



**TETRA TECH NUS, INC.**

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N62661 AR 001741  
NAVSTA NEWPORT RI  
5090 3a

C-NAVY-05-04-1713W

May 21, 2004

Project Number N4152

Mr. Curtis Frye  
Remedial Project Manager  
EFA Northeast, Naval Facilities Engineering Command  
10 Industrial Highway, Mail Stop 82  
Lester, Pennsylvania 19113

Reference: CLEAN Contract No. N62472-94-D-0888  
Contract Task Order No. 0833

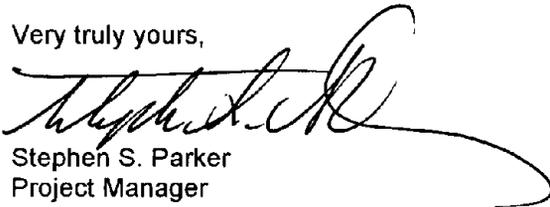
Subject: Internal Draft Action Memo Revision 2  
Old Fire Fighting Training Area  
Naval Station Newport, Newport Rhode Island

Dear Mr. Frye:

Attached for your review is the Internal Draft (Revision 2) Action Memorandum for the site referenced above. This revision has been prepared to address only the mound removal, per your comment to the Revision 1, dated April 30, 2004. In accordance with the Scope of Work, we have provided copies of this material to the parties described in the distribution list below.

We will take comments to this submittal at your convenience. If you have any questions regarding this material, please do not hesitate to contact me.

Very truly yours,



Stephen S. Parker  
Project Manager

SSP/rp

Enclosure

c: C. Mueller, NSN (2 w/encl.)  
J. Trepanowski/G. Glenn, TtNUS (w/ encl.)  
File N4152-3.2 w/o encl, N4152-8.0 (w/encl.)



BASE MAP IS A PORTION OF THE FOLLOWING 7.5 X 15 MINUTE U.S.G.S. QUADRANGLE:  
 PRUDENCE ISLAND, RHODE ISLAND, 1955, PHOTOREVISED 1970 AND 1975



QUADRANGLE LOCATION

SITE LOCUS

FIGURE 1

OLD FIRE FIGHTING TRAINING AREA

NAVSTA NEWPORT – NEWPORT, RHODE ISLAND

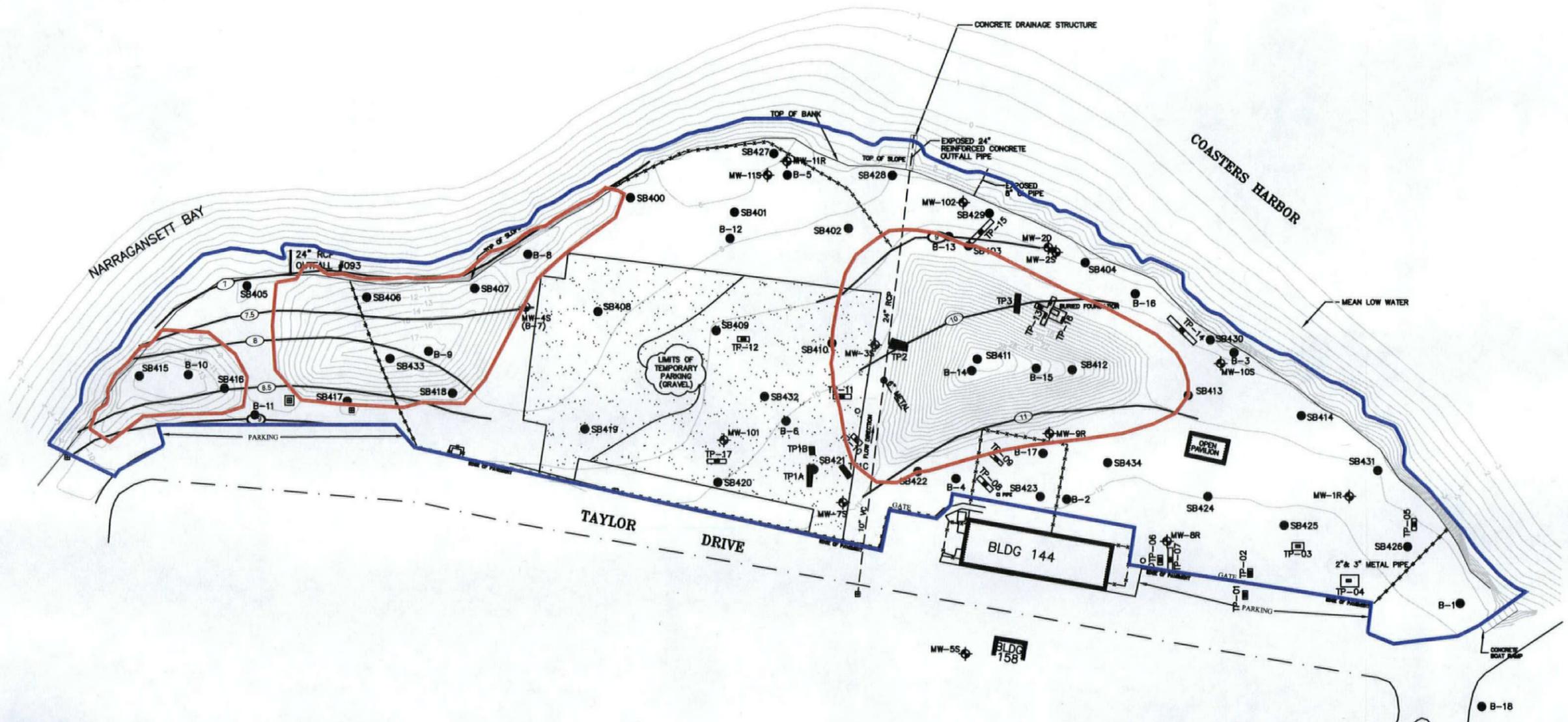


TETRA TECH NUS, INC.

DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	J. FORRELLI	DATE:	MAY 19, 2004
SCALE:	AS NOTED	ACAD NAME:	DWG\4152\1230\FIG_1.DWG

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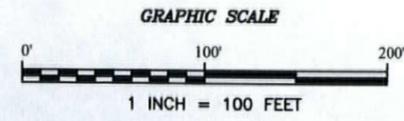


**NOTES AND REFERENCES:**

1. DRAWING COMPILED FROM A DRAWING ENTITLED 'BASE MAP OLD FIRE FIGHTING TRAINING AREA NETC, NEWPORT, RHODE ISLAND, JULY 1997, PROJ. NO. 7578 CTD: 288, BY BROWN & ROOT ENVIRONMENTAL, SOURCE: BASE PLAN BY GUERRIERE & HALNON, INC., DATED NOVEMBER 10, 1997, AND THE ADDITION OF FIELD MEASURED FEATURES, BY LOUIS FEDERICI AND ASSOCIATES 3/16/99, PRESENTED ON A DRAWING ENTITLED 'KADY FIELD, TOPOGRAPHIC, SOIL SAMPLE LOCATION, AND SITE SURVEY AT THE OLD FIRE FIGHTING TRAINING AREA, NAVAL STATION NEWPORT IN NEWPORT, RHODE ISLAND FOR TETRA TECH NUS, INC., LOUIS FEDERICI & ASSOCIATES, 3/16/99, DWG NO. 990205-01.
2. HORIZONTAL DATUM BASE ON THE RI STATE PLANE COORDINATE SYSTEM NAD 1927. VERTICAL DATUM BASED ON NAVAL BASE MEAN LOW WATER.
3. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.
4. PLAN NOT TO BE USED FOR DESIGN.

**LEGEND**

- ▣ CATCH BASIN
- - - - - FENCE
- - - - - EXISTING CONTOUR
- B-16 SOIL BORING LOCATION
- ⊕ MW-65 MONITORING WELL LOCATION
- - - - - STORM SEWER
- ⊕ TP-16 TEST PIT LOCATION (B&RE, 6/97)
- ⊕ TP-17 TEST PIT LOCATION (TRC, 1/94)
- - - - - ROAD CHANGED FROM LAST SURVEY DUE TO CONSTRUCTION ON TAYLOR DRIVE
- EXPECTED TOPOGRAPHY AFTER MOUND REMOVAL (2004)
- APPROXIMATE MOUND EXCAVATION AREA LIMITS
- SOIL RPG EXCEEDANCE AREA LIMITS



MOUND EXCAVATION AREAS	
ACTION MEMORANDUM	
OLD FIRE FIGHTING TRAINING AREA	
NAVSTA NEWPORT - NEWPORT, RHODE ISLAND	
DRAWN BY:	D.W. MACDOUGALL
CHECKED BY:	S. PARKER
SCALE:	1" = 100'
REV.:	0
DATE:	MAY 18, 2004
FILE NO.:	DWG\4152\1230\MOUND.DWG

FIGURE 3

**TETRA TECH NUS, INC.**  
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**Attachment C**  
**Admin Record Index of Site Specific Documents**

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NAVAL STATION NEWPORT  
ADMINISTRATIVE RECORD FILE

CD No.	ID No.	Manager	JOB No.	Job Name	File/Location	Doc	Tracking No	EPA/AR Category and Document Tracking No	Site	Date	Doc Type	Description	Author	Cross Ref
CD4	00123	Parker	N7574	NUWC WORK PLANS	N7574-8 0	38379		01 04 08 0004	NUSC DISP AREA	1/14/1998	PLAN	FINAL SASE WORK PLAN, NUSC DISPOSAL AREA	TTNUS	
CD2	00124	FORRELLI	N5278	NETC RIFS	TTNUS LIBRARY	DISK 09-2		03 04 09 0001	OFFTA	8/1/1994	REPORT	OFFTA REMEDIAL INVESTIGATION REPORT, DRAFT FINAL	TRC	
CD2	00125	FORRELLI	N5278	NETC RIFS	TTNUS LIBRARY	DISK 09-6		03 04 09 0002	OFFTA	8/1/1994	REPORT	OFFTA HUMAN HEALTH RISK ASSESSMENT, DRAFT FINAL TEXT AND TABLES	TRC	
CD2	00126	FORRELLI	N5278	NETC RIFS	TTNUS LIBRARY	DISK 09-1		03 04 09 0003	OFFTA	8/1/1994	REPORT	OFFTA REMEDIAL INVESTIGATION REPORT, DRAFT FINAL, TEXT AND TABLES	TRC	
CD2	00127	FORRELLI	N5278	NETC RIFS	TTNUS LIBRARY	DISK 09-8		03 04 09 0004	OFFTA	10/1/1994	REPORT	OFFTA ECOLOGICAL RISK ASSESSMENT, DRAFT FINAL, TEXT AND TABLES	TRC	
CD2	00128	FORRELLI	N5278	NETC RIFS	TTNUS LIBRARY	DISK 09-11		04 02 09 0001	OFFTA	11/1/1994	REPORT	OFFTA FEASIBILITY STUDY, DRAFT, TABLES AND TABLES	TRC	
CD2	00130	Parker	N1703	ERA WORK PLANS	N1703-3 2	28778	C-52-10-5-2793	03 01 09 0001	OFFTA	10/16/1995	LETTER	MEMO OF UNDERSTANDING, ECORISK WORK PLAN	TTNUS	
CD2	00131	Parker	N1703	ERA WORK PLANS	N1703-2 1	38155		03 01.09 0002	OFFTA	4/29/1996	PLAN	ECORISK WORK PLAN ADDENDUM C, DRAFT FINAL, OFFTA	URIGSO	
CD4	00132	Archive	N7397	OFFTA ERA	TTNUS LIBRARY	NA		03 04 09 0005	OFFTA	12/18/1998	REPORT	TECHNICAL SUPPORT DOCUMENT (DATA) FOR THE ECOLOGICAL RISK ASSESSMENT, OFFTA	TTNUS	
CD4	00133	Forrelli	N5278	NETC RI/FIS	N5278-3 1	44415	NAVY-IN-0592	06 01 09.0001	OFFTA	11/20/1998	LETTER	RIDEM CONCURRENCE ON 0-1 FOOT SAMPLE INTERVAL FOR SURFACE SOILS AT KATY FIELD	NAVY	
CD4	00134	Archive	NA	KATY FIELD	NSN LIBRARY	ELDN 10119		10 04 09 0001	OFFTA	11/23/1998	MINUTES	PROCEEDINGS AT THE FIRST PUBLIC HEARING, KATY FIELD AND OFFTA	IRONS AND ASSOC	
CD5	00135	Parker	N7397	OFFTA ERA	N7397-8 0	44480	C-NAVY-1-99-1315W	03 04 09 0006	OFFTA	1/20/1999	LETTER	OFFTA ECORISK DATA REVISIONS	TTNUS	
CD5	00136	Archive	NA	KATY FIELD	NSN LIBRARY	ELDN 10103		10 04 09 0002	OFFTA	1/25/1999	MINUTES	PROCEEDINGS AT THE SECOND PUBLIC HEARING, KATY FIELD AND OFFTA	IRONS AND ASSOC	

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CD No.	ID N	Manager	JOB No.	Job Name	File/ Location	Doc#	Tracking No.	EPA AR Category and Document Tracking No.	Site	Date	Doc Type	Description	Auth r	Cr ss:Ref
CD5	00137	Parker	N7397	OFFTA ERA	N7397-8 0	44486	C-NAVY-2-99-1326W	03 04 09 0007	OFFTA	2/16/1999	LETTER	OFFTA ECORISK DATA AMEND 02	TTNUS	
CD5	00138	Forrelli	N5278	NETC RI/FS	N5278-3 1	45852		03 04 09 0008	OFFTA	3/16/1999	LETTER	EPA ASSESSMENT OF DATA NEEDED TO COMPLETE THE OFFTA RI	USEPA	
CD5	00139	Forrelli	N5278	NETC RI/FS	N5278-8 0	47589		03 04 09 0009	OFFTA	5/10/1999	REPORT	HUMAN HEALTH RISK ASSESSMENT REPORT, SOIL AND SEDIMENT OFFTA SITE	TTNUS	
CD5	00140	Forrelli	N5278	NETC RI/FS	N5278-3 1	47171	NAVY-IN-0632	03 04 09 0010	OFFTA	6/14/1999	LETTER	EPA COMMENTS ON THE DRAFT RISK ASSESSMENT REPORT FOR KATY FIELD	USEPA	
CD5	00141	Forrelli	N5278	NETC RI/FS	N5278-3 1	47176	NAVY-IN-0638	03 04 09 0011	OFFTA	6/18/1999	LETTER	RIDEM COMMENTS ON THE DRAFT RISK ASSESSMENT REPORT FOR KATY FIELD	RIDEM	
CD5	00142	Forrelli	N5278	NETC RI/FS	N5278-8 0	47232	C-NAVY-8-99-1370W	03 04 09 0012	OFFTA	8/3/1999	LETTER	REPONSE TO RIDEM COMMENTS ON THE DRAFT HUMAN HEALTH RISK ASSESSMENT, KATY FIELD	TTNUS	
CD5	00143	Forrelli	N5278	NETC RI/FS	N5278-8 0	47233	C-NAVY-8-99-1369W	03.04 09 0013	OFFTA	8/3/1999	LETTER	RESPONSE TO EPA COMMENTS ON THE DRAFT HUMAN HEALTH RISK ASSESSMENT, KATY FIELD	TTNUS	
CD5	00144	Forrelli	N5278	NETC RI/FS	N5278-3 1	47798		03 04 09 0014	OFFTA	8/30/1999	LETTER	EPA REBUTTAL TO NAVYS RESPONSE TO COMMENTS ON THE DRAFT RISK ASSESSMENT REPORT FOR KATY FIELD	USEPA	
CD5	00145	Parker	N7397	OFFTA ERA	N7397-8 0	48429	C-NAVY-10-99-1384W	03 04 09 0015	OFFTA	9/30/1999	LETTER	RESPONSE TO COMMENTS FOR THE DRAFT FINAL ECOLOGICAL RISK ASSESSMENT, OFFTA	TTNUS	
CD5	00146	Parker	N7397	OFFTA ERA	N7397-8 0	52607		03 04 09 0016	OFFTA	4/28/2000	REPORT	FINAL ECOLOGICAL RISK ASSESSMENT REPORT/TECHNICAL REPORT AND REVISED APPENDIX D	SAIC / URIGSO	
CD5	00147	Forrelli	N5278	NETC RI/FS	N5278-3 1	52740	NAVY-IN-0659	03 04 09 0017	OFFTA	5/22/2000	LETTER	EPA COMMENTS TO THE BACKGROUND SOIL INVESTIGATION REPORT	USEPA	
CD5	00148	Forrelli	N5278	NETC RI/FS	N5278-3.2	53172	C-NAVY-6-00-1448W	03 04 09 0018	OFFTA	6/22/2000	LETTER	HUMAN HEALTH RISK ASSESSMENT EXPOSURE PARAMETER TABLES	TTNUS	

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CD N	ID/No	Manager	JOB No	Job Name	File/ Location	Doc	Tracking No	EPA/AR Category and Document Tracking No	Site	Date	Doc Type	Description	Author	Cross Ref
CD5	00149	Forrelli	N5278	NETC RI/FS	N5278-3 1	54331		03 04 09 0019	OFFTA	7/12/2000	LETTER	RIDEM COMMENTS TO THE HUMAN HEALTH RISK ASSESSMENT EXPOSURE PARAMETERS	RIDEM	
CD5	00150	Forrelli	N5278	NETC RI/FS	N5278-8 0	53686	C-NAVY-7- 00-1456W	03 04 09 0020	OFFTA	7/13/2000	LETTER	RESPONSE TO RIDEM COMMENTS ON THE DRAFT BACKGROUND SOIL INVESTIGATION REPORT FOR OFFTA	TTNUS	
CD5	00151	Forrelli	N5278	NETC RI/FS	N5278-8 0	53687	C-NAVY-7- 00-1455W	03 04 09 0021	OFFTA	7/13/2000	LETTER	RESPONSE TO EPA COMMENTS ON THE DRAFT BACKGROUND SOIL INVESTIGATION REPORT FOR OFFTA	TTNUS	
CD5	00152	Forrelli	N5278	NETC RI/FS	N5278-8 0	54332	C-NAVY-8- 00-1461W	03 04 09 0022	OFFTA	8/16/2000	LETTER	RESPONSE TO RIDEM COMMENTS ON THE PROPOSED HHRA EXPOSURE PARAMETERS FOR OFFTA	TTNUS	
CD5	00153	Forrelli	N5278	NETC RI/FS	N5278-8 0	54340		03 04 09 0023	OFFTA	8/23/2000	REPORT	FINAL BACKGROUND SOIL INVESTIGATION REPORT, OFFTA	TTNUS	
CD5	00154	Forrelli	N5278	NETC RI/FS	N5278-3 1	56132		03 04 09 0024	OFFTA	11/20/2000	LETTER	EPA COMMENTS TO THE DRAFT FINAL RI REPORT FOR OFFTA	USEPA	
CD5	00155	Forrelli	N5278	NETC RI/FS	N5278-3 1	56153		03 04 09 0025	OFFTA	12/5/2000	LETTER	RIDEM COMMENTS TO THE DRAFT FINAL PHASE 3 RI REPORT FOR OFFTA	RIDEM	
CD5	00156	Forrelli	N5278	NETC RI/FS	N5278-8 0	55601	C-NAVY- 12-00- 1471W	03 04 09 0026	OFFTA	12/20/2000	LETTER	RESPONSES TO COMMENTS TO REVISED DRAFT FINAL RI, OFFTA	TTNUS	
CD5	00157	Forrelli	N5278	NETC RI/FS	N5278-3 1	56169		03 04 09 0027	OFFTA	1/16/2001	LETTER	EPA REBUTTAL TO NAVY RESPONSE TO EPA COMMENTS ON THE DRAFT FINAL RI REPORT, OFFTA	USEPA	
CD5	00158	Forrelli	N5278	NETC RI/FS	N5278-3 1	56152		04 02 09.0001	OFFTA	2/7/2001	LETTER	EPA COMMENTS TO THE PROPOSED SEDIMENT PRG DEVELOPMENT FOR OFFTA	USEPA	
CD5	00159	Forrelli	N5278	NETC RI/FS	N5278-3 1	56266		03.04.09 0028	OFFTA	2/8/2001	LETTER	NAVY COMMENTS TO RIDEM PROPOSED STATISTICAL EVALUATION OF BACKGROUND SAMPLING, OFFTA	NAVY	
CD5	00160	Forrelli	N5278	NETC RI/FS	N5278-8 0	56181	C-NAVY- 01-01- 1478W	03 04 09 0029	OFFTA	2/20/2001	LETTER	RESPONSE TO ADDITIONAL EPA COMMENTS TO THE REVISED DRAFT FINAL RI, OFFTA	TTNUS	
CD5	00161	Forrelli	N5278	NETC RI/FS	N5278-8 0	56179	C-NAVY- 01-01- 1479W	04 02 09.0002	OFFTA	2/22/2001	LETTER	NAVY RESPONSE TO EPA PROPOSED PRG DEVELOPMENT ALTERNATIVES, OFFTA MARINE SEDIMENT	TTNUS	

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CD No	ID No	Manager	JOB No.	Job Name	File/Location	Doc	Tracking No	EPA AR Category and Document Tracking No.	Site	Date	Doc Type	Description	Author	Cross Ref
CD5	00162	Parker	N7397	OFFTA ERA	N7397-3 2	56183	C-NAVY-03-01-1480W	03 04 09 0030	OFFTA	3/1/2001	LETTER	ERRATA SHEETS FOR FINAL ERA OFFTA	SAIC	
CD5	00163	Forrelli	N5278	NETC RI/FS	N5278-3.1	56263		03 04 09 0031	OFFTA	3/15/2001	LETTER	EPA REBUTTAL ON NAVY RESPONSE TO ADDITIONAL EPA COMMENTS ON THE DRAFT FINAL RI REPORT, OFFTA	USEPA	
CD5	00164	Parker	N7397	OFFTA ERA	N7397-3 2	56112	C-NAVY-03-01-1484W	04 02 09 0003	OFFTA	3/28/2001	LETTER	RESPONSE TO COMMENTS, PROPOSED PRG DEVELOPMENT, OFFTA	TTNUS	
CD5	00165	Forrelli	N5278	NETC RI/FS	N5278-8 0	56286	C-NAVY-01-01-1485	03 04 09 0032	OFFTA	4/11/2001	LETTER	NAVY RESPONSE TO EPA REBUTTAL ON RESPONSE TO ADDITIONAL COMMENTS ON THE DRAFT FINAL RI, OFFTA	TTNUS	
CD5	00166	Archive	NA	OFFTA ERA	TTNUS LIBRARY	EPA_EMAIL_042301		04 02.09.0004	OFFTA	4/23/2001	LETTER	COMMENTS TO TTNUS CORRESPONDENCE ON PRG DEVELOPMENT DOCUMENT, OFFTA	EPA	
CD5	00167	Forrelli	N5278	NETC RI/FS	N5278-8 0	W5200234F	W5200234 F	03 04 09 0033	OFFTA	7/1/2001	REPORT	FINAL REMEDIAL INVESTIGATION REPORT FOR OFFTA	TTNUS	
CD1	00168	Archive	NA	TANK FARM 5	NSN Library	ELDN 10409		01 01 13 0001	TANKS 53 AND 56	9/1/1987	PLAN	TANK CLOSURE PLAN TANKS 53 AND 56	ENVIRONMENTAL RESOURCE ASSOCIATES	
CD1	00169	Forrelli	N0288A	Tank Farms 4&5	N0288A-4 11	31009		01 01 13 0002	TANKS 53 AND 56	6/1/1991	REPORT	TANK CLOSURE INVESTIGATION, TANKS 53 AND 56, TANK FARM 5 BY TRC	TRC	
CD1	00170	Forrelli	N0288A	Tank Farms 4&5	N0288A-4 11	31010			TANKS 53 AND 56	1/1/1993	REPORT	REMEDIAL DESIGN WORK PLAN, GROUNDWATER TREATMENT INTERIM REMEDIAL ACTION TK'S 53&56	TRC	
CD1	00171	Forrelli	N0288A	Tank Farms 4&5	N0288A-4 11	31011			TANKS 53 AND 56	1/1/1993	REPORT	35% DESIGN SUBMISSION, GROUNDWATER TREAT INTERIM RA 53&56	TRC	
CD1	00172	Archive	NA	TANK FARM 5	NSN Library	ELDN 10403			TANKS 53 AND 56	1/25/1993	SPEC	SPEC FOR INTERIM REMEDIAL ACTION, TANKS 53 AND 56	TRC	
CD1	00173	Archive	NA	TANK FARM 5	NSN Library	ELDN 10407			TANKS 53 AND 56	5/1/1993	REPORT	90% DESIGN ANALYSIS FOR GW INTERIM REMEDIAL ACTION, TANKS 53 AND 56	TRC	

**Attachment D**  
**Responsiveness Summary on Public and Other Comments to the Fact Sheet**

**RESPONSIVENESS SUMMARY  
FACT SHEET FOR SOIL REMOVAL ACTION  
OLD FIREFIGHTING TRAINING AREA  
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND**

The purpose of the responsiveness summary is to document the Navy's responses to the comments and questions raised during the public comment period on the proposed removal action plan. The Navy considered all of the comments summarized in this section before selecting the remedy described in this Action Memorandum.

**BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS**

In 1996 the Navy established a citizen's advisory committee called a Restoration Advisory Board (RAB) to assist the Navy in addressing Installation Restoration (IR) program sites, such as the Old Fire Fighting Training Area (OFFTA). The RAB meets monthly at NAVSTA Newport to discuss planned and ongoing activities at the IR sites on the base. The cleanup alternatives for site soil were discussed at RAB meetings at various times during the development of the Feasibility Study (FS). Input provided by the RAB was considered during development of the FS, the Fact Sheet describing the proposed soil cleanup, and the Action Memorandum.

The FS for the OFFTA site was made available to the public in September and the Fact Sheet describing the proposed soil cleanup was made available in July 2003. They can be found in the information repositories maintained for the site at the Middletown, Newport, and Portsmouth, Rhode Island Public Libraries.

The notice of availability for the Fact Sheet describing the proposed soil cleanup was published in the Newport Daily News and the Providence Journal – East Bay Edition on July 8, 11, and 15, 2003. A public comment period on the proposed cleanup plan lasted from July 16, 2003 to August 15, 2003. An informational open house and meeting was held on July 16, 2003 to present the proposed soil cleanup plan to the public and to solicit comments on the plan. Representatives from the Navy, EPA, and the RIDEM were available at the meeting to discuss the public's questions and concerns about the site. A representative from the Navy was present at the hearing to record the public's formal comments and comment cards were available for people to provide formal written comments.

**COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND THE NAVY'S RESPONSE TO THOSE COMMENTS**

Formal comments on the proposed cleanup plan were received from eleven individuals or groups during the public comment period. The rest of this section presents the comments received and provides the Navy's responses to those comments.

**Name:**

Ms. Claudette Weissinger

**Comment:**

Highly support the offshore and on shore clean up be done at the same time. (for obvious reasons).

**Navy's Response:**

The Navy believes that the sediment data collected to date are inconclusive in demonstrating that an active remediation of the offshore sediment is warranted. The Navy believes that conducting an aggressive offshore sediment clean up would be more harmful to the marine habitat and marine life than taking no action. (There is no identified human health risk from the offshore sediments.) RIDEM and EPA disagree with the Navy's conclusions about the need for active remediation of the sediment, but have agreed to postpone the final offshore decision. The Navy will collect additional offshore data and further evaluate the extent of any additional actions needed for sediment. Rather than delay the soil cleanup until additional data are collected, evaluated and agreement is reached on the appropriate action for sediment, the Navy believes it is in the best interest of the public, and the environment, to move forward with the onshore soil removal action now.

**Name:**

Mr. Christopher Burnett  
President,  
Spinblade Energy LLC  
Portsmouth, RI

**Comment:**

Has the Navy considered the merits of installing 2 to 3 wind turbines at the recovered site for the purpose of generating clean, carbon free renewable electric power for the use of Navy Station Newport. Such an initiative could help to take a negative toxic removal into a positive renewable energy projects. The U.S. Navy would not have to pay for such an initiative but could lease 3 locations (approximately 28 feet in diameter) to mount modern 1.5 mw turbines. Based on local onemometer data these turbines could generate 9.0 mwh of power annually. It could generate additional income to the Navy and reduce the base dependence on easily interrupted commercial power.

(The commentor attached) copies of relevant DOD directives on renewable energy. The proposed turbines would not preclude in any way the use of the land for recreational or other purposes. The State of RI can provide subsidy from RI Renewable Funds. Potential income - \$50,000 to \$75,000 per year for 4.5 mw. Excellent welfare and rec funds. Provide free power for streetlights for the Navy.

**Navy's Response:**

The installation of wind turbines falls outside the scope and jurisdiction of the Navy's Installation Restoration Program, under which waste site investigation and remediation are performed. The Public Works Officer for NAVSTA Newport is responsible for managing real estate property, and energy initiatives and conservation. The NAVSTA Environmental staff will bring to the attention of the Public Works Officer this concept for his awareness and future considerations on any area of NAVSTA property.

**Name:**

Ms. Mary Philcox  
Aquidneck Island Citizens Advisory Board

**Comments:**

Soil Cleanup:

1. Storm Drain System – The existing storm drain system has been implicated as a potential source of PAH contaminants either through direct runoff or as a migration pathway. As the existing system is being removed during excavation, this is an opportunity to eliminate one of the variables associated with the sediment contamination. How does the Navy propose to address storm water conveyances and discharges at this site after the soil cleanup is completed?

**Navy's Response:**

The existing storm drainage system is currently being upgraded to include a contaminant capture system, and other upgrades will be considered as a part of the proposed construction clean-up for the site.

2. Truck Traffic – Request that the Navy minimize the impact of truck traffic on the local community as well as people along the routes to the disposal sites. For example, truck arrival and departure times could be limited to reduce noise and traffic during early morning and late evening hours, loads should be covered and weight restrictions should be observed.

**Navy's Response:**

The Navy will make efforts to minimize the impacts of truck traffic on the community through the means described above as well as others such as routing trucks to limit travel on small secondary roads to the extent possible. The design document for the soil cleanup will address these issues in detail.

3. The Navy, USEPA, and RIDEM have not yet reached an agreement on the proposed remedy for the sediments. As it is possible that a sediment cleanup could be conducted concurrently with the soil cleanup, this issue should be resolved as soon as possible. What is the process for reaching agreement? What type of time frame is anticipated?

**Navy's Response:**

The Navy is in the process of completing the Draft Work Plan for a supplemental monitoring to collect and evaluate additional data to determine the extent of any remedial actions needed for offshore sediment. USEPA and RIDEM must review and approve the draft work plan before the investigation is conducted. After the work plan is approved, the Navy will conduct the investigation and incorporate its findings into a revised Feasibility Study. USEPA and RIDEM will review the revised FS and provide comments or concurrence. The time frame for reaching agreement is dependent on the length of time it takes to prepare the draft documents, the length of time for all parties to review, comment and agree or reach consensus on each document discussed above. Our goal is to reach agreement on the monitoring work plan during the winter season so that sediment sampling may begin in the spring.

4. The Navy has indicated that it does not believe that there is a significant cost savings if soil removal and sediment removal actions occur concurrently. What is the estimated difference in cost between conducting the soil and sediment removal concurrently versus separately?

**Navy's Response:**

The costs for performing the soil and the sediment removal actions have been estimated separately, because different equipment is required, and logistics may require one be performed either before or after the other. However, it is believed that some of the administrative costs (contracting actions, project management, etc.) would be shared between the two actions if they were conducted together. Using the estimates recently published, sharing these tasks could result in a cost savings of approximately \$58,000. It is also possible that some savings could be realized for waste disposal per ton, if both sediment and soils are removed together; however, this is unknown at this time. Basically if both the soil and sediments removal actions are combined the administrative cost saving is minimal when compared to the overall project cost estimated in the FS.

5. Phase II pre-design sampling at sediment station SD-410 yielded results that were an order of magnitude lower than the results obtained during the Feasibility Study (FS) sampling. The FS sample result was above the preliminary remediation goal (PRG) but the Pre-design sample result was less than the PRG. What method will the Navy use to determine whether the contaminant levels in the sediment are safe if the results cannot be directly compared to the PRG due to variability? Does the Navy have an explanation for the variability in the test results? Does the Navy plan to conduct further studies of the behavior of the contaminants in the sediment? Will additional modeling of sediment stability and other physical, biological and chemical processes be performed? What is the timeframe for any planned studies and will the work be completed prior to the proposed soil removal?

**Navy's Response:**

The Navy is still evaluating the conditions at the site to determine the extent of any remedial actions needed for offshore sediment. These evaluations include reevaluation of existing data, as well as collection of new data before and after soil removal actions. The variability described above is one factor that contributed to Navy's conclusion that active remediation of the sediments is not warranted. Variability can be related to the nature of ocean sediments (moving with tides and storm events) and with what is known as heterogeneity. The continued monitoring effort will go on through 2004 and 2005 (contingent on work plan approval), while the soil removal is plan in two stages. The first stage is to remove the known soil mounds on site in 2004. For stage one, the exact amount of soil needing removal is evident since it is well known that the soil mounds were created when the original fire fighting training operation were terminated. The larger of the two removal actions the second stage will remove the subsurface soil contamination in 2005. .

6. The Navy has proposed that the sediment be monitored after the soil removal action is completed to see if cleanup goals will eventually be reached as an alternative to concurrent soil and sediment removal. How does the Navy propose to determine whether cleanup goals have been met? What would be the scope of the sampling (frequency, locations, parameters)? What levels/trends would be considered to meet remediation goals?

**Navy's Response:**

Sediment results from current and past sampling efforts continue to be compared with remediation goals provided in the Feasibility Study Report (September 2002). Additionally, these results are shared with USEPA and RIDEM for continuing discussions on whether these sediments will require removal. The Sediment and Groundwater Monitoring Draft Work Plan soon to be released for this site will address the scope of the sampling efforts. The findings will be used to make a determination of what follow-on actions are necessary.

**Name:**

Mr. David W. Brown

**Comments:**

I appreciate the facts sheets, displays, briefings and study reports that the Navy has provided on OFFTA over the past two years. It is good that NSN intends to go ahead with this part of the OFFTA cleanup as soon as possible. But I have the following concerns:

1. In using just the three criteria and choosing Alt. 3 (removal and disposal) over Alt. 2 (removal, treatment, backfill), the Navy has ignored the negative long-term community and area effects ("external social costs").

The Navy has chosen the cheapest way to meet cleanup standards from the standpoint of its own "out-of-pocket" costs, but it has not included indirect costs to the public, both tangible and

intangible. From the community externalities standpoint, Alt. 3 is likely to be worse than Alt. 2 in at least the following ways:

- a) More exposure of people along the truck routes to dust, engine emissions, and noise from hauling more tons of contaminated stuff away.
- b) More wear-and-tear on the roads and bridges that the trucks use.
- c) Quicker fill-up of the landfills where the stuff is dumped, and needs for our region to find other, more costly ways to dispose of waste sooner.
- d) Possible need eventually to clean up more OFFTA material at the dumping sites, if people-intensive land uses there are eventually sought.
- e) Possible added human health and ecological risks near the dumping sites from having more OFFTA material there.

The only "social" pluses I can think of for Alt. 3 are that f) more work for local truckers and drivers will be generated and g) by having a few months' quicker access to OFFTA, NSN may generate a few more jobs sooner.

An argument that you have used "standard procedures" won't hold. As good environmental economics and benefit-cost references will tell you, sound comparisons will "internalize" such externalities into the analysis. Or at least, a tradeoff framework should be used to weight the Navy's costs and benefits against these other important society-wide considerations.

To put it another way, I don't think that citizens here want to be party to messing up the life qualities, safety and environment of people elsewhere, just to clean up our own backyard the cheapest way. So I am calling for the above kinds of "external" issues and concerns to be given full consideration by the Navy, regulatory agencies and others involved before choosing Alt. 3.

**Navy's Response:**

The Navy considers these types of indirect "social" costs to the extent possible in evaluating remedial options. The Navy agrees that the external social cost concerns mentioned above are valid for any removal action project that removes contaminated soil from a site and transports it to a permitted landfill disposal facility, and as such are taken into consideration when doing comparisons. However, fiscal reality dictates that it must also give great weight to the bottom line "out-of-pocket" costs in order to maximize the environmental cleanup benefits across all of the Navy sites. The Navy has a finite budget to divide among the many needed investigation and remediation projects under its jurisdiction. Therefore every extra dollar spent on one project is a dollar diverted from another project. The social costs of alternative 3 identified above must be weighed not simply against the direct and indirect costs of alternative 2, but also against the human and environmental costs of not using the \$5,000,000 cost difference to fund the cleanup of another site.

**2. Why have the estimated cost and time advantages of Alt. 3 become greater than before?**

Earlier drafts of remedial alternatives talked in terms of \$8 million for Alt. 3 vs. \$12 million for Alt. 2. Now it's \$9 million vs. \$14 million. And even more striking, while it was formerly 4-6 months vs. 6-8 months, now it's 6 months vs. 2 years. What justified these big comparative changes from earlier estimates?

**Navy's Response:**

The alternatives and associated estimates provided in the Draft Feasibility Study were revised based on review of the draft document. This is not uncommon, and indeed the purpose of the peer review of the documents, to assure that all the efforts associated with the projects have been properly thought out.

Several factors contributed to the increased cost estimates. Costs for both alternatives increased because the conversion factor for the number of tons per cubic yard of soil to be removed was revised

from approximately 1.2 to 1.5, increasing the estimated tonnage to be removed and increasing all costs estimated on unit-tons (transport costs, disposal costs, backfill costs, etc.). Additionally, estimated sampling costs increased for both alternatives because the number of confirmation samples to be collected after excavation was increased, and the frequency of testing soil to be disposed of was increased. For alternative 2, additional costs were included for more post-treatment confirmation analysis, and pilot testing of the treatment process.

The schedules for both Alternatives 2 and 3 were revised to be more complete. Both schedules were revised to include time for mobilization and demobilization, instead of only including the earthmoving operations. The schedule for alternative 2 was revised to include pilot testing efforts, and to increase the time for treatment on site because the treatment time in the draft schedule was judged to be too short to achieve the cleanup goals.

3. If you go ahead with Alt. 3,
  - a) Can you demonstrate that the Navy is taking precautions to minimize negative social (community and area) impacts? E.g. why not barge the stuff away instead of trucking it?
  - b) If there some social damages (like medical problems from truck pollution or ruined roads), is the Navy prepared to compensate for the damages without hassle or delay?

**Navy's Response:**

During the design of the soil cleanup, the Navy will evaluate various means of minimizing potential impacts to the surrounding community and environment. Alternate transportation methods, transportation routes, hauling schedules, covered and sealed hauling containers, dust control methods; and air monitoring will be evaluated to develop an implementable, cost effective plan that minimizes negative impacts to the community and environment.

The Navy has conducted remedial actions of this scale at Naval Station Newport and other bases taking appropriate precautions to not damage people's health or the local infrastructure. The Navy anticipates that the proposed cleanup can be carried out in a safe manner and with minimal disruptive activities to the surrounding community. If the Navy causes any damage as a result of the cleanup, the Navy will work with the community to remedy the damage.

4. Re the off-shore sediment, I'm disappointed that the Navy isn't going ahead with the off-shore cleanup now. But it's heartening to learn that the Navy wants to reach agreement with EPA and RIDEM in coming months. What are the remaining issues, who will take the next negotiating step, and when?

**Navy's Response:**

The Navy does not believe that remedial action is warranted for the offshore sediment because the current data does not consistently show a connection between the contaminants in the sediment and the contaminants on the site. The sediment contaminants appear to be more closely related to urban runoff and storm water pollutants than the oils that are present in the soil at the site. RIDEM and EPA disagree with the Navy's conclusions about the need for active remediation of the sediment, but have agreed to postpone the final offshore decision. The Navy will collect additional offshore data and further evaluate the extent of any additional actions needed for sediment. The Navy is scheduling meetings with the regulators to continue to discuss the technical differences. The next steps are completing and reaching agreement on future monitoring efforts.

5. Re the groundwater, can't the Navy do better than just monitor before/after outflows? Why not make improvements in surface and subsurface drainage for that whole part of the Island as an integral part of the soil cleanup (e.g., drainage from the new "temporary" parking lot on part of OFFTA)?

**Navy's Response:**

The Navy has installed upgrades including pollutant capture system to the storm drain system that discharges to the north portion of the site. Additional improvements are being considered for the second storm drain system at the site, and would be included in the second stage soil removal action.

**Name:**

Ms. Nathaya Johnson

**Comment:**

This is an issue that shouldn't even be talked about anymore! This project should have started and been in the works a long time ago. Now they're talking about more delays? More delays to begin to right the wrong to the environment? Delays such as that tend to contradict the very standards which certain organizations were set up for originally. These organizations were set up to take action, not bog down and delay. That having been said, let me just say that we'd better start the cleanup of this project in order to better the environment.

**Navy's Response:**

The Navy supports starting the cleanups this fiscal year. With that in mind the Navy scheduled the soil removal action in two stages. The first stage is the soil mound removals in 2004 and the second stage is the removal of the contaminated subsurface soil in 2005.

**Name:**

Mr. Michael Anderson

**Comment:**

I say why spend more money on further testing. Enough testing has already been done! They know there are "hot spots". We all know about "hot spots". They won't go away no matter how long we delay this thing, obviously. So waiting any longer is definitely not the answer. Let's let the Navy do what they propose. Their proposal is right and just. Their intent mean this important work will start soon.

**Navy's Response:**

Your comment has been added to the responsiveness summary, thank you.

**Name:**

Mr. Erasmo Garcia

**Comment:**

I think the Navy's ideas about cleaning up this site is definitely a good proposal and the right thing to do rather than waste further time on doing nothing. The longer this is allowed to go on for, the more time is ultimately wasted resulting in the environment being unimproved longer. Let's stop all the red tape and start cleaning up this land!

**Navy's Response:**

Your comment has been added to the responsiveness summary, thank you.

**Name:**

Mr. John Anderson

**Comment:**

The Navy should be allowed to begin a cleanup project without much further ado. These considerations have been going on way too long and too much government money is being wasted as it is! The Navy's proposal would mean an environmental improvement ultimately, therefore, there should be no entity getting in the way of that mission. There is no good sound reason not to begin hands-on work to rectify this problem that has apparently been allowed to go on long enough!

**Navy's Response:**

Your comment has been added to the responsiveness summary, thank you.

**Name:**

Mr. William Weikert

**Comment:**

Plain and simple. Let's begin the work and solve any problems that may come up as we go along. We know what we're in for here. Every project has potential problems unforeseen that may arise. That's no excuse to not clean up the environment. We as taxpayers deserve to see our hard-earned tax money spent on solving problems, cleaning up the planet, and good causes as such. So let's get to it and do it. Wasting our money on red-taped delays is not the way to solve issues. We need to take action, begin the work, get it done and move on to the many other important issues that concern us all in our daily lives.

**Navy's Response:**

The Navy supports starting the cleanups this fiscal year. With that in mind the Navy scheduled the soil removal action in two stages. The first stage is the soil mound removals in 2004 and the second stage is the removal of the contaminated subsurface soil in 2005.

**Name:**

Mr. Manual Marquis

**Comment:**

I am well aware of this proposal through my attendance at the rab meetings. I am very much in favor of the Navy's proposal for remediation to commence as soon as possible.

**Navy's Response:**

Your comment has been added to the responsiveness summary, thank you.

**Name:**

Mr. Victor Peabody

**Comment:**

The way I see it is, why wait any longer, why spend more money than we have to, why procrastinate the cleanup of this problem? Let's stop dilly-dallying and start taking action. No action is not better than taking physical steps to rectify the situation here. We could begin the work and then, if we ran into a problem, solve the problems as we go along instead of anticipating a problem that may not exist therefore delaying the important work in the meantime.

**Navy's Response:**

Your comment has been added to the responsiveness summary, thank you.

**ACTION MEMORANDUM**

**DATE:** May 19, 2004

**FROM:**

**TO:** Commanding Officer, Engineering Field Activity Northeast, Naval Facilities Engineering Command

**SUBJECT:** Non-Time Critical Removal Action  
Mound Soil Removal  
Old Fire Fighting Training Area (Site 09)  
Naval Station Newport, Newport, Rhode Island

**1. PURPOSE**

The purpose of this Action Memorandum is to document the decision by the U.S. Navy (Navy) to conduct a non time critical removal action (NTCRA) to remove three mounds of contaminated soil and debris at the Old Fire Fighting Training Area (OFFTA) Site, at Naval Station (NAVSTA) Newport, in Newport Rhode Island.

This action is the first of several steps to be taken to restore the OFFTA for unrestricted use and to prevent, minimize, and mitigate potential damage to the public health, welfare and the environment posed by contaminants in the soils due to former property uses. Contaminated soil and debris at OFFTA will be removed in a series of actions. The first action (this action) will remove debris and soil contained in the mounds. The majority of contaminated soil and debris are located below the base grade elevation of the site and will still remain after the mound removal action is completed. Removal of this remaining contaminated soil and debris will be addressed by a separate, future removal action.

This NTCRA is being conducted by the NAVSTA Newport Installation Restoration Program (IRP) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and to the maximum extent possible, the Rhode Island Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations).

**2. NAVSTA NEWPORT BACKGROUND**

The NAVSTA Newport facility has been in use by the Navy since the era of the Civil War. During World Wars I and II, military activities at the facility increased significantly and the base provided housing for many servicemen. In subsequent peacetime years, use of on-site facilities was slowly phased out until Newport became the headquarters of the Commander Cruiser-Destroyer Force Atlantic in 1962. In April 1973, the Shore Establishment Realignment Program (SER) resulted in the reorganization of naval forces, and activity again declined. From 1974 to the present, research and development and training have been the primary activities at Newport. The base was renamed Naval Station Newport in 1998. The major commands currently located at NAVSTA Newport include the Naval Education and Training Center, Surface Warfare Officers School Command, Naval Undersea Warfare Center, and the Naval War College. Occupying approximately 1,063 acres, NAVSTA Newport is located along the western shoreline of Aquidneck Island for approximately 6 miles facing the east passage of Narragansett Bay. Portions of the facility are located in the City of Newport and the Towns of Middletown and Portsmouth, Rhode Island.

### 3. SITE DESCRIPTION

- a. Description. The OFFTA Site is located at the northern end of Coasters Harbor Island (see Figure 1), which is part of NAVSTA Newport. Coaster Harbor Island has a land area of 92 acres. Navy training facilities, including the Naval War College, occupy the portion of the island south of the OFFTA Site. The Site, formerly used as a recreational area, occupies approximately 5.5 acres and is bordered by Taylor Drive to the south and is surrounded by Coasters Harbor (part of Narragansett Bay) to the east, north, and west. Located along Taylor Drive, opposite the Site, are instructional facilities and asphalt parking lots. With the exception of the three mounds constructed into the landscape, the OFFTA Site is generally flat, with base grade surface elevations ranging from 8 to 12 feet above mean low water (MLW). The Site is entirely vegetated with mown grass except for the temporary parking lot located in the center portion of the site formerly occupied by a baseball field. Several stands of large ornamental cedar trees grow on the mounds. A one-story concrete block building (Building 144), used for recruiting offices, is located along the southern side of the Site. With the exception of the parking lot, use of the OFFTA Site is not allowed; access to the Site is restricted by a chain link fence and rope barriers along its eastern, southern, and western sides.

A brief description of the three mounds follows. The Central Mound, located in the center of the Site, is largest and highest mound rising approximately 20 feet. It is a steeply sloped, three-sided pyramid shape structure with a volume of 7,000 cubic yards. The smallest mound, Mound No. 1, is a low, rounded feature located in the far west portion of the Site along the shoreline. This mound is 4 to 6 feet high and has a volume of approximately 600 cubic yards. Mound No. 2 is also located in the west portion of the Site, bordered on the north by shoreline. This rounded, grass-covered feature is approximately 9 feet high with a volume of approximately 3,500 cubic yards. The shoreline sides of Mounds No. 1 and No. 2 have been eroded by wave action.

The site is underlain by layers of fill, consisting of construction debris and sand and gravel; silty sand and gravel; sand and gravel; peat; silt; and glacial till consisting of silt sand and gravel. Overburden deposit thickness ranges from about 6 to 27 feet, excluding the mounds noted above.

A Navy fire fighting training facility occupied the Site from World War II until 1972. During the training operations, sailors ignited fuel oils in small structures at the site that simulated shipboard compartments, and then extinguished the fires. Figure 2 depicts the site and site features during the fire fighting training. These operations resulted in releases of fuel mixtures to the ground at the site. Upon closure of the fire fighting training facility, the training structures were reportedly demolished and the debris buried in the mounds on the site, and then the entire area was covered with 1 to 2 feet of topsoil. The site was converted to a recreational area (Katy Field) in 1976 and used as such until its closure in 1998.

Results of OFFTA Site investigations indicated that past site activities have resulted in the release of both organic and inorganic contaminants. Contaminants that are believed to be site related include PAH compounds, petroleum and lead. Other contaminants found are not believed to be site related include the metals antimony, arsenic, beryllium and manganese, and the pesticide dieldrin. In addition to the contaminated soil at the site, various types of debris, including granite blocks, concrete slabs, bricks, and asphalt, are present in the mounds, in the subsurface, and along the shoreline. In addition, asbestos containing material was found among some of the demolition debris.

The Navy plans to allow unrestricted use of the property and therefore, Site contamination exceeding levels acceptable for residential use must be addressed. The Feasibility Study (FS) submitted by the Navy to the Rhode Island Department of Environmental Management (RIDEM) and US Environmental Protection Agency (EPA) in September 2002 evaluated remedial alternatives to address risks posed by soil, groundwater, and marine sediment. The US EPA and RIDEM agreed with the Navy's findings of the evaluation of remedial alternatives for soil and groundwater, and to accelerate the removal of contaminants from the site, it was agreed that the on-shore cleanup could progress under a voluntary removal action.

- b. **Removal Site Evaluation.** The past use of the Site as a fire fighting training facility from the 1940s to the 1970s resulted in releases of petroleum-based fuels and deposition of fuel combustion by-products introducing a wide range of petroleum hydrocarbons into the OFFTA site soils. Upon closure of the fire fighting training facility, the training structures were reportedly demolished and the soils and debris buried in the mounds on the site. The main site contaminants present are a result of the use of fuels and fuel components during fire training operations and include polycyclic aromatic hydrocarbons (PAHs) compounds, petroleum and metals.

PAHs were detected at their highest concentrations in subsurface soil and groundwater sample locations adjacent to Coasters Harbor. PAHs were also detected in shoreline sediment, marine sediment stations, and storm water samples. The highest concentrations in marine sediment were detected at sampling stations nearest the shore in the vicinity of storm drain outfalls discharging at the shoreline of the site. Concentrations of PAHs in surface soils, subsurface soils, and shoreline sediments exceeded RIDEM Residential Direct Exposure Criteria for soils (DECs).

Separate phase petroleum was present in various locations as "free product" petroleum on groundwater and bound within soils in the vadose zone near the central mound.

Metals were detected in soils, sediment, and groundwater throughout the site. The presence of lead contamination in the site soils possibly resulted from residual lead paint or leaded fuels used at the site. The metals, including antimony, arsenic, beryllium and manganese, were found at comparable or higher concentrations in till at the site, indicating that they are naturally occurring.

In the FS and supporting documents, Preliminary Remediation Goals (PRGs) were developed for Contaminants of Concern (COCs) for evaluation of soil alternatives. The COCs and associated PRG concentrations for contaminants which are site related have been retained as removal action goals for this soil removal action. For this removal action state regulatory standards for the petroleum contamination that were not considered in the risk assessment were selected as additional removal action goals. The TPH action level of 500 mg/kg was chosen since no risk was calculated for petroleum as a single contaminant, and because state regulations require that the criteria for petroleum be met if site use is not restricted. Table 1 presents the chemicals retained as COCs, and the PRGs selected as removal action goals.

Goals for naturally occurring metals should not be used to direct removal actions into natural soils unless there are site related COCs which exceed the removal action goals as well. The presence of comparable concentrations of these metals in till, and distribution of those contaminants showing higher concentrations at depth indicate that these metals are naturally occurring, and should not, by themselves, direct a removal action for soil at this site.

Dieldrin was selected as a COC because its maximum concentration (44 µg/kg) detected on site was projected to be a contributor to site risk. However, this compound was only detected in two subsurface soil samples (44 µg/kg at MW-11, 2 to 4 feet below ground surface and 1.5 µg/kg within the fill in the central mound) and at 17 surface soil samples (range: 0.47 µg/kg, average: 4.7 µg/kg). This distribution indicates that a) dieldrin is present as a result of appropriate use and application of pesticides in the area and not discharge, and b) is co-located in upper intervals of the soils which will likely be removed with site – related COCs as described above. Therefore, dieldrin is not recommended to direct soil removal actions at the site.

The extent of soils exceeding PRGs was delineated using test pit and boring soil sample analytical results. Although the contaminate levels in the mound samples are lower than those found in the soil samples collected from intervals below the base grade elevation, contaminant levels in all three mounds were found to exceed the removal action goals. Therefore, removal of the mounds is required to achieve the remedial action goals for the OFFTA Site. In addition, removal of the mounds is required to 1) confirm that no continuing contaminant sources exist and, 2) allow access to contaminated soils is beneath the mounds.

The extent of soil and debris contamination requiring removal at the Site totals 47,200 cubic yards including the mounds. The mounds with a volume of 11,100 cubic yards account for 24 percent of the contaminated soil and debris volume at the OFFTA Site.

- c. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant. The three mounds contain a total of 11,100 cubic yards of soil and debris contaminated with PAH, petroleum fuel products and metals that results in present and potential threats to site users and the environment. The PAHs, and other contaminants that are present in site soils due to historic releases of fuels or by combustion, exceed the Removal Action Goals and continue to pose unacceptable risks to human health in the long-term through dermal contact, incidental ingestion, and possibly through fugitive dust inhalation, under potential future use of the site. In addition, wave erosion of mounds along the shoreline may contribute to sediment contamination in Coasters Harbor.
- d. National Priorities List (NPL) Status. On November 21, 1989, NETC Newport was added to the National Priorities List (NPL) (54 FR 48184). On March 23, 1992 Site 09 (Fire Fighting Training Area) was recognized as an "Area of Contamination" (AOC) by the signing parties to the Federal Facilities Agreement (FFA) for NETC Newport. Therefore the Navy is required to take response actions pursuant to CERCLA and the terms of the agreement. Although NETC Newport has undergone change of name to NAVSTA Newport, NPL status is not affected.

**4. OTHER ACTIONS TO DATE**

- a. Previous Actions. To date no removal actions have occurred at the site since its identification as a part of the IRP sites at NAVSTA

In 1998 the Navy conducted a removal evaluation to determine if there were still vessels or piping in place that could be contributing to the contamination at the site. While remnant piping was found in the soils, these pipes were not connected and it was determined that the fuel storage facilities had been removed during the redevelopment effort in the 1970s.

In November and December 2003, the Navy conducted a Soil Pre-Design Investigation, which involved collection of additional subsurface information to better delineate the extent of contaminants in the soils. From this investigation, a Mound Summary Report (March 2004) was prepared to help scope the contracting actions for removal and disposal of the mounds.

- b. Current Actions. The Navy has initiated contracting actions to remove the mounds at the site. Removal of the mounds as described in this Action Memorandum is anticipated to be conducted in summer/fall 2004.

**5. STATE AND LOCAL AUTHORITIES ROLE**

- a. State and Local Actions to Date. The site is located on property held by the Navy, and as such the Navy holds responsibility for removal actions, risk reduction and remediation of the site as needed. State and Local authorities have not undertaken any removal actions at the site, other than providing oversight of studies and actions conducted by the Navy. The State provides oversight of actions and review of documents for the site. The local community provides input on the Navy's action through the Restoration Advisory Board, a group of community members who meet with Navy representatives monthly to discuss progress and provide input on IRP sites
- b. Potential for Continued State and Local Response. The ownership of the land at Coasters Harbor Island is not anticipated to change in the foreseeable future, and the Navy will continue to hold responsibility for the site. Therefore, there is no anticipated need for state or local lead on removal or remedial actions for this site. The State of Rhode Island will continue to oversee the investigations and removal actions and the local community will continue to provide input on actions conducted at the site through the Restoration Advisory Board.

**6. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES**

Estimated cancer and non-cancer risk due to exposure to OFFTA Site soil are discussed below.

For surface soil, the total cancer risks under the residential, recreational, and worker scenarios were  $2.5 \times 10^{-5}$ ,  $5.4 \times 10^{-6}$ , and below  $1 \times 10^{-6}$ , respectively. For subsurface soil, cancer risks under the residential and worker scenarios were  $4.0 \times 10^{-5}$ , and  $1.4 \times 10^{-6}$ , respectively. No recreational exposure risks were calculated for subsurface soils because subsurface soils would not be accessible for exposure during recreational activities. Non cancer risks for surface and subsurface soil under all scenarios did not exceed 1.0 for any target organ group.

In accordance with EPA risk assessment methods, potential future residential risks were calculated for subsurface soils from 2 to 10 feet below ground surface. This depth range is thought to be appropriate for residential exposures, because soils in this interval can be brought to the surface during installation of footings and foundations for residential structures.

RIDEM regulations require remedial action at sites where cancer risks exceed  $1 \times 10^{-5}$ . EPA target risk range for consideration of remedial actions is  $1 \times 10^{-6}$  to  $1 \times 10^{-4}$ . Thus, the surface and subsurface soil under the residential risk scenario is considered "actionable" under RIDEM regulations, and is also within the EPA target risk range for consideration of remedial actions.

- a. Threats to Public Health or Welfare. The PAHs, and other contaminants that are present in mound soils, if not addressed by implementing the response action described in this Action Memorandum, will present an unacceptable potential health risk to people using the site for residential purposes, which is a possible future use of the property.
- b. Threats to the Environment. The PAHs and other contaminants that are present in western mound soils, if not addressed by implementing the response action described in this Action Memorandum, may contribute to sediment contamination in Coasters Harbor and increase ecological risk as a result of continued wave action erosion along the northern shoreline.

**7. ENDANGERMENT DETERMINATION**

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Action memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment. The Navy has determined that this threat can be abated, minimized, or eliminated by undertaking a removal action.

**8. PROPOSED ACTIONS AND ESTIMATED COSTS**

- a. Proposed Action. The proposed soil removal action consists of the excavation, transportation and off-site disposal of three mounds, consisting of soil, fill and debris, constructed into the landscape of the OFFTA Site. Following removal of the mounds the removal areas will be graded and seeded to the base grade elevation present across the Site. In addition, the action will include the construction of erosion controls in areas excavated along the shoreline. Details of this proposed action, and the basis for the proposal are provided below.

Comments on the proposed removal action have been received from the EPA, RIDEM, and the public and are provided in a responsiveness summary (Attachment E). The responsiveness summary provides the Navy's response to the comments to the removal action. The comments have been taken into consideration and do not require a revision to the proposed action.

Mound removal areas and volumes were determined based on excavating the mounds to a depth of approximately 1 foot below the base grade elevation, which will provide for a proper subgrade

elevation for site restoration. Figure 3 shows the approximate mound excavation area limits. The estimated mound excavation areas and volumes are as follows:

Mound	Removal Area (square yards)	Bank Measure Soil Volume (cubic yards)	Bank Measure Debris Volume (cubic yards)	Total Volume (cubic yards)
Central Mound	4,752	4,750	4,750	9,500
Mound No. 1	816	500	500	1,000
Mound No. 2	2,675	2,300	2,300	4,600
Total	8,243	7,550	7,550	15,100

**Staging Area Setup and Site Preparation** – Under this phase staging areas, decontamination areas and site access controls will be set up. Staging areas will be sized to accommodate the excavated soil in separate 500 cubic-yard piles. Trees and stumps within the work areas will be removed. Trees will be removed from the site; stumps and root balls will be handled as excavated debris.

**Erosion Control** – Erosion control measures will be set up to prevent runoff or erosion of soil and debris from excavated soil and worked surfaces. In areas excavated along the shoreline, erosion controls will be constructed to prevent storm, wave and wind erosion.

**Excavation** – Mounds will be excavated to a depth of 1 foot below the base grade elevation. Excavated soil and debris materials will be handled in volumes small enough for staging, testing and disposal according to the material type and/or disposal facility.

**Staging of Material** – Excavated soil and debris materials will be segregated and staged in covered stockpiles of like material (according to type and/or disposal facility) in the staging area. Materials may include soils, root balls, demolition debris, concrete, rebar, brick, wood, metal, asphalt and building rubble.

**Waste Disposal** – Stockpiled materials will be sampled and analyzed for characterization purposes and to facilitate disposal. After profiling and manifesting, material will be shipped to the approved disposal facility. Materials may be classified as follows:

**Site Restoration** – Excavated and affected area will be restored by grading to the proper subgrade elevation, installing geotextile layer to provide separation of the subgrade and the topsoil/fill layer, and placing a fill layer (8-inch thick) and topsoil layer (4-inch thick) prior to seeding. Finished grade will match the surrounding base grade elevation.

Specific actions and methodologies to perform the soil removal will be described in the mound removal action statement of work.

- b. **Contribution to Remedial Performance.** Although the future use of the site has not been determined, the Navy has determined that future unrestricted use is desirable for the site. Therefore, site contaminants must be addressed to levels acceptable for the most sensitive possible use of the site, which is residential use. The Navy has determined that cleanup plan for the on-shore portion of the OFFTA Site consists of removal of the mounds from the site followed by excavation of remaining soil exceeding removal action goals with off-site disposal of excavated soil and fill. The remedy decision for the off-shore portion of the site (marine sediment) has not been completed. The NTCRA will eliminate a significant portion of the potential on-shore soil risk to human health and potential risk to ecological receptors as one-fourth of the onshore soil exceeding removal action goals will be removed. This action will also verify that no continuing contaminant sources exist in the mounds. Implementation of the mound removal action represents a step in bringing the on-shore portion of the site to a

condition suitable for the next action, excavation and removal of the contaminated soils below the base grade elevation to complete the soil remedy.

c. Alternative Actions Considered. A wide range of alternative technologies for soils were evaluated for this site, and are summarized on Table 2. Initial screening eliminated some of the technologies as described in that table. Others that could be combined together as a removal action alternative to achieve these goals were retained for further detailed analysis in the feasibility study. The alternatives considered in detail are:

- no action - eliminated because it does not meet removal action goals;
- removal, ex-situ treatment and backfill – eliminated after detailed analysis due to extended time required to meet removal action goals and high cost for treatment;
- removal and off site disposal – recommended for this site.

d. Feasibility Study. During the development of the FS provided in September 2002, the Navy evaluated remedial alternatives to address risks posed by soil, groundwater, and marine sediment. The EPA and RIDEM were in agreement with the findings of the evaluation of remedial alternatives for soil and groundwater, but were not in agreement with the findings of the remedial alternatives evaluated for the marine sediment. To avoid a delay in removal of contaminants from the site, it was agreed that the on shore cleanup could progress under a removal action and the marine sediment would progress after additional data could be collected and evaluated to determine the extent of additional actions needed for groundwater and sediment.

e. Applicable or Relevant and Appropriate Requirements (ARARs). The removal action complies with the following federal and state ARARs:

- Coastal Zone Management Act (16 USC Parts 1451 et. seq.) – Actions must meet applicable coastal zone management requirements.
- Floodplain Management (Executive Order 11988; 40 CFR Part 6, Appendix A) – Actions must preserve beneficial value of the floodplain.
- Clean Air Act (CAA), National Emission Standards for Hazardous Air Pollutants (NESHAPS) (USC 7411, 7412; 40 CFR Part 61) – Requirements for monitoring of air emissions must be met; activities will be carried out in a manner which will minimize potential air releases.
- Resource Conservation and Recovery Act (RCRA), Subtitle C - Standards for Hazardous Waste Facilities (42 USC 6291 et seq.) - Soils and debris must be tested, and if hazardous, handled and disposed according to standards.
- Clean Water Act (CWA), Section 402, National Pollutant Discharge Elimination System (NPDES) (33 USC 1342; 40 CFR Parts 122-125, 131) - Regulated discharges into surface waters must meet ambient water quality criteria.
- Rhode Island Coastal Resources Management (RIGL 46-23-1 et seq.) – Actions must address applicable coastal resource management requirements.
- Rhode Island Remediation Regulations (CRIR 12-180-001, Section 8; DEM-DSR-01-93, as amended August 1996) – Removal must comply with standards that may be more stringent than federal standards.
- Rhode Island Clean Air Act - Fugitive Dust Control (RIGL 23-23 et seq.; CRIR 12-31-05) – Actions must take reasonable precaution to prevent particulate matter from becoming airborne.
- Rhode Island Clean Air Act - Emissions Detrimental to Persons or Property (RIGL 23-23 et seq.; CRIR 12-31-07) – Actions must prevent airborne emissions of contaminants that may be injurious to humans, plant or animal life or cause damage to property.
- Rhode Island Clean Air Act - Air Pollution Control (RIGL 23-23 et seq.; CRIR 12-31-09) - Removal action air emissions must be monitored and emissions controlled if necessary.
- Rhode Island Clean Air Act - Air Toxics (RIGL 23-23 et seq.; CRIR 12-31-22) - Removal action air emissions must be monitored to assess compliance and operation and maintenance activities carried out in to minimize potential air releases.

- Rhode Island Hazardous Waste Management Standards for Treatment, Storage, and Disposal Facilities (RIGL 23-19.1 et seq.; CRIR 12-030-003) – Soils and debris must be tested, and if hazardous, handled and disposed according to standards.

f. Project Schedule. The projected start of the removal action is August 2004. The following project schedule has been developed in accordance with the FFA, required times for completion of tasks and other constraints.

Milestone	Proposed Start Date	Proposed Completion Date
Award Contract	3/30/04	3/30/04
Mound Excavation and Removal	08/01/04	10/15/04
Excavation Area Grading and Seeding	10/15/04	10/30/04
Completion Report	10/30/05	12/01/05

g. Estimated Costs. The estimated cost for the proposed removal action is \$\_\_\_\_\_. There are no long-term operation, maintenance, or monitoring costs associated with this removal action.

**9. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN**

If the removal action is not conducted, the contaminant concentrations in the soil will likely degrade over time, with bacterial action reducing the hydrocarbons in the soil and groundwater. However, concentrations will decrease slowly, and a restriction on the use of the property will be required for many years. Shoreline erosion will continue resulting in further sediment contamination in Coasters Harbor.

**10. OUTSTANDING POLICY ISSUES**

None identified at this time.

**11. ENFORCEMENT**

The action is being undertaken voluntarily by the Navy in accordance with the Federal Facilities Agreement for the NAVSTA Newport IRP. Regulatory agencies are anticipated to remain in an oversight role for the duration of the removal action, approving documentation and completion reports in order to continue to move toward a permanent remedy for the site.

**12. RECOMMENDATION**

The removal of the contaminated soil and debris mounds will reduce the risk of exposure of contaminants to the future occupants of the Site. The proposed action will also reduce further erosion of contaminated soils from the bluff face to the sediments along the shoreline and will reduce migration of contaminants from the site soils into groundwater. This action will also verify that there are continuing contaminant sources within the mounds and allow access to contaminated soils is beneath the mounds. Implementation of the removal action also prepares the site for excavation and removal of the contaminated soils below the base grade elevation to complete the soil remedy. Therefore, the Navy recommends the implementation of the proposed OFFTA Mound Soil Removal NTCRA.

Approvals:

NAVSTA Newport

\_\_\_\_\_  
 CAPT Robert P. McLaughlin, Jr.  
 Commanding Officer

Date: \_\_\_\_\_

Engineering Field Activity  
 Northeast

\_\_\_\_\_

Date: \_\_\_\_\_

**REFERENCES**

Phase I Remedial Investigation Final Report, Naval Education and Training Center, Newport, RI (TRC, January 1992)

Source Removal Evaluation Report for Old Fire Fighting Training Area, Naval Education and Training Center, Newport, RI (Brown & Root Environmental, January 1998)

Human Health Risk Assessment Report for Recreational Use, Old Fire Fighting Training Area/Katy Field, Naval Station Newport, Newport, RI (Tetra Tech NUS, Inc. [TtNUS], May 1999)

Draft Background Soil Investigation for Old Fire Fighting Training Area, Naval Station Newport, Newport, RI (TtNUS, May 2000)

Old Fire Fighting Training Area Marine Ecological Risk Assessment Report, Naval Station Newport, Newport, RI (Science Applications International Corporation [SAIC] and The University of Rhode Island Graduate School of Oceanography [URI], April 2000)

Old Fire Fighting Training Area Remedial Investigation Report (TtNUS July 2001)

Old Fire Fighting Training Area Feasibility Study Report (TtNUS September 2002)

Old Fire Fighting Training Area Mound Summary Report (TtNUS March 2004)

Old Fire Fighting Training Area Soil Pre-Design Investigation Report (TtNUS April 2004)

**Attachment A – TABLES**

**Table 1 – Removal Action Goals**

**Table 2 - Technologies Screening Evaluation**

**TABLE 1**  
**SOIL COCs AND REMOVAL ACTION GOALS**  
**DRAFT ACTION MEMORANDUM**  
**OLD FIRE FIGHTING TRAINING AREA**  
**NAVSTA NEWPORT, NEWPORT, RHODE ISLAND**

Parameter	Units	Soil PRG	Maximum Detected in RI	Selected as COC in FS?	Basis of Value	PRG Selected as Removal Action Goal?
<b>SEMIVOLATILE ORGANIC COMPOUNDS</b>						
Benzo(a)anthracene	ug/kg	900	9100	Yes	RIDEM	YES
Benzo(a)pyrene	ug/kg	400	7100	Yes	RIDEM	YES
Benzo(b)fluoranthene	ug/kg	900	9700	Yes	RIDEM	YES
Benzo(g,h,i)perylene	ug/kg	800	4300	Yes	RIDEM	YES
Benzo(k)fluoranthene	ug/kg	900	3500 J	Yes	RIDEM	YES
Chrysene	ug/kg	400	8100	Yes	RIDEM	YES
Dibenzo(a,h)anthracene	ug/kg	400	820 J	Yes	RIDEM	YES
Indeno(1,2,3-cd)pyrene	ug/kg	900	4100	Yes	RIDEM	YES
<b>PESTICIDES/PCBs</b>						
Aroclor-1254	ug/kg	1000	530	No	TBC	No
Dieldrin	ug/kg	40	44 J	Yes	RIDEM	No (4)
<b>TOTAL PETROLEUM HYDROCARBONS</b>						
TPH*	mg/kg	500	21000 J	No (1)	RIDEM	YES
<b>METALS</b>						
Antimony	mg/kg	10	39.2 J	Yes	RIDEM	No (3)
Arsenic	mg/kg	7.0	74.4 J	Yes	RIDEM (2)	No (3)
Beryllium	mg/kg	0.4	0.48 B1	Yes	RIDEM	No (3)
Lead	mg/kg	150	7820 J	Yes	RIDEM	YES
Manganese	mg/kg	390	1110 J	Yes	RIDEM	No (3)
<b>DIOXINS/FURANS</b>						
Total 2,3,7,8-TCDD Equivalents	ug/kg	1	0.016388	No	TBC	No

RIDEM - Action level established as Direct Exposure Criteria by Rhode Island Department of Environmental Management

TBC - Value to be considered if contaminant is found to be present

Data qualifiers.

J = estimated

B = greater than IDL but less than CRDL

(1) TPH and Free product are not CERCLA COCs, however, they will be used with the COCs on this Table as cleanup criteria in accordance with RIDEM regulations

(2) Value for arsenic is revised from background negotiated value to revised RIDEM Remediation Regulations see text.

(3) Noted metals not to be used as action limits due to naturally occurring condition see text

(4) Dieldrin PRG not selected as an action limit, see text

**TABLE 2  
IDENTIFICATION AND PRELIMINARY SCREENING OF TECHNOLOGIES AND  
PROCESS OPTIONS FOR SOIL  
DRAFT ACTION MEMORANDUM  
OLD FIRE FIGHTING TRAINING AREA  
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND**

GENERAL RESPONSE ACTION	REMEDIAL TECHNOLOGY TYPE	PROCESS OPTION	DESCRIPTION OF PROCESS OPTION	SCREENING COMMENTS
No Action	No Action	Not Applicable	No Action	Retained for consideration in the FS. Later rejected as removal action goals would not be met.
Limited Action	Institutional Controls	Deed Restrictions	Administrative action used to restrict future site activities on individual properties. Restrictions would prevent activities such as excavation or residential development.	Eliminated. Does not allow unrestricted residential reuse.
	Access Restrictions	Fencing	Barrier erected to restrict access to contaminated properties.	Eliminated. Does not allow unrestricted residential reuse.
		Post Signs	Post "No Trespassing" or hazard warning signs.	Eliminated. Does not allow unrestricted residential reuse.
	Long-Term Monitoring	Monitoring	Periodic monitoring events to determine whether the soil is a continuing source of contamination.	Eliminated. As a stand-alone option, does not allow unrestricted residential reuse.
Containment	Horizontal Barriers	Impermeable Cap	Asphalt, concrete, geosynthetics, or multi-media materials are used to form an impermeable barrier to prevent direct contact with contaminated soil and to minimize leaching of contaminants from soil to groundwater.	Eliminated. Does not allow unrestricted residential reuse because of contaminants left in the subsurface.
		Permeable Cover	Soil, crushed stone, geosynthetics and vegetative cover used to prevent direct contact with contaminated soil and minimize erosion and surface migration of contaminated soil.	Eliminated. Does not allow unrestricted residential reuse because of contaminants left in the subsurface.
Removal	Excavation	Bulk Excavation	Use of common construction equipment to remove contaminated soil. Able to address all soil above the groundwater table.	Retained for protection of human health and protection of ecological receptors. Effective for all site contaminants. Proposed for Removal Action.

Eliminated process option (see screening comment)

TABLE 2 (CONT.)  
IDENTIFICATION AND PRELIMINARY SCREENING OF TECHNOLOGIES  
AND PROCESS OPTIONS FOR SOIL  
DRAFT ACTION MEMORANDUM  
OLD FIRE FIGHTING TRAINING AREA  
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND  
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GENERAL RESPONSE ACTION	REMEDIAL TECHNOLOGY TYPE	PROCESS OPTION	DESCRIPTION OF PROCESS OPTION	SCREENING COMMENTS
Disposal	Disposal	Off-Base Landfill	Transport and disposal of untreated soil to an approved off-base landfill.	Retained as potentially effective. Must be reviewed in concert with excavation technology. Proposed for Removal Action
		On-Base Landfill	Transport and disposal of untreated soil to a new or existing on-base landfill.	Eliminated. No landfill currently available. Extensive permitting for a new landfill.
		On-Site Backfill	Backfill of treated soil to the excavated areas. Clean fill from off site can also be used.	Retained. Reviewed in concert with excavation technology and treatment technologies.
		Treatment, Storage, or Disposal Facility (TSDF)	Transport and disposal of untreated soil to an approved off-base TSDF.	Retained as potentially effective. Must be reviewed in concert with excavation technology. Proposed for Removal Action if required.
Treatment	Immobilization	Solidification/Stabilization	Soil mixing equipment used to mix reagents with contaminated soil to physically and/or chemically decrease the mobility of contaminants. Potential reagents include cement, pozzolanic material, thermoplastics, polymers and asphalt. Treatment may be done in situ or ex situ.	Retained through FS as a component of on-site treatment alternative" Later eliminated in favor of soil washing.
		Microencapsulation	Contaminated material is encapsulated by containers or inert and impervious coatings that will minimize leaching. Treatment will be done ex situ.	Eliminated. Effectively isolates all site contaminants but no treatment occurs. Not feasible in cases involving large volume of contaminated material.

 Eliminated process option (see screening comment)  
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**TABLE 2 (CONT.)  
IDENTIFICATION AND PRELIMINARY SCREENING OF TECHNOLOGIES  
AND PROCESS OPTIONS FOR SOIL  
DRAFT ACTION MEMORANDUM  
OLD FIRE FIGHTING TRAINING AREA  
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND  
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GENERAL RESPONSE ACTION	REMEDIAL TECHNOLOGY TYPE	PROCESS OPTION	DESCRIPTION OF PROCESS OPTION	SCREENING COMMENTS
Treatment (Cont'd)	Thermal Treatment	Incineration	Destruction of organic contaminants by subjecting them to high temperatures under controlled conditions in a combustion chamber. Treatment would be done ex situ.	Effective for organic contaminants but not effective for inorganic contaminants. Not easily undertaken on base. Later eliminated due to cost and complexity.
		Pyrolysis	Chemical decomposition of organic contaminants by heating the material in the absence of oxygen. Treatment would be done ex situ.	Eliminated. Effective for organic contaminants but not effective for inorganic contaminants. Not easily undertaken on base. Not readily available.
		Low-Temperature Thermal Stripping (LTTS)	Air, heat and mechanical agitation are used to volatilize organic contaminants from soil into a vapor stream. Vapor is usually further treated. Treatment would be done ex situ.	Effective for organic contaminants but not effective for inorganic contaminants. May be used as part of a treatment train. Retained through FS for component of treatment alternative.
		Supercritical Water Oxidation	Contaminated soil is exposed to water in a high temperature, high pressure environment. Under such conditions, organic substances are oxidized.	Eliminated. Effective for some organic contaminants (SVOCs) but not effective for inorganic contaminants.
		Vitrification	Melting of contaminated material to volatilize or pyrolyze organics and entrain inorganics in a stable vitreous residual. Treatment may be done in situ or ex situ.	Retained for consideration as a treatment alternative. Potentially effective for all site contaminants. Later eliminated in favor of LTTS, which is more effective on a large scale.

 Eliminated process option (see screening comment)

TABLE 2 (CONT.)  
 IDENTIFICATION AND PRELIMINARY SCREENING OF TECHNOLOGIES  
 AND PROCESS OPTIONS FOR SOIL  
 DRAFT ACTION MEMORANDUM  
 OLD FIRE FIGHTING TRAINING AREA  
 NAVSTA NEWPORT, NEWPORT, RHODE ISLAND  
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GENERAL RESPONSE ACTION	REMEDIAL TECHNOLOGY TYPE	PROCESS OPTION	DESCRIPTION OF PROCESS OPTION	SCREENING COMMENTS
Treatment (Cont'd)	Physical Treatment	Soil Flushing	Contaminants sorbed to soil are mobilized or dissolved in an aqueous flushing solution in-situ. The flushing solution is then extracted from the subsurface and treated. Flushing solution may be augmented by chemicals that increase the mobilization or dissolution of organics and some heavy metals from the soil. Treatment would be done in-situ.	Eliminated. Potentially effective for organics and some inorganics, but repeated flushing may be necessary. Difficult to ensure capture of flushing solution due to shallow water table. More difficult in cases involving multiple types of contaminants. Later eliminated due to time considerations and volume of anticipated waste.
		Soil Washing	Process reduces the amount of contaminated material by two means. Finer particles, which contain the bulk of contaminants, are separated from more coarse material. Contaminants sorbed to soil are dissolved in an aqueous washing solution. The wash water may be augmented by chemicals which increase the leaching of organics and some heavy metals from the soil. Treatment would be done ex-situ.	Potentially effective for organics and some inorganics, but multiple washing steps may be necessary. Washing solution would need to be recovered and treated. More difficult in cases involving multiple types of contaminants. May be used as part of a "treatment train." Can be done on or off base. Retained through the FS as component of treatment alternative.
		Liquefied Gas Solvent Extraction	Liquefied gas solvents, such as propane, are used to extract organics from soil. Treatment would be done ex-situ.	Eliminated. Technology is not commercially available and effectiveness is not well established. Cost information not available.

Eliminated process option (see screening comment)

**TABLE 2 (CONT.)  
 IDENTIFICATION AND PRELIMINARY SCREENING OF TECHNOLOGIES  
 AND PROCESS OPTIONS FOR SOIL  
 DRAFT ACTION MEMORANDUM  
 OLD FIRE FIGHTING TRAINING AREA  
 NAVSTA NEWPORT, NEWPORT, RHODE ISLAND  
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GENERAL RESPONSE ACTION	REMEDIAL TECHNOLOGY TYPE	PROCESS OPTION	DESCRIPTION OF PROCESS OPTION	SCREENING COMMENTS
Treatment (Cont'd)	Physical Treatment	Soil Vapor Extraction	In situ technology in which vacuum blowers and extraction wells are used to strip volatile organic compounds from unsaturated soil. Treatment would be done in situ.	Eliminated. Only effective for volatile organic compounds (VOCs) in non-saturated soil. Not effective for SVOCs or inorganics.
		Electrokinetics	Electrodes are used to manipulate soil conditions to recover or destroy organics and metals. Treatment would be done in situ.	Eliminated. Potentially effective for organic and some inorganics. Less effective in cases involving shallow water table.
	Chemical Treatment	Chemical Dechlorination	Chlorine atoms are stripped from chlorinated contaminants through chemical reactions to produce less toxic byproducts. These byproducts are generally more amenable to biodegradation. Treatment will be done ex situ.	Eliminated. Only addresses chlorinated compounds. Not effective for non-chlorinated organics (SVOCs) or inorganics.
		Solvent Extraction	Chemical desorption and dissolution of organic and some inorganic contaminants by washing soil with a solvent solution. Treatment would be done ex situ.	Retained through F.S. However, may not be effective for wastes with multiple contaminant types. Solvent solution would need to be recovered and treated. Later eliminated due to cost and complexity.
	Biological Treatment	Aerobic Biodegradation	Microorganisms degrade organic contaminants to carbon dioxide and water. Oxygen is used as an electron acceptor in the degradation process. Treatment would be done ex situ.	Eliminated. Effectiveness is limited to certain organic contaminants. Not effective for inorganics.

 Eliminated process option (see screening comment)

**TABLE 2 (CONT.)  
 IDENTIFICATION AND PRELIMINARY SCREENING OF TECHNOLOGIES  
 AND PROCESS OPTIONS FOR SOIL  
 DRAFT ACTION MEMORANDUM  
 OLD FIRE FIGHTING TRAINING AREA  
 NAVSTA NEWPORT, NEWPORT, RHODE ISLAND  
 PAGE 6 OF 6**

GENERAL RESPONSE ACTION	REMEDIAL TECHNOLOGY TYPE	PROCESS OPTION	DESCRIPTION OF PROCESS OPTION	SCREENING COMMENTS
Treatment (Cont'd)	Biological Treatment (Cont'd)	Anaerobic Biodegradation	An electron acceptor other than oxygen is used in the process in which microorganisms degrade organic contaminants. Treatment may be done in situ or ex situ.	Eliminated. While this technology is commonly used in the wastewater treatment industry to effectively treat solid organic waste, applications in hazardous waste treatment are limited. Effectiveness is limited to certain organic contaminants. Not effective for inorganics.
		Phytoremediation	Plants are used to naturally remediate contaminants via three mechanisms: direct uptake and accumulation of contaminants in plant tissue, release of enzymes that stimulate microbial activity and biochemical transformation, and enhancement of mineralization in plants' roots. Effective for destruction of some VOCs and SVOCs and effective for absorbing many inorganics. Treatment would be done in situ.	Eliminated. Potentially effective for some metals, SVOCs. Root systems of plants may not extend deep enough to remediate contaminants at depth. Plants would require harvesting, proper disposal, and replanting.

 Eliminated process option (see screening comment)  
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**Attachment B – Figures**

**Figure 1 – Locus**

**Figure 2 – Historical Features**

**Figure 3 – Target Excavation Areas**