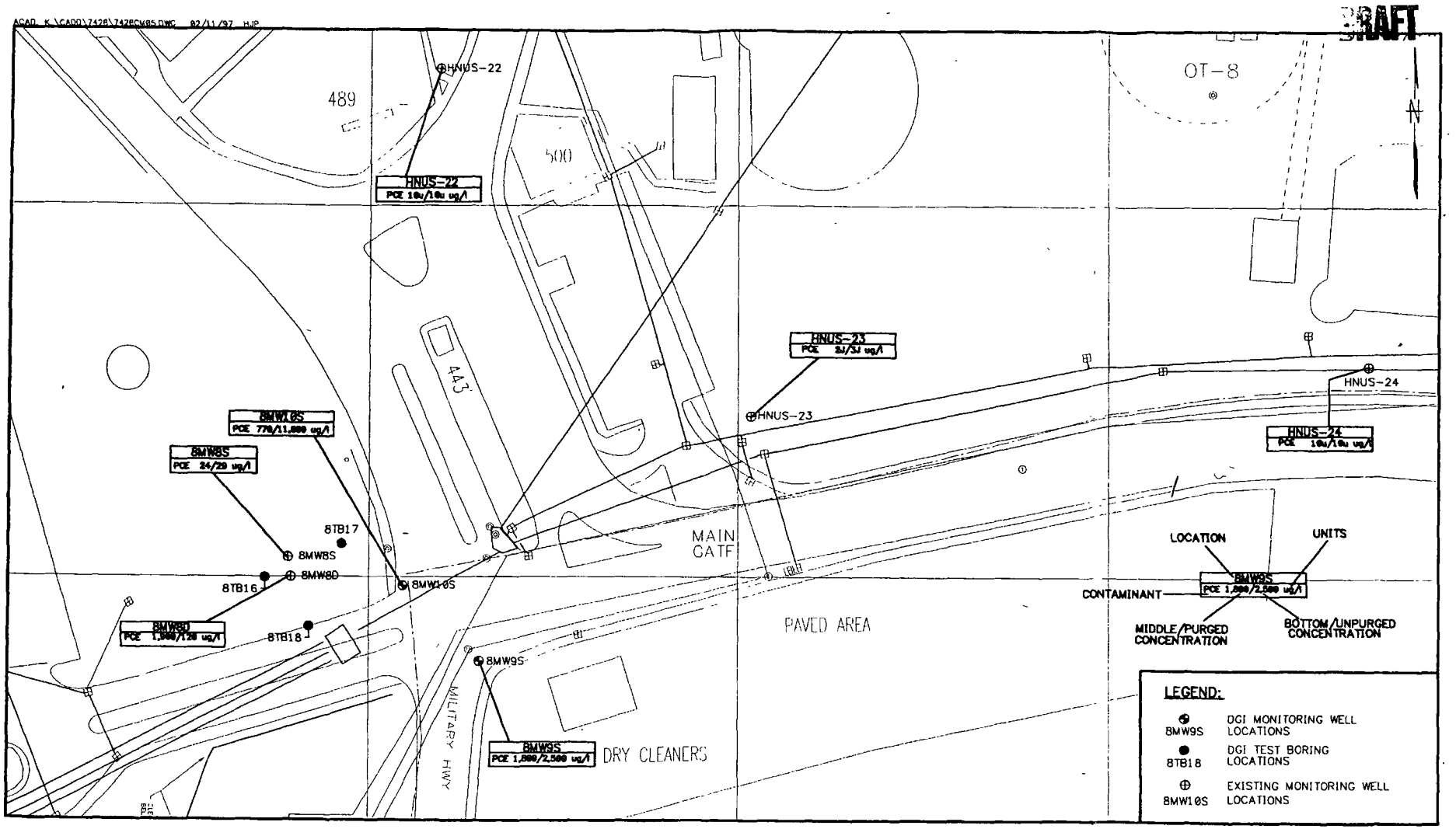
FIGURE 3

DECTECTED CONCENTRATIONS OF PCE IN SOIL
GOSS COVE DATA GAP INVESTIGATION
NSB-NLON, GROTON, CONNECTICUT

0 50 100
SCALE IN FEET

Brown & Root Environmental

045910022



DRAFT

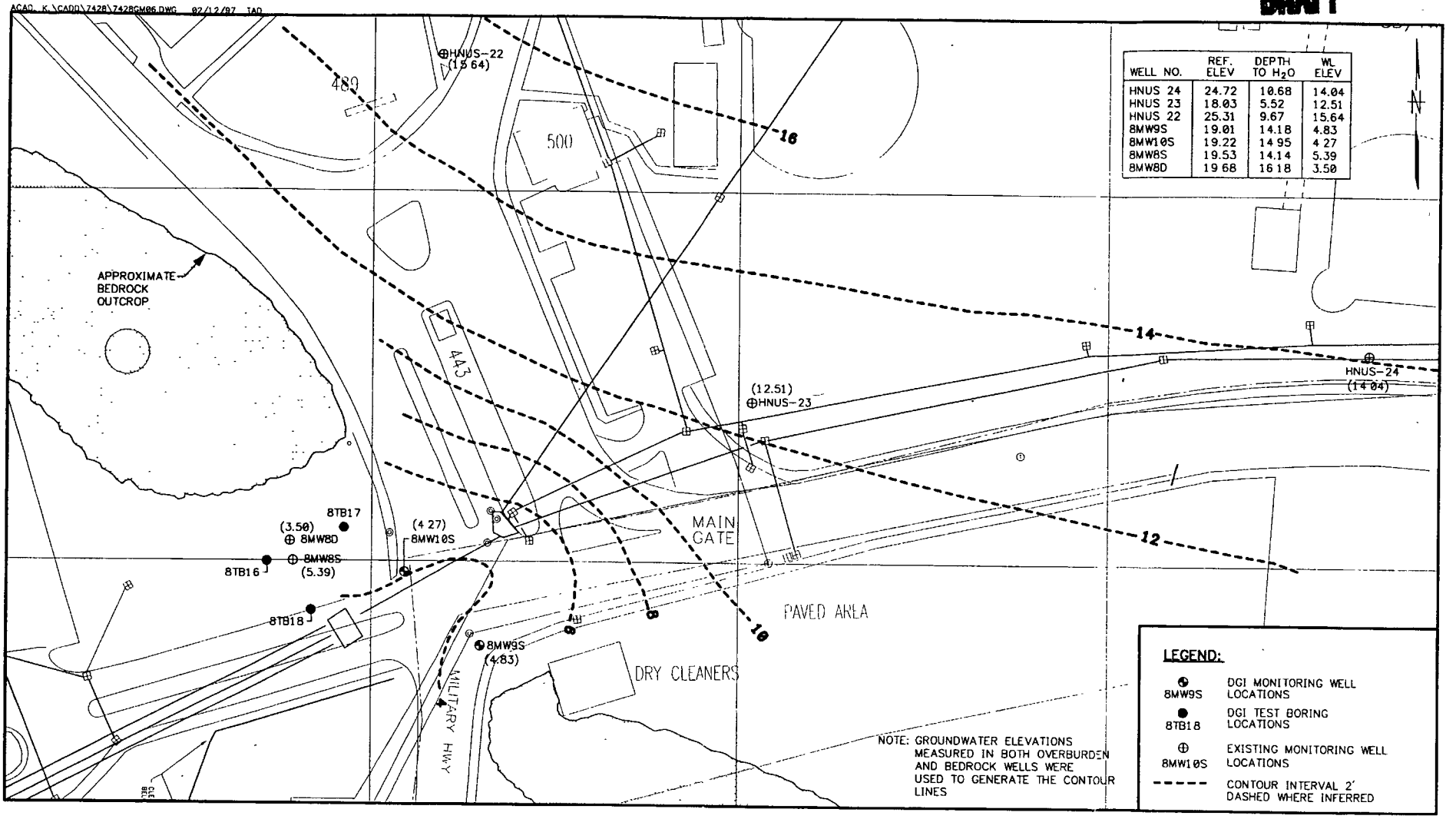
FIGURE 4

DETECTED CONCENTRATIONS OF
PCE IN GROUNDWATER
-- GOSS COVE DATA GAP INVESTIGATION
NSB-NLON, GROTON, CONNECTICUT

Brown & Root Environmental

045910032

DRAFT



WELL NO.	REF. ELEV	DEPTH TO H_2O	WL ELEV
HNUS 24	24.72	10.68	14.04
HNUS 23	18.03	5.52	12.51
HNUS 22	25.31	9.67	15.64
8MW9S	19.01	14.18	4.83
8MW10S	19.22	14.95	4.27
8MW8S	19.53	14.14	5.39
8MW8D	19.68	16.18	3.50

DRAFT

FIGURE 5

GROUNDWATER POTENTIOMETRIC SURFACE MAP – 2/5/97
GOSS COVE DATA GAP INVESTIGATION
NSB–NLON, GROTON, CONNECTICUT

0 50 100
SCALE IN FEET

Brown & Root Environmental

04591004Z

RESULTS OF DATA GAP INVESTIGATION

- LOW CONCENTRATIONS OF PCE IN OVERBURDEN SOIL (FIGURE 3).

- UNLIKELY THAT OVERBURDEN SOIL/LANDFILL MATERIAL IS SOURCE CONTRIBUTING TO PCE CONTAMINATION IN GROUNDWATER.

- HIGH CONCENTRATIONS OF PCE IN GROUNDWATER; POTENTIAL DNAPL (FIGURE 4).

- LIKELY THAT UNKNOWN, UPGRADIENT SOURCE IS MAIN CONTRIBUTOR TO PCE CONTAMINATION IN GROUNDWATER.

RECOMMENDATIONS

- EVALUATE GROUNDWATER IN SEPARATE OPERABLE UNIT.
- CONDUCT ANY FURTHER INVESTIGATIONS OF PCE CONTAMINATION UNDER BASEWIDE GROUNDWATER OPERABLE UNIT.
- EVALUATE SOIL AND SEDIMENT OPERABLE UNITS IN GOSS COVE LANDFILL FEASIBILITY STUDY.

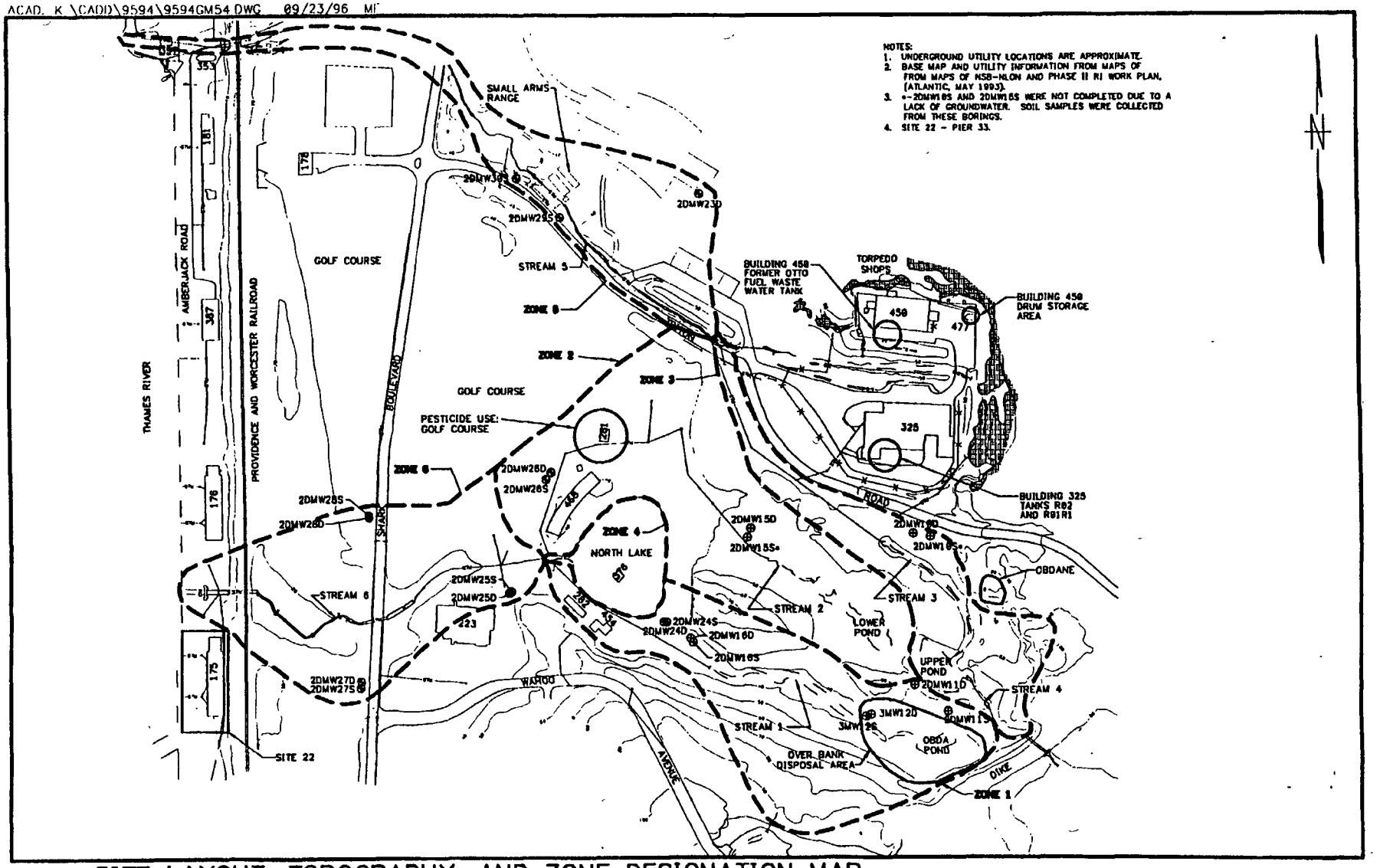
ATTACHMENT 2

NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CT

FEASIBILITY STUDY
SITE 3 - AREA A DOWNSTREAM

(DRAFT DECEMBER 1996)

ACAD. K:\CADD\9594\9594GM54.DWG 09/23/96 MF



SITE LAYOUT, TOPOGRAPHY, AND ZONE DESIGNATION MAP

NSB, NEW LONDON

GROTON, CONNECTICUT

0 350 700

SCALE IN FEET

FIGURE 1-3

Brown & Root Environmental

REVISED DRAFT

FEASIBILITY STUDY
AREA A DOWNSTREAM
REMEDIAL ACTION OBJECTIVES

- Protection of potential *human receptors* from incidental ingestion of soils/sediments contaminated with DDTR concentrations exceeding **222 mg/kg.**
- Protection of potential *ecological receptors* from soils contaminated with DDTR concentrations exceeding **5 mg/kg** and sediments concentrations exceeding **3 mg/kg**.
- Protection of potential *ecological receptors* from sediments contaminated with cadmium, lead, and zinc concentrations exceeding **9.6 mg/kg**, **218 mg/kg**, and **410 mg/kg**, respectively, and sediments contaminated with dieldrin concentrations exceeding **0.045 mg/kg**.

FEASIBILITY STUDY
AREA A DOWNSTREAM

PRELIMINARY SCREENING OF ALTERNATIVES

- SEE TABLE 3-1 IN FFS.

TABLE 3-1
PRELIMINARY SCREENING OF REMEDIATION TECHNOLOGIES FOR SOILS/SEDIMENTS FOR AREA A DOWNSTREAM/OBDA, FFS NSB, NLON, GROTON, CONNECTICUT
PAGE 1 OF 5

TECHNOLOGY	PROCESS OPTION	DESCRIPTION	SCREENING COMMENTS	OPTION RETAINED
			GENERAL RESPONSE ACTION: NO ACTION	
No Action	No Action	No Action	Retained as baseline for comparison.	Y s
			GENERAL RESPONSE ACTION: INSTITUTIONAL CONTROLS	
Access Restriction	Deed Restriction	Property deed would contain notice regarding contaminated soils and would restrict disturbance of these soils.	Only effective in preventing direct contact regarding human exposure. Does not reduce contaminant exposure to ecological receptors. Could be used in conjunction with containment response actions.	Yes
	Fencing	A physical barrier to prevent outside entry.	Only effective in preventing direct contact regarding human exposure. Does not reduce contaminant exposure to ecological receptors. Could be used in conjunction with containment.	Yes
	Monitoring	Sampling and analysis of environmental media.	Effective only to assess contaminant levels on site and migration off site.	Y s
			GENERAL RESPONSE ACTION: CONTAINMENT	
Horizontal Barriers	Capping	Cover placed over wastes to minimize erosion of contaminated soils/sediments and direct contact.	Not effective in reducing toxicity of contaminants, but will provide a barrier for primary exposure pathways.	Y s
	Liner	Membrane layer placed underneath wastes to minimize contaminant migration.	Not applicable to DDTR or inorganic constituents because of their relatively low mobility. Would negatively impact site hydrogeology.	No
Surface Water Control	Vertical Barriers	Use of sheet pilings or silt curtains to minimize sediment transport.	Effective to minimize contaminant migration during sediment dredging.	Yes
	Floodwall/dikes	Reinforced concrete wall or earthen berms on the downgradient of the contaminated area.	Flooding not a concern; therefore, this option not applicable.	N
	Site Grading and Stormwater Management	Grading and stormwater structures to prevent transport of contaminants from surface soils or sediments.	Not effective in reducing toxicity of contaminants but will reduce mobility. Useful in stream diversion during excavation or dredging.	Y s
			GENERAL RESPONSE ACTION: REMOVAL	
Excavation	Mechanical	Physical removal of contaminated soil by mechanical equipment such as backhoe, bulldozer, loader, etc.	Effective in removing contaminated soils.	Y s
	Soil Freezing	Soils frozen to facilitate excavation.	This is an innovative technology that does not offer any advantage over mechanical excavation at this site.	No
Dredging	Mechanical	Physical removal of contaminated sediments by mechanical dredging type equipment.	Effective in removing contaminated sediments. Maximizes solids concentrations of removed sediments.	Yes
	Hydraulic	Removal of contaminated sediments in a liquid slurry form.	Generates excessive volumes of wastewater.	No
	Pneumatic	Air conveyance type pump hydraulically removes contaminated sediments.	Typically applicable to deep sediments. Not applicable to shallow depths such as 4 feet or less at this site.	No

REVISED DRAFT

TABLE 3-1
PRELIMINARY SCREENING OF REMEDIATION TECHNOLOGIES FOR SOILS/SEDIMENTS FOR AREA A DOWNSTREAM/OBDA, FFS
NSB, NLON, GROTON, CONNECTICUT
PAGE 2 OF 5

TECHNOLOGY	PROCESS OPTION	DESCRIPTION	SCREENING COMMENTS	OPTION RETAINED
			GENERAL RESPONSE ACTION: IN SITU TREATMENT	
Biological	Aerobic Degradation	Enhancement of natural biological activity by the addition of oxygen, nutrients and sometimes cultured microorganisms.	Aerobic biodegradation may be effective for DDTR in combination with an anaerobic biodegradation. However, implementation in nonhomogeneous site conditions would be difficult. Ineffective for inorganic COCs. Not proven in field scale for DDTR treatment.	No
	Genetically Engineered Bioremediation	Microorganisms are genetically engineered to utilize target compounds.	Technology is in the research and development stage; therefore, it will not be considered further.	No
	Anaerobic Degradation	Anaerobic microbial species and conditions are developed to enhance utilization of target compounds.	Anaerobic biodegradation may be effective for DDTR in combination with aerobic degradation. However, implementation in nonhomogeneous site conditions would be difficult. Ineffective for inorganic COCs.	No
Physical/ Chemical	Soil Venting/Air Sparging	Injection and extraction wells pump ambient air through soil to remove contaminants.	Not effective for nonvolatile organics such as DDTR and for areas with soils and sediments with very low permeability. Ineffective for inorganic COCs.	No
	Soil Washing	Removal of contaminants from soil by flushing soils with aqueous surfactants or solvents.	Potentially effective for DDTR and inorganic COCs. Not effective in low permeability and nonhomogeneous soil/sediment.	No
	Steam Injection	Steam is injected into the soil to enhance the recovery of petroleum hydrocarbons.	Marginally effective for low volatility organics such as DDTR. Not effective with low permeability and nonhomogeneous soil/sediment. Ineffective for inorganic COCs.	No
	Contained Recovery of Oily Wastes (CROW™)	Steam and hot water are injected. Displacement by the steam and hot water move the oily wastes and water aboveground for treatment.	Applicable to heavy oils. Demonstration projects have not been completed and effectiveness on DDTR is unknown. Ineffective for inorganic COCs.	No
	Stabilization	Subsurface materials solidified, fixated or encapsulated to prevent leaching of contaminants.	Physical and chemical properties of soil/sediments will be permanently altered. Moreover, contaminated media can continue to enter potential exposure pathways.	No
	Degradation	Chemicals are injected into subsurface soils to oxidize, reduce or hydrolyze subsurface chemicals.	Chemicals injected may be toxic. Contact with contaminants difficult to control. Degradation products may be toxic.	No
Thermal	Vitrification	Electrically heating contaminated materials into a glass/crystalline structure.	Questionable effectiveness for wet media.	No
	Electro-Acoustic	Application of direct current and acoustic fields to increase migration of leachable contaminants through material.	Technology is in the research and development stage. Removal of DDTR by leaching is questionable because of its very low mobility.	No
	Radio-Frequency Destruction	Radio-frequency electrodes placed along the ground surface heat the subsurface and volatilize and/or destroy organics.	Technology is in the research and development stage. Ineffective for inorganic COCs.	No

REVISED DRAFT

TABLE 3-1
PRELIMINARY SCREENING OF REMEDIATION TECHNOLOGIES FOR SOILS/SEDIMENTS FOR AREA A DOWNSTREAM/OBDA, FFS
NSB, NLON, GROTON, CONNECTICUT
PAGE 3 OF 5

TECHNOLOGY	PROCESS OPTION	DESCRIPTION	SCREENING COMMENTS	OPTION RETAINED
		GENERAL RESPONSE ACTION: ABOVEGROUND (ONSITE) TREATMENT		
Biological	Landfarming	Controlled application of contaminated soil, nutrients, and microbes to land area that is tilled.	Not proven on a large scale for DDTR. Aerobic biodegradation may be effective for complete degradation of residual products from anaerobic degradation. Ineffective for inorganic COCs.	No
	Composting	Degradation of wastes using thermophilic aerobic microbes under forced air conditions.	Not proven on a large scale for DDTR. Aerobic biodegradation may be effective for complete degradation of residual products from anaerobic degradation. Ineffective for inorganic COCs.	No
	Bioslurry	Enhanced biodegradation by increasing the mass transfer of organics into the aqueous phase.	Not proven on a large scale for DDTR. Questionable effectiveness for DDTR degradation and difficult to implement with silty loam material mixed with vegetative material. Ineffective for inorganic COCs.	No
	Anaerobic Degradation	Anaerobic microbial species and conditions are developed to enhance utilization of hazardous constituents.	Not proven on a large scale for DDTR. Anaerobic biodegradation may be effective when followed by aerobic degradation. Ineffective for inorganic COCs.	Yes
	Genetic Engineering	Microorganisms are genetically engineered to utilize hazardous constituents.	Not proven on a large scale for DDTR. Technology is in the research and development stage; therefore, it will not be considered further. Ineffective for inorganic COCs.	N
Physical/ Chemical	Steam Stripping	Steam is pumped through contaminated soils to remove contaminants.	Marginally effective for low volatility organics such as DDTR. Ineffective for inorganic COCs.	No
	Air Stripping	Air is pumped through contaminated soils to remove contaminants.	Not effective for low volatility organics such as DDTR. Ineffective for inorganic COCs.	No
	Dechlorination	Chemical dechlorination using a sodium reagent (HAPEG)	Treated solids/wastewater phase separation would be difficult to implement for silty/loam soils and sediment mixed with vegetative matter. Ineffective for inorganic COCs.	No
	Hydrolysis	Displacement of a functional group on an organic molecule with a hydroxyl group to chemically degrade hazardous constituents.	Not proven effective for DDTR. Ineffective for inorganic COCs.	No
	Oxidation	Process by which oxidizing agents decompose organic compounds to carbon dioxide and water and inorganics to salts.	Treated solids/wastewater phase separation would be difficult to implement for silty/loam soils and sediment mixed with vegetative matter. Ineffective for inorganic COCs.	No
	Dewatering	Use of passive, gravity-aided removal of excess water from soil/sediment or use of a mechanical technique such as centrifuge, filter press, etc.	May be effective as pretreatment to reduce moisture content.	Yes
	Soil Washing	Extraction of contaminants from soil by aqueous solutions and solvents.	May be effective for DDTR and inorganic COCs. Treated solids/wastewater phase separation would be difficult to implement for silty/loam soil and sediment mixed with vegetative matter.	No
	Solvent Extraction	Extraction of contaminants from soil by use of solvents or superficial fluids.	May be effective for DDTR and inorganic COCs. Treated solids/wastewater phase separation would be difficult to implement for silty/loam soil and sediment mixed with vegetative matter.	No
	Supercritical Fluid Extraction	Use of supercritical carbon dioxide to extract organic contaminants.	Bench-scale studies show that the process is effective for DDT. But the technology has not been demonstrated in the field. Ineffective for inorganic COCs.	No

REVISED DRAFT

TABLE 3-1
PRELIMINARY SCREENING OF REMEDIATION TECHNOLOGIES FOR SOILS/SEDIMENTS FOR AREA A DOWNSTREAM/OBDA, FFS
NSB, NLON, GROTON, CONNECTICUT
PAGE 4 OF 5

TECHNOLOGY	PROCESS OPTION	DESCRIPTION	SCREENING COMMENTS	OPTION RETAINED
Physical/ Chemical (cont'd)	Stabilization	Excavated material is solidified, fixated, or encapsulated to prevent leaching of contaminants.	Physical/chemical properties of soil/sediment will be permanently altered. Moreover, contaminated media will continue to enter potential exposure pathways.	No
Thermal	Incineration	High temperature oxidation of organics in a controlled combustion process.	Very effective in destroying all types of organic contamination. Ineffective for inorganic COCs.	Yes
	Pyrolysis	High temperature heating of materials in the absence of air to thermally degrade wastes to a volatile gaseous portion and residual solid comprising of fixed carbons and ash.	Very effective in destroying organic contamination. Ineffective for inorganic COCs.	Yes
	Thermal Desorption	Separation of contaminants from solids by heating the mixture to drive off contaminants.	Potentially effective for removal of DDTR from contaminated soil/sediment. Ineffective for inorganic COCs.	Yes
GENERAL RESPONSE ACTION: DISPOSAL				
Onsite Landfill	Solid Waste Disposal Area	Removal and transportation of wastes to an existing or newly constructed landfill on base permitted to handle nonhazardous solid waste.	Inadequate space for a new landfill. Existing landfills at NSB, NLON are not permitted for DDTR contaminated wastes.	No
	RCRA Landfill	Removal and transportation of wastes to an existing or newly constructed landfill on base permitted to handle DDTR and/or hazardous waste.	Inadequate space for a new landfill. Existing landfills at NSB, NLON are not permitted for DDTR contaminated wastes.	No
Offsite Landfill	Solid Waste Disposal Area	Removal and transportation of wastes to an existing landfill permitted to handle nonhazardous solid waste.	Applicable to non-RCRA wastes such as soil/sediments at this site.	Yes
	RCRA Landfill	Removal and transportation of wastes to an existing landfill permitted to handle DDTR and/or hazardous waste.	Applicable to all types of wastes.	Y s
Onsite Reuse	Use in Asphalt Batch Plant	Removal and transportation of wastes to an existing batch plant to be used as supplemental aggregate. In the aggregate kiln, organics are volatized and incinerated.	Technology primarily applicable to petroleum hydrocarbons and PAHs. Not suitable for DDTR contaminated soil/sediments.	No
	Fill After Treatment	Use of treated soils as landfill material in nonregulated areas.	Not applicable to sediments because of degree of treatment required to meet stringent PRGs. Potentially applicable to soil because degree of treatment required to meet PRGs are less stringent.	Yes
	Fuel for Boiler or Kilns	Use of wastes as supplemental fuel in industrial boilers or kilns.	Wastes must have heat value generally greater than 5,000 BTU/lb. None of the soils or sediments at Area A Downstream/OBDA are expected to meet this criterion.	No

REVISED DRAFT

TABLE 3-1
PRELIMINARY SCREENING OF REMEDIATION TECHNOLOGIES FOR SOILS/SEDIMENTS FOR AREA A DOWNSTREAM/OBDA, FFS
NSB, NLON, GROTON, CONNECTICUT
PAGE 5 OF 5

TECHNOLOGY	PROCESS OPTION	DESCRIPTION	SCREENING COMMENTS	OPTION RETAINED
Offsite Reuse	Use in Asphalt Batch Plant	Removal and transportation of wastes to an existing batch plant to be used as supplemental aggregate. In the aggregate kiln, organics are volatized and incinerated.	Primarily applicable to petroleum hydrocarbons and PAH. Not applicable to DDTR contaminated soil/sediments.	No
	Use in Cement Manufacturing	Removal and transportation of sediments to an existing plant to be used as raw material. In the cement kiln, organics are incinerated.	Acceptance criteria based on physical characteristics and contaminant profile are restrictive. Silty loam soils with high vegetative content would be unacceptable.	No
	Fill After Treatment	Use of treated sediments as landfill material in nonregulated areas.	High degree of treatment required for soils to be classified as "clean" fill. There are potential long term liabilities associated with this option.	No
	Fuel for Boiler or Kilns	Use of wastes as supplemental fuel in industrial boilers or kilns.	Wastes must have heat value generally greater than 5,000 BTU/lb. None of the soils or sediments at Area A Downstream/OBDA meet this criterion.	No

REVISED DRAFT

FEASIBILITY STUDY
AREA A DOWNSTREAM
DETAILED ANALYSIS OF ALTERNATIVES

- Alternative 1 - No Action
- Alternative 2 - Capping with Instutional Controls
- Alternative 3 - Excavation/Dredging of Soils/Sediments, Dewatering, Offsite Disposal
- Alternative 4 - Excavation/Dredging of Soils/Sediments, Dewatering, Thermal Desorption of Soils and Offsite Disposal of Sediments

FEASIBILITY STUDY
AREA A DOWNSTREAM

ALTERNATIVE 1 - NO ACTION

- STATUS-QUO ALTERNATIVE
- REQUIRED BY NCP TO PROVIDE BASELINE FOR COMPARISON

FEASIBILITY STUDY
AREA A DOWNSTREAM

ALTERNATIVE 2: CAPPING

- PLACEMENT OF SOIL COVER OVER SEDIMENTS AND SOILS
- INSTITUTIONAL CONTROLS (FENCING, SECURITY, DEED RESTRICTIONS)
- LONG TERM MONITORING

FEASIBILITY STUDY
AREA A DOWNSTREAM

ALTERNATIVE 3 - EXCAVATION

- EXCAVATION/DREDGING OF SOILS/SEDIMENTS
- DEWATERING
- OFF-SITE DISPOSAL OF SEDIMENTS, AND SOIL

FEASIBILITY STUDY
AREA A DOWNSTREAM

ALTERNATIVE 4 - EXCAVATION/TREATMENT

- EXCAVATION/DREDGING OF SOIL/ SEDIMENTS
- DEWATERING
- SOILS TREATED BY THERMAL DESORPTION FOR REMOVAL OF DDTR.
- SEDIMENTS DISPOSED OF OFF-SITE

TABLE 5-1

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES
AREA A DOWNSTREAM/OBDA FFS
NAVAL SUBMARINE BASE NEW LONDON, GROTON, CONNECTICUT

CRITERION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
Overall Protection of Human Health and Environment	Not Protective	Protective of environment	Protective of environment	Protective of environment
Compliance with ARARs and TBCs	Does not comply with TBC-based PRGs	Complies with all ARARs and TBCs	Complies with all ARARs and TBCs	Complies with all ARARs and TBCs
Long-Term Effectiveness and Permanence	Not effective. Residual risks unacceptable	Effective.	More effective than Alternative 2.	Most effective.
Reduction of Toxicity, Mobility and Volume through Treatment	None	Minor reduction in toxicity. Some reduction in mobility. No reduction in volume.	Minor reduction in toxicity. Some reduction in volume.	Greatest reduction in toxicity. Some reduction in volume.
Short-Term Effectiveness	No relevant concerns	Significant concerns for ecological habitat.	Severe concerns for ecological habitat.	Severe concerns for ecological habitat. Greater concerns for onsite worker than Alternative 3.
Implementability	Readily implementable.	More easily implementable than Alternative 3 or Alternative 4	More easily implementable than Alternative 4.	Least easy to implement
Cost	Capital: $0 O & M. $0 N.P.W.: $0	Capital: $2,610,000 O & M: $3,000/yr + $5,000/5 yr N.P.W.: $2,670,000	Capital: $8,162,000 O & M: $0 N.P.W.: $N. E.	Capital: $9,580,000 O & M: $0 N.P.W.: $NE

1 O & M: Operation and Maintenance
2. N.P.W.: Net Present Worth of Capital and O & M Costs
3 N.E.: Not Evaluated because of short duration of remedial action.

DISTRIBUTION LIST FOR NSB-NLON RAB MEETING MINUTES

Mr. Mark Evans
Naval Facilities Engineering Command
Northern Division
10 Industrial Highway
Mail Stop #82 (Code 1823/ME)
Lester, PA 19113-2090

Mr. Andy Stackpole
Naval Submarine Base - New London
Environmental Department
Building 166
Groton, CT 06349-5039

Mr. Richard Conant
Naval Submarine Base - New London
Environmental Department
Building 166
Groton, CT 06349-5039

Ms. Kymberlee Keckler
Remedial Project Manager
U.S. EPA Region I
J.F.K. Federal Building
(HBT)
Boston, MA 02203-2211

Mr. Mark Lewis
CT Dept. of Environmental Protection
Water Management Bureau
Permitting, Enforcement, and
Remediation Division
Federal Remediation Program
79 Elm Street
Hartford, CT 06106

Mrs. Deborah Motycka Downie

Mr. Andrew Parrella

Ms. Susan Orrill

Mr. Norman Richards

Mr. Harry Watson

Ms. Suzanne Berkman
Department of the Navy
Naval Submarine Base - New London
Building 166
Groton, CT 06349-5039

Lt. Jim Brooks
Submarine Group 2
Public Affairs Officer, Box 100
Naval Submarine Base, New London
Groton, CT 06349

Mr. Leon Hutchinson
COMSUBLANT, N543
Norfolk Naval Base
Norfolk, VA 23511

Mr. Robert Jones
Regional Environmental Coord.
COMSUBGRP2
Box 100
Groton, CT 06349-5100

Mr. Chuck McGuire
CINCLANTFLT
Code N465
Norfolk, VA 23511

Captain W.P. Thomas MSC USN
Director, Environmental Programs
Navy Environmental Health Center
2510 Walmer Avenue
Norfolk, VA 25313-2617

Mr. Matthew Cochran
Brown & Root Environmental
Foster Plaza VII
661 Andersen Road
Pittsburgh, PA 15220-2745

Mr. Corey Rich
Brown & Root Environmental
Foster Plaza VII
661 Andersen Road
Pittsburgh, PA 15220-2745

DISTRIBUTION LIST FOR NSB-NLON RAB MEETING MINUTES

Mr. Doug Cervenak
Brown & Root Environmental
Foster Plaza VII
661 Andersen Road
Pittsburgh, PA 15220-2745

Mr. Jean-Luc Glorieux
Brown & Root Environmental
Foster Plaza VII
661 Andersen Road
Pittsburgh, PA 15220-2745

Ms. Connie Dinerman
New London Health Department
120 Broad Street
New London, CT 06320

Ms. Mary Jane Engle
Director of Health
Ledgelight Health District
1 Fort Hill Road
Groton, CT 06340

Kenneth Finkelstein, Ph.D.
NOAA
c/o EPA Waste Management Division
J.F.K. Federal Bldg. (HEE-6)
Boston, MA 02203

Ms. Carole Hossam
ATSDR
Mail Stop E-32
1600 Clifton Road, N.E.
Atlanta, GA 30333

Ms. Deborah Jones

Ms. Marijane Mitchell

Mr. Bart Pearson

Dr. Clifford Striba
Director of Health
Uncas Health District
401 West Thames Street
Norwich, CT 06360

Mr. Thomas Wagner

Mr. Carl Tippman
Foster Wheeler Environmental Corp.
2300 Lincoln Highway East
1 Oxford Valley, Suite 200
Langhorne, PA 19047-1829