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NAVSTA NEWPORT RI
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DEPARTMENT OF THE NAVY

ENGINEERING FIELD ACTIVITY, NORTHEAST
NAVAL FACILITIES ENGINEERING COMMAND
10 INDUSTRIAL HIGHWAY,
MAIL STOP, #82
LESTER, PA 19113-2090

IN REPLY REFER TO

5090
Code EV23/CF
December 23, 2004

Ms. Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section
USEPA Region 1
1 Congress Street, Suite 1100
Boston MA, 02114-2023

Mr. Paul Kulpa, Project Manager
Office of Waste Management
Rhode Island Department Of Environmental Management
235 Promenade St.
Providence Rhode Island, 02908-5767

Dear Ms. Keckler / Mr. Kulpa:

SUBJECT: DRAFT SOIL PRE-DESIGN INVESTIGATION REPORT FOR, SITE
09, OLD FIRE FIGHTING TRAINING AREA, NAVAL STATION
NEWPORT, NEWPORT, RHODE ISLAND

The Navy's responses to EPA and RIDEM comments on the subject Work Plan are provided as enclosure (1) and (2), respectively. As you will note from our responses, we believe additional discussions are necessary before determining the scope of the planned soil removal action. As we discussed in our meetings on October 7, 2004 and November 4, 2004, we have continued to explore various scopes of effort considering regulatory, risk, and future use issues, as well as implementability and cost. The package contained in enclosure (3) provides constructability and cost information on various alternatives considered. We are continuing to evaluate residual risk associated with each of the excavation alternatives and will provide this information as soon as it is available.

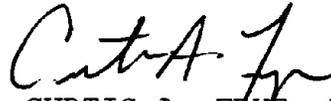
We would like to propose a conference call on January 12, 2005 to discuss the enclosed material and establish criteria for reaching an agreeable solution.

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5090
Code EV23/CF
December 23, 2004

If you have any questions, please do not hesitate to contact me at (610) 595-0567 extension 142.

Sincerely,



CURTIS A. FRYE, P.E.
Remedial Project Manager
By direction of the
Commanding Officer

Enclosures:

1. Responses to USEPA Comments, Draft Soil Pre-Design Investigation Report, Site 09, Old Fire Fighting Training Area, Naval Station Newport, Newport, RI, July 2004 (Comments dated August 16, 2004)
2. Responses to RIDEM Comments, Draft Soil Pre-Design Investigation Report, Site 09, Old Fire Fighting Training Area, Naval Station Newport, Newport, RI, July 2004 (Comments dated September 2, 2004)
3. OFFTA Excavation Tables and Constructability Review of Various Alternatives

Copy to:

C. Mueller, NSN
S. Parker, TtNUS
J. Stump, Gannett Fleming
C. Tippmann, TtFWI

**R s p n s e t o C o m m e n t F r o m t h U S E P A
O n t h e D r a f t P r e - D e s i g n I n v e s t i g a t i o n R e p o r t
C o m m e n t s D a t e d A u g u s t 1 6 , 2 0 0 4**

1. *This Soil Pre-Design Investigation Report includes recommended excavation depths. Rhode Island Department of Environmental Management (RIDEM) regulations impose the residential direct contact concentrations and the leachability criteria down to the water table (or throughout the vadose zone). However, human health and environmental risk considerations and future use options dictate the required depth of excavation to remove contamination from the site. The design and work plan must demonstrate that the proposed excavation plan addresses risk and future use concerns.*

Response: As discussed on November 4, 2004, the Navy is continuing to explore the possible approaches for excavation of soil at the site. The proposed excavation depths described in the draft PDI report were revised in October, 2004, and presented to the reviewers on October 7, 2004. Based on the discussions held that date, additional revisions are being considered.

The Navy concurs that the excavation approaches need to address regulatory, risk, and future use issues noted in the comment, and our evaluations are taking these issues into account. In addition, the Navy has to consider implementability and cost. Therefore, prior to revising the proposed excavation depths again, we propose to meet in January 2005 and discuss the pros and cons of the different options to conduct these soil removal actions.

2. *The depths of excavation proposed will leave significant contaminant concentrations, rubble, piping containing oil, oil saturated soils, and free product in the subsurface. For this reason, the excavation depths will need to be adjusted. Contamination would be left in place if the recommended excavation depths were implemented. It appears that unrestricted use of the site would not be attainable under the proposed excavation depths. EPA understands that a subsequent removal action for OFFTA soils is planned for the summer of 2005.*

Response: The cross section figures will be revised to clearly show the contaminants present at the different depths. These revised figures will simplify the data evaluation, by depicting the depths of the different contaminants exceeding PRGs with the water table and depth of different strata.

Regarding the proposed excavation depths, please refer to the response to general comment no. 1, above.

3. *Although the initial excavation plan proposed by the Navy assumes that dewatering of excavations will not be feasible, adequate support for this assumption is not provided. If the Navy has some direct experience at the site to verify this claim, it should be presented in this report to support the Navy's position. However, it seems likely that dewatering would be feasible down to at least the mean low water (MLW) elevation and it may also be feasible below that elevation depending on the contact between the ocean and the excavations. Without evidence to the contrary, limiting excavations site-wide to the water table is not acceptable. Further discussion of this restriction imposed by the Navy is required.*

Response: Please refer to the response to general comment no. 1, above. Although the target excavations will be revised, the Navy concurs that additional discussions on limitations are warranted. Dewatering options will be considered in the Soil Removal Action Work Plan.

ENCLOSURE (1)

- 4 *It is not apparent that limiting the excavation at the Site to the high water elevation will adequately address the subsurface contamination. However, I recognize that excavating beyond this point would apparently involve work beyond the current scope of soil remediation. Nevertheless, EPA expects the Navy to conduct additional work to investigate and remove subsurface contamination from locations beyond the high water elevation. The remedial action needs to meet the remedial goals and be protective of human health and the environment.*

Response: It has been agreed that the soil removal action will end at the horizontal position of the Mean High Water (MHW), as the comment above indicates. The area beyond (seaward of) the MHW line is considered marine sediment, as discussed at previous meetings and correspondence. Some of this marine sediment will likely be addressed through the construction of a shoreline protection system, and this will be determined during the design phase of the work.

Page Comment

5. *p. 1-1, §1.0 An objective of the pre-design investigation, according to the Work Plan, was to evaluate soils near the shoreline for geotechnical parameters for evaluation of a potential stone revetment to prevent shoreline erosion. The results of this evaluation and any recommendations were not discussed in the pre-design investigation report.*

Response: The Navy concurs, and this will be included in the revised report.

6. *p. 3-1, §3.0 The last sentence in the third paragraph states that the high tide line will be the limit of excavation for the planned removal action. It is not apparent that this is appropriate. Furthermore, the high tide line is not identified on any of the figures in this report. Please identify the high tide line on the figures.*

Response: Please refer to the response to general comment no. 4 above. The mean high water (MHW) line will be estimated based on Newport tidal cycles, and identified on the figures as appropriate.

7. *p. 4-1, §4.0 Section 2.5.4 of the Work Plan states that the limit on the vertical excavation would be bedrock. The decision rule in Section 2.5.5 of the Work Plan states that construction debris will be included in the removal action regardless of chemical content. However, it does not appear that the proposed excavation volume presented in this report includes any construction debris below the elevation of the water table.*

Response: Please refer to the response to comment no. 1 above.

8. *p. 4-3, §4.1.2 The first sentence in the last paragraph refers to eight borings in Area 2. However, there were only five borings drilled in Area 2.*

Response: This discrepancy will be corrected.

9. *p. 4-3, §4.1.3 The first sentence in the second paragraph in this section states that the bottom of fill in cross-section B-B' ranges from elevation 2.5 to 4.4 feet. This is not correct according to Figure 4-4, which indicates that the correct elevation range is -4.0 to 4.3 feet. Also, the second sentence misstates the range for cross-section C-C' based on review of Figure 4-4. The correct range for C-C' should be elevation -0.5 to 1.4 feet. Finally, the stated range for the bottom of fill for cross-section D-D' is incorrect; it should be elevation 3.0 to 6.9 feet. Please correct these discrepancies.*

Response: The depths and elevations will be checked and any discrepancies will be corrected.

- 10 p. 4-4, §4.2.1 *The second last sentence in the second paragraph states that the fill thickness at SB410 is 8 feet. However, Figure 4-3 indicates that it is 6 feet thick. Please correct.*

Response: The depths and elevations will be checked and any discrepancies will be corrected.

11. p. 4-4, §4.2.1 *The third paragraph states that the bedrock in Area 3 is much deeper than bedrock to the east and west. However, this statement is not consistent with the figures. Please correct the text to be consistent with the figures.*

Response: The text will be clarified to better describe the bedrock features in this area.

12. p. 4-5, §4.2.1 *Please edit the first sentence in the first paragraph on this page to refer to 17 of 19 borings and test pits. Then edit the second sentence to indicate where, other than TP-10, no samples were collected.*

Response: The requested information will be included.

13. p. 4-6, §4.2.2 *The partial paragraph at the top of the page states that the fill thickness in Area 4 was at least 8 feet thick. This is not correct. According to Figure 4-5, the fill thickness in Area 4 ranged from 0.5 to 10 feet. Please correct.*

Response: The depths and elevations will be checked and any discrepancies will be corrected.

14. p. 4-6, §4.2.2 *The fourth sentence in the partial paragraph at the top of the page refers to organic layers in SB402 to the west. However, SB402 is on the east side of Area 4. Please review and correct the reference.*

Response: The text discussing location will be clarified.

15. p. 4-7, §4.2.3 *The discussion in the paragraph at the top of the page is not consistent with the information in Figure 4-5. Please correct the text.*

Response: The depths and elevations will be checked and any discrepancies will be corrected.

16. p. 4-10, §4.3.3 *The discussion in the second paragraph contains inconsistencies compared to Figure 4-6. Please review the discussions for cross-sections I-I' and K-K' compared to Figure 4-6 and correct the inconsistencies.*

Response: The depths and elevations will be checked and any discrepancies will be corrected.

17. p. 5-1, §5.1.1 *In the second sentence of the second paragraph the elevation range of -1.5 to 3.4 feet is mentioned. However, review of Figures 4-3, 4-4, and 4-7 suggests that the correct range should be -1.1 to 3.9 feet. Please correct as appropriate.*

Response: The depths and elevations will be checked and any discrepancies will be corrected.

18. p. 5-4, §5.2 *The text at the bottom of this page and continuing to page 5-5 does not make sense. It appears that some text has been inadvertently omitted. Please review and correct as appropriate.*

Response: The text was truncated, and will be corrected.

19. *p. 5-7, §5.3.2 The discussion for Area 1 refers to a bedrock high at SB417 and SB433. This is not correct according to Figure 4-3. The bedrock elevation at SB417 and SB433 is less than elevation -10.0 feet which makes it close to the lowest bedrock elevation at the Site. Please correct.*

Response: The depths and elevations will be checked and any discrepancies will be corrected.

20. *Figures 4-7 through 4-9 Please review the bottom of fill elevations presented in these figures as there appear to be several discrepancies between these elevations and the elevations presented in Figures 4-3 through 4-6.*

Response: The depths and elevations will be checked and any discrepancies will be corrected.

21. *Table 4-1 Beginning on page 2 of 8 and continuing on to page 3, some of the data are duplicated (from B-6 through SB420) and should be deleted.*

Response: The table will be checked and pagination will be revised as necessary.

22. *Table 4-2A The description of B-7(MW-4) under Area 2 is not consistent with the boring log data, which reported strong petroleum odors and black staining. Please correct the inconsistency.*

Response: This information will be checked and revised as necessary.

23. *Appendix F, Tables F-1 through F-3:*
a. Please review and correct the page numbering for the first three tables. Is page 6 of 7 the last page for Table F-3 or is there a page missing?

Response: The table will be checked and pagination will be revised as necessary.

24. *Appendix F, Table F-7:*

NOTE: The comments that follow identify interpretations of the data and proposed target excavation depths proposed in Table F-7.

The comments that refer to details of the table will be checked and rectified as needed.

In regards to the comments on the remaining contaminants below the proposed target excavation depths, please refer to the response to General Comment No. 1 above.

- a. Some of the base grade elevations presented in this table do not agree with the planned elevations shown on Figure 4-1. Please correct.*

Response: This information will be checked and revised as necessary.

- b. Grid Cell C2:*
1. B-11 contains lead exceeding 300 mg/kg down to elevation 2.4, so lead is also a depth driver in C2.

Response: This information will be checked and revised as necessary.

2. *The excavation depth in C2 should be at least as deep as the water table because contamination at SB415 and B-11 appears to extend down to or below the water table.*

Response: Please refer to the response to Comment No. 2.

c. *Grid C4:*

1. *The boring log for SB418 indicates soil saturated with oil down to an elevation 4 feet below MLW, although the intervals sampled did not have exceedances for organic contaminants. Also, the greatest PID readings were found below the proposed excavation depth. Based on these findings, the proposed depth of excavation appears to be inadequate. Since SB418 is the only exploration in this grid cell, additional exploration of C4 is warranted before settling on an excavation depth for this grid cell.*

Response: No additional testing for the completion of the PDI is anticipated. Any additional exploration considered necessary will be accomplished as part of the design effort.

d. *Grid B4:*

1. *Contamination exceeding cleanup goals was detected down to MLW in at least the northeastern half of this grid, indicating a deeper excavation is warranted. Contamination found at SB406 suggests that deeper contamination may also exist west of SB407.*

Response: Excavation depths will be reviewed and possibly adjusted. Please refer to the response to Comment No. 1.

e. *Grids B5, B6, & B7 and C5, C6, & C7:*

1. *Test pit and boring data and analytical results from all explorations in these areas suggest that contamination in these areas extends down to at least MLW, with visible petroleum contamination, high PID readings, strong odors, and analytical hits present down to these depths. At TP-12 a pipe containing oil was found 5 feet below grade and at TP-11 soil was reported as saturated with petroleum. Also, gasoline range organic (GRO) contamination located below the planned depth of excavation of was detected in SB409 and SB410 at 110 mg/Kg and at SB419, SB420, SB421, and SB432 ranging from 120 to 890 mg/Kg. GRO may be indicative of BTEX compounds. Although GRO is not specifically regulated, BTEX compounds are. Based on these data, the proposed excavation depth is not adequate in these grids.*

Response: Please refer to the response to Comment No. 1.

f. *Grid C8:*

1. *At SB422, analytical results showed PAH contamination at nine times greater than the cleanup goals at an elevation down to 7.8 with no sample collected from the subsequent interval between 5.8 and 7.8. Consequently, the proposed excavation down to elevation 7.8 is not considered adequate, as contamination is expected below elevation 7.8.*

Response: Please refer to the response to Comment No. 1.

2. *The proposed excavation depth in C8 is 3.8 feet shallower than C7, which abuts C8 on the west. Although it is expected that C8 will be excavated deeper based*

Enclosure (1)

on the deeper contamination found at SB422, a transition to a deeper excavation will be expected on the western side of C8 to address the deeper contamination found in C7.

Response: The manner in which the grid cells will be excavated, particularly the transitions between each cell will be determined through the design process, and described in the removal action work plan or design documents.

3. *Note that grid C8 is missing from Area 5 (only 3,475 square feet were included in Area 3).*

Response: This omission will be corrected as needed.

g. Grids A5, A6, & A7:

1. *The proposed excavation plan for this area appears adequate since most contamination in Area 4 appears to be above the water table except for lead contamination at SB402 that reached 1,300 ppm at approximately the MLW elevation, more than 3 feet deeper than the planned excavation. Note that this lead is located in a peat deposit immediately beneath a deeper layer of fill. Therefore it is possible that unacceptable lead contamination is also located in the fill in the vicinity of the water table. If so, it should be removed.*

Response: Please refer to the response to Comment No. 1

h. Area 5, general:

1. *The note in the column labeled "Controlling Depth" does not appear to be consistent with the excavation depths proposed for each grid cell. Please clarify the note or correct the apparent inconsistency so the intent is clear.*

Response: This information will be checked and revised as necessary.

i. Grid B8:

1. *Boring SB411 detected no contamination but boring B-14 had no recovery beneath the base elevation. Based on the depth of contamination found at TP-2 and TP-3, which abut Grid B8, excavation down to at least the water table for the northern and western portions of Grid B9 appears warranted.*

Response: Please refer to the response to Comment No. 1.

j. Grid B9:

1. *Neither boring B-15 nor SB412 had sufficient sample recovery at an elevation beneath the base elevation. Therefore this grid has not been adequately characterized. Additional work will be required to better characterize this grid in order to establish an excavation plan.*

Response: No additional testing for the completion of the PDI is anticipated. Any additional exploration considered necessary will be accomplished as part of the design effort.

2. *Based on the depth of contamination found at TP-3, TP-13, and TP-16, excavation down to at least the water table appears warranted for much of the northern portion Grid B9.*

Enclosure (1)

Response: Please refer to the response to Comment No. 1.

k. *Grids C9 & C-10:*

1. *EPA is concerned that the refusal elevations in these two grids may not be bedrock, but concrete. In C9, the playground area reportedly is built on high bedrock. However, B-2, which abuts the playground on the east, drilled easily to 14 feet below ground surface (bgs) and B-4, which abuts the playground on the west, also got down to 14 feet bgs. In C10, TP-06 reported a concrete slab at 7 feet bgs while TP-07, immediately adjacent to TP-06, reported conglomerate at 8 feet bgs. EPA will require confirmation that refusal reports are definitively either bedrock or concrete. Existing data are not definitive.*

Response: No additional testing for the completion of the PDI is anticipated. Any additional exploration considered necessary will be accomplished as part of the design effort.

2. *B-2 had black, visibly stained soil at 6-8 feet bgs, but no organic samples were collected from that depth. The proposed excavation plan for Grid C9 should be adjusted to remediate this contamination.*

Response: Please refer to the response to Comment No. 1.

l. *Grid C11:*

1. *Given the magnitude and depth of contamination found in SB414 and SB431, located in grids bordering Grid C11, excavation in the northern and northwestern part of Grid C11 will need to be designed to remove deeper soil than the excavation plan indicates.*

Response: Please refer to the response to Comment No. 1.

m. *Grid A8:*

1. *Owing to significant concentrations of contamination found in A8 at elevations at least down to the MLW elevation, deeper excavation in grid A8 is indicated. TPH contamination of 21,000 mg/Kg was detected at TP-15 down to the 3 foot elevation suggesting that deeper soil contamination should also be expected at that location. Also, significant lead and PAH contamination exists down to the MLW elevation at other locations within grid A8.*

Response: Please refer to the response to Comment No. 1.

n. *Grid A9:*

1. *Strong odors and visibly stained soil were found in MW-2 down to the MLW elevation and lead in significant concentrations was detected at SB404 to beneath the MLW elevation. High TPH and lead contamination was also found at TP-13 and TP-16 at depths approaching the water table, suggesting that significant contamination goes even deeper and that the proposed excavation should be revised to address this contamination.*

Response: Please refer to the response to Comment No. 1.

2. *EPA is further concerned that additional contamination will be found beneath the buried foundations/structures that exist at TP-13 and TP-16, including the possibility of oil-filled piping. These structures must be removed and the subsurface further explored as part of any remedial action.*

Enclosure (1)

Response: The Navy concurs that structures and foundations encountered will need to be removed during the soil removal action.

o. Grid B10:

1. *Given the magnitude of PAH contamination detected at SB413 in the 2-4 foot interval, it is not appropriate to terminate the excavation for B10 at 4 feet bgs. Deeper excavation is warranted to remove the contaminated soil that is expected to be found at greater depths.*

Response: Please refer to the response to Comment No. 1.

p. Grid B11:

1. *PAH contamination extends down to the MLW elevation and TPH contamination of 1200 mg/Kg was found below the MLW elevation suggesting that excavation only to the water table will leave significant contamination in place at depth.*

Response: Please refer to the response to Comment No. 1.

q. Grid A7:

1. *At SB428, PAH contamination exceeding the cleanup goal extends down to the MLW elevation.*

Response: Please refer to the response to Comment No. 1.

r. Grid A10:

1. *At SB430, lead was detected at concentrations exceeding the cleanup goal at elevations lower than MLW and TPH exceeded the cleanup goal down at least as deep as the MLW elevation. This suggests that the planned excavation depth may not be adequate.*

Response: Please refer to the response to Comment No. 1.

s. Grid B12:

1. *At SB431, oil-stained soils were found and TPH contamination was identified down to the MLW elevation. This suggests that the planned excavation depth may not be adequate.*

Response: Please refer to the response to Comment No. 1.

**R s p n s to C m m n t s F r o m t h R I D E M
O n t h D r a f t P r e - D s i g n I n v e s t i g a t i o n R e p o r t
C m m n t s D a t e d S e p t e m b e r 2, 2004**

GENERAL COMMENT

In general, the Office of Waste Management has a number of concerns with the document. The primary concerns are the procedures employed during the investigation, the analytical test methods, the interpretation of sampling results, the delineation of the extent of contamination and the proposed excavation limits. In essence, while the Navy acknowledges that contamination on the site warrants a removal action, the proposals submitted in the report will result in this objective not being met. In order to resolve this problem the Navy should simply employ the procedures which were used at the Melville North Landfill. This will result in the effective remediation of onsite-contaminated soils and eliminate the need for additional remedial actions and a long term monitoring program for the onsite soils. In regards to the overall approach for the site, that is the contaminated onsite soils and adjacent contaminated sediments, the Office of Waste Management reiterates its position that both areas of concern should be addressed under one remedial action. That is, concurrent excavation of contaminated soils and sediments.

Response: The actions conducted at Melville were reviewed, and it was recalled that while some excavation below the water table was necessary, it was not extensive. Testing at this site indicates fill present closer to the shoreline, and deeper below the water table. In addition, soil removals below the water table at Melville were limited to a very small area.

As discussed on November 4, 2004, the Navy is continuing to explore the possible approaches for excavation of soil at the site. The proposed excavation depths described in the PDI report were revised in October, 2004, and presented to the reviewers on October 7, 2004. Based on the discussions held that date, additional revisions are being considered.

The excavation approaches need to address regulatory, risk, and future use issues identified by the USEPA in their comments dated August 16, 2004 and our evaluations are taking these issues into account. In addition, the Navy has to consider implementability and cost. Therefore, prior to revising the proposed excavation depths again, we propose to meet in January 2005 and discuss the pros and cons of the different options to conduct these soil removal actions.

Regarding the marine sediment, data evaluated in 2001 and 2002 does not merit removal of the sediment at the site, as described in the Phase 2 Sediment Predesign Investigation Report (Tetra Tech NUS, Inc. September 2002), and subsequent correspondence and meetings.

**1. Section 3.0 Subsurface Soil Predesign Investigation Activities,
Page 3-1, Paragraph 3.**

The report notes that the high tide mark will be the limit of excavation. Please be advised that the Site Remediation Regulations require that non-aqueous phase liquids in any media must be address. Therefore, if free product is found on the shoreline below the high tide mark the Navy must taken action to address this contamination.

Response: Free product is considered an actionable PRG at the site. However, no free product has been identified seaward of the mean high tide.

Enclosure (2)

**2. Section 3.0 Subsurface Soil Predesign Investigation Activities,
Page 3-1, Paragraph 3.**

This section of the report states that the limit of excavation will be the high tide mark. The Navy has demonstrated that the sediments adjacent to the Old Fire Fighter Training Area are contaminated. Removal of the contaminated sediments concurrent with the onshore removal action will facilitate the remedial action and reduce the overall cost. Removal of the contaminated sediments after the completion of the onshore work will present logistical problems and increase the overall cost of the project. The above was found to be true in the remediation of the Melville North Landfill and the McAllister Point Landfills respectively. The Office of Waste Management reiterates its position that the Navy takes advantage of the experience gained from the remediation of the aforementioned two sites and conduct a removal action on the adjacent sediments concurrent with the onshore action.

Response: The Navy has determined that data does not indicate the need for removal of sediment at the site. However, the Navy is continuing to consider the cost of removal vs the cost of monitoring as the project progresses.

**3. Section 3.2, Sample Analysis and Data Review.
Page 3-3**

The report notes that TPH samples were run for the C4-C36 range using a modified 8015 procedure. Method 8015 is for volatile range compounds. The report is a public document and therefore should indicate if this modified TPH test procedure was for volatile range TPH.

Response: The GRO range includes the volatile range TPH. This will be stated in the revised report.

**4. Section 3.2, Sample Analysis and Data Review.
Page 3-3**

The report states that there is overlap between GRO and TPH, however only TPH has a PRG. GRO is a subset of TPH and as such the TPH standard applies. Please modify this and all other sections of the report to reflect this requirement.

Response: The text is correct as stated. The Navy concurs that the TPH standard does apply to the Gasoline Range Organics (GRO) as reported in the data tables.

**5. Section 4.0, Investigation Findings.
Tables and Figures**

The tables and/or figures contain typographical errors. In that, at a number of locations there are disagreements with the information presented in the tables and the associated figures, (depth of borings, depth of bedrock or other geologic strata, number and/or location of soil samples taken from borings, etc). It is recommended that the tables and figures be reviewed to ascertain the source of the discrepancies.

Response: Discrepancies between text, tables and figures will be checked and revised as needed.

**6. Section 4.0, Investigation Findings.
Table 4-2, 4-3**

Please include a column with GRO results

Enclosure (2)

Response: GRO is reported in Tables 4-3A through 4-3C

7. Section 4.1.1, Area I Findings
Page 4-1

The highest PID and FID readings in SB 433 were 116 and 326 respectively. The interval where these readings were obtained was not sampled for TPH. However, the interval with one of the lowest PID and FID readings, 0.4 and 0, was sampled for TPH. As such the TPH sample was not taken in the correct location in this boring. It is therefore, incorrect to ascertain that there is not a TPH problem at this location. Considering the elevated field readings the report should assume that there is an area of concern for TPH.

Response: Samples for lab analysis were taken every other interval. The Navy's reevaluations will conservatively estimate excavation to the top of the first interval where PRGs are not exceeded, instead of the bottom the last interval where PRGs were exceeded.

8. Section 4.1.1, Area I Findings
Page 4-1

At SB 418 strong petroleum odors, high PID and FID readings and potential oil saturated soil was observed in the boring. However, the TPH result for this location was only 44 ppm. The low TPH results in not in concert with the multiple field observations. This brings into question the validity of the laboratory analysis. Accordingly, this should be considered an area of concern for TPH and should be delineated as such in the report.

Response: Observations of free product will be used to support the laboratory data available to make a determination of action or no action at each interval. Observations of free product will be considered an actionable PRG exceedance, as described in the response to Comment No. 10 below.

9. Section 4.1.1, Area I Findings
Page 4-1

The report notes that GRO in this area ranged from 3,600-34,000 ppm. The borings with elevated readings of GRO should be considered areas of concern that warrant remedial action. Please modify the report accordingly.

Response: The comment cites incorrect units. GRO is expressed in ug/kg, not ppm. The concentrations reported do not exceed the residential criteria of 500 mg/kg (500,000 ug/kg).

10. Section 4.1.1, Area 2 Findings
Page 4-2

At borings B-7 and B-8, there were elevated PID or FID readings and odors or staining was observed. Although there were indications of petroleum contamination TPH samples were not taken at these locations. Therefore, it is inappropriate to state that TPH is not a concern at these boring locations. As such the report should be modified to state that these areas may warrant remediation and will be investigated during the remedial action.

Enclosure (2)

Response: TRC investigations conducted in the early 1990s did not include TPH analysis. Available observations on oil and screening instrument readings from those investigations will be used to the extent possible, but TPH data that is available from the grid cell will be the primary decision factor for determining if TPH exceeds PRGs within the grid cell, since the TPH data from 2004 is presumed to more reflect the current condition than observations of free product in 1992. In the passage of 12 years, free product observed by TRC may have broken down through natural attenuation processes.

Please also refer to the response to the General Comment above, regarding the determination of the target excavation depths.

11. Section 4.1.1, Area 2 Findings
Page 4-2

The report notes that GRO in this area ranged from 4,600-31,000 ppm. The borings with elevated readings of GRO should be considered areas of concern, which warrant remedial action. Please modify the report accordingly.

Response: The comment cites incorrect units. GRO is expressed in ug/kg, not ppm. The concentrations reported do not exceed the residential criteria of 500 mg/kg (500,000 ug/kg).

12. Section 4.2.1, Area 3 Findings
Page 4-5

At a number of borings (B-6, MW-3s, MW 7s) strong petroleum odors and/or staining was observed however TPH samples were not collected. These should be delineated as areas of concern, which warrant remediation in the report. Please modify the document accordingly

Response: TRC investigations did not include TPH analysis. Please refer to the response to Comment No. 10, above.

13. Section 4.2.1, Area 3 Findings
Page 4-5

Sheens were observed at MW 101, SB 409, SB 410, SB 419, SB 420, and SB 421. The report should note that the locations and depths where the sheens were observed are considered areas of concern, which warrant remediation. The report should be modified such that these areas and depths are delineated as areas of concern.

Response: TRC investigations did not include TPH analysis. Please refer to the response to Comment No. 10, above.

Enclosure (2)

14. Section 4.2.1, Area 3 Findings
Page 4-5

The report notes that GRO in this area ranged from 2,100-230,000 ppm. The borings with elevated readings of GRO should be considered areas of concern that warrant remedial action. Please modify the report accordingly

Response: The comment cites incorrect units. GRO is expressed in ug/kg, not ppm. The concentrations reported do not exceed the residential criteria of 500 mg/kg (500,000 ug/kg).

15. Section 4.2.2, Area 4 Findings
Page 4-6

At borings B-5 and B-12 petroleum odors and/or staining was observed however TPH samples were not collected. These should be delineated as areas of concern that warrant remediation in the report. Please modify the document accordingly

Response: TRC investigations did not include TPH analysis. Please refer to the response to Comment No. 10, above.

16. Section 4.2.2, Area 4 Findings
Page 4-6

The highest PID and FID readings were observed at the four-foot depth interval in boring SB-427. In addition, this was the only interval where oily sand with a petroleum odor was noted. Although there was indications of petroleum contamination TPH samples were not taken at this location. Therefore, it is inappropriate to state that TPH is not a concern at this boring location. As such the report should be modified to state that these areas may warrant remediation and will be investigated during the remedial action.

Response: Please refer to the response to Comment No. 10, above.

17. Section 4.2.2, Area 4 Findings
Page 4-6

The report notes that GRO in this area ranged from 4,700-60,000 ppm. The borings with elevated readings of GRO should be considered areas of concern that warrant remedial action. Please modify the report accordingly

Response: The comment cites incorrect units. GRO is expressed in ug/kg, not ppm. The concentrations reported do not exceed the residential criteria of 500 mg/kg (500,000 ug/kg).

18. Section 4.3.1, Area 5 Findings
Page 4-8

At a number of locations (B-2, B-4 and TP-2 petroleum odors and/or staining was observed however TPH samples were not collected. These should be delineated as areas of concern that warrant remediation in the report. Please modify the document accordingly

Enclosure (2)

Response: TRC investigations did not include TPH analysis. Please refer to the response to Comment No. 10, above.

19. Section 4.3.1, Area 5 Findings
Page 4-8

At SB 412 a PID readings of 636 was detected. However, no TPH samples were collected at this location. Due to the high PID reading this should be considered an area of concern, which warrants remediation. Please modify the report accordingly.

Response: Sample SB412-1416, which was taken from the 0-2 foot interval below the base grade elevation provided a result of 100 mg/kg TPH, which is below the 500 mg/kg action limit. Please note that this area is exposed as the mounds have been removed, and building foundations are present in this area that will require removal.

20. Section 4.3.2, Area 6 Findings
Page 4-9

At a number of locations (B-3, B13, B-16, MW-2, MW-10s,) petroleum odors and/or staining was observed however TPH samples were not collected. These should be delineated as areas of concern that warrant remediation in the report. Please modify the document accordingly.

Response: TRC investigations did not include TPH analysis. Please refer to the response to Comment No. 10, above.

21. Section 4.3.2, Area 6 Findings
Page 4-9

At SB429, 430, and 431 petroleum odors, staining or oil saturated soils were observed. The depths where these observations were made should be considered areas of concern, which warrant remediation.

Response: Boring data will be reviewed and depths will be adjusted as needed. Regarding the use of screening instrument data and other observations on the samples, please refer to the response to Comment No. 10 above.

22. Section 5.2, Metals Summary
Page 5-4.

"The average arsenic concentrations measured in the till (12.9 mg/kg) is consistent with the background study conclusions that the bedrock and glacial till are the predominant source of background UTL value of 563 mg/kg and well below the average concentrations measured in the till samples (899.2)."

The above statement contains typographical errors in that it references an average arsenic concentration in the till as being 12.9 and 563 mg/kg. These average concentrations refer to arsenic and manganese respectively. Please correct the report.

Response: The paragraph was truncated inadvertently. The text will be checked and revised as necessary.

Enclosure (2)

23. Section 5.2, Metals Summary
Page 5-4.

The report notes that the bedrock and till are sources of arsenic at the site. If the bedrock were the source of arsenic it would be expected that the concentration of arsenic would increase with depth and high levels of arsenic would be found in samples taken in the bedrock or in the immediate vicinity of the bedrock. This is not the case as there is no general trend in arsenic concentrations with respect to depth. That is, in approximately half of the sample locations the concentration of arsenic decrease with depth in the other half the concentration of arsenic increases with depth. In regards to the bedrock, the concentration of arsenic in the bedrock or in the immediate vicinity of bedrock ranges from 2-1 –69.2. Further, in some cases the concentration of arsenic in the soil column was higher than the concentration in the bedrock or in the soil immediately above the bedrock, in other cases the opposite was observed.

Variability was also observed in the glacial till samples. The concentration of arsenic in the till ranged from 2 to 25 ppm. Further, in some locations the concentration of arsenic in the till was lower than the overlying strata above the till, in other locations the opposite was observed. Therefore, since consistent trends were not observed the report should note that there was variability in the arsenic concentrations across the site. Statements that the bedrock or till was the source of the arsenic should be removed from the report.

Response: The report will be revised to correctly state that there is variability in the arsenic concentrations across the site, as stated in the comment. The remainder of the comment appears to be circumvented by Comment No. 24, below.

24. Section 5.2, Metals Summary
Page 5-6.

The document states that lead is the only metal that should be used as a PRG at the site as the other metals represent background conditions and should not be used as PRGs. A review of the information presented for arsenic reveals that this is not the case. Therefore, the metals PRG list should include the other metals. However, please be advised that based upon the arsenic distribution maps presented in the document, a number of the areas which the Navy initially proposed for remediation due to arsenic (including areas delineated in this report) will not require remediation.

Response: Based on conversations between RIDEM and the Navy on September 8, 2004, the metals that do not seem to be associated with the fill or site operations (arsenic, antimony, beryllium and manganese) will not be considered actionable for the soil removal. Discussions held to date show that EPA is in concurrence with this approach.

25. Section 5.3.2, Recommended Excavations Depths
Page 5-6.

This section of the report delineates the recommend excavation depths in the eastern, central and western sections of the site. In certain locations it is noted that the excavation is limited to a shallow depth due to the shallow water table, even with dewatering efforts. Dewatering cannot be considered as a limiting factor for the remedial action. The Melville North Landfill is similar to the Old Firefighter Training Area, in that the site abuts the bay. Limited dewatering was carried out at the Melville site, and in most locations the excavations were dug below the water table, in standing water. As this was not considered to be a logistical concern at Melville North Landfill, it should not be listed as logistical concern at the Old Firefighter Training Area. Therefore, this depth limitation must be removed form the report and similar to the Melville North Landfill excavation should be carried out to the depths where contamination was observed.

Response Depth of excavation was limited at Melville by the depth of fill that was to be removed. Target excavation was nearly at the water table, or only slightly below. This site has deeper actionable contaminants. The target depths are still being evaluated, as described in the response to the General Comment, above.

**26. Section 5.3.2, Recommended Excavations Depths
Page 5-6.**

This section of the report notes that in certain sections of the site the bedrock is shallow. In other sections of the report the proposed limit of excavation is the bedrock. The bedrock at the site is not hard, competent, granite. The bedrock is soft shale, which is highly fractured and easily removed by a simple backhoe. Therefore, if contamination exists in the bedrock it can be easily removed by the excavator. This procedure was employed at other sites on the base, the most recent of which was the PCB removal action at Gould Island. Accordingly, the bedrock limitation should be removed from the report and it should be noted that contamination in the fractured, easily excavated bedrock will be removed if warranted

Response: There is both phyllite and conglomerate bedrock, which are porous with different densities. There is no chemical data to suggest the bedrock is contaminated. The need for excavation of bedrock would have to be justified for the Navy to conduct this effort.

**27. Section 5.3.2, Recommended Excavations Depths
Page 5-6.**

The report notes that there are a number of buried structures at the site, (foundations, oil water separators, etc). In some cases samples were not taken from beneath the structures, and/or the structures were not fully investigated to determine if there are pipes or other routes of contamination leading into or out of the structures. Releases have been found at a number of buried structures found at the base. The extent of the release as well as the presence of pipes, pipe chases, etc. was ascertained after the structures were removed. Therefore, rather than engage in an extensive boring or test pitting program around and through each structure to determine the extent of contamination, it is recommended that the Navy remove the structures and any contaminated soils around them during the removal action.

Response: The Navy concurs: all structures and foundations will be removed during the soil removal action, as stated in the Action Memorandum.

28. Appendix E, Subsurface Analytical Results.

The minimum detection limit typically employed at a site is set at a level below a particular standard. In this manner it can be determined whether non-detects exceed regulatory criteria. The GRO detection limit at this site ranged from 2000-4000 ppm, well above the standard of 500 ppm. In order to address this problem the Navy may either resample all of the locations using an appropriate detection limit, assume that the concentration observed at the non detect sample points is equal to one half of the detection limit or use other lines of evidence, such as field observations, PID/FID readings etc to delineate area of concern. This information would then be used to delineate the areas, which require remediation.

Response: The comment cites incorrect units. GRO is expressed in ug/kg, not ppm. The concentrations reported do not exceed the residential criteria of 500 mg/kg (500,000 ug/kg).

Enclosure (2)

TABLE A-1
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM IMPACTED SOIL
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Grid Cell	Boring Number	Ground Surface Elev. (1)	Base Grade Elev. (1)	Water Table Elev.(1) (3)	PAH PRG Exceed.	TPH PRG Exceed.	Free Product Present	Target Excavation	Target Limited to lowest Avg. PRG exceedance in Grid Cell		Controlling depth	Area (sq ft)	Volume (CY)
					Elevation (1)	Elevation (1)	Elevation (1)	Thickness					
AREA 1													
C1	SB415	13.3	8.0	1.9	ND	ND	--	7.5	7.5	0.0	no excavation below WT	3,675	-
	B-10	13.7	8.0	1.9	NS	NS	--	7.5					
C2	B-11	8.4	8.4	2.0	ND	NA	--	7.9	5.5	0.0	SB418, no excavation below WT	9,350	-
	SB418	11.5	8.5	2.0	5.5	ND	--	5.5					
C3	SB417	8.5	8.5	2.1	ND	ND	2.5	2.5	5.0	0.0	Average of two points, no excavation below WT	7,875	-
	SB433	17.3	8.0	2.2	ND	ND	--	7.5					
C4	B-9	17.7	8.0	2.3	NS	NS	--	7.5	7.5	0.0	Average of two points, no excavation below WT	8,825	-
	SB418	10.0	8.0	2.3	ND	ND	--	7.5					
AREA 1 sub total												-	-
AREA 2													
B2	SB405	7.0	7.0	2.0	-1.0	ND	--	-1	-3.0	5.0	Petroleum compound (7)	3,525	653
B3	SB408	11.4	7.0	2.1	3.4	ND	--	3.4	3.4	0.0	no excavation below WT	4,650	-
	B-6	11.5	7.0	2.4	1.5	NA	--	1.5					
B4	MW-4B(B-7)	8.1	8.1	2.4	0.1	NA	--	0.1	-3.2	5.5	Average of 3 points, petroleum compounds (7)	7,500	1,537
	SB407	12.0	7.0	2.3	-1.1	-1.1	-5.1	-5.1					
AREA 2 sub total												2,100	-
AREA 3													
B5	SB408	8.0	8.0	2.7	0.0	4.0	--	0	-2.0	6.0	Petroleum compound (6)(7)	10,000	2,222
B6	TP-12	9.0	9.0	3.3	ND	4.0	4.0	4.0	0.6	2.8	Average of 2 points, Petroleum, Pb (7)	10,000	1,019
	SB409	9.1	9.1	3.3	ND	1.1	1.1	1.1					
B7	MW-3B	9.8	9.8	3.6	NA	NA	1.8	1.8					
	TP-11	10.0	10.0	3.9	4.0	4.0	4.0	4.0	-0.6	4.2	SB410, Petroleum compounds (7)	10,000	1,556
C5	SB410	8.4	8.4	3.6	ND	1.4	1.4	1.4					
	SB419	8.4	8.4	2.9	ND	0.4	--	0.4	-1.6	4.5	petroleum compounds (7)	9,875	1,813
C6	TP-17	10.0	10.0	3.6	ND	ND	2.0	2.0					
	MW-101	9.4	9.4	3.5	1.4	1.4	--	1.4					
C8	SB420	10.0	10.0	3.7	6.0	-2.0	0.0	-2.0	-1.2	4.6	Average of 4 points, Petroleum compounds (7)	10,000	1,778
	SB432	9.8	9.8	3.6	1.8	1.8	--	1.8					
C7	B-6	10.1	10.1	3.8	ND	NA	--	9.6					
	MW-7B	10.9	10.9	4.8	6.9	NA	--	6.9					
C9	TP1	10.5	10.5	4.3	6.5	NA	--	6.5	0.6	3.5	Based on SB421, Petroleum compounds (7)	10,000	1,296
	TP-10	10.5	10.5	4.3	NS	NS	--	10					
C8	SB421	10.6	10.6	4.3	2.8	2.8	2.8	2.8					
	SB422	11.8	11.8	4.5	7.8	ND	--	7.8	7.8	0.0	no excavation below WT	3,475	-
AREA 3 sub total												9,483	-
AREA 4													
A5	SB400	7.3	7.3	2.6	ND	ND	--	6.8	6.8	0.0	no excavation below WT	5,175	-
A6	B-5	7.8	7.8	3.0	NA	NA	--	7.3					
	B-12	7.9	7.9	3.2	ND	NA	--	7.4					
A7	MW-11R	7.8	7.8	3.2	NA	NA	--	7.1	4.9	0.0	Based on MW-11S, SB-427, no excavation below WT	10,850	-
	MW-11B	7.9	7.9	3.2	NA	NA	--	7.4					
A7	SB401	7.9	7.9	3.2	3.9	ND	--	3.9					
	SB427	8.3	8.3	3.0	4.3	ND	2.3	2.3					
A7	SB402	8.4	8.4	3.0	ND	ND	--	7.9	7.9	0.0	no excavation below WT	7,575	-
AREA 4 sub total												-	-
AREA 5													
B8	B-14	30.7	10.5	4.0	NS	NS	--	10	10.0	0.0	Average of B-14 and SB411 no excavation below WT	10,000	-
	TP2	13.0	10.0	3.5	ND	NA	--	9.5					
B9	SB411	31.0	10.5	3.9	ND	ND	--	10					
	MW-9R	11.7	11.0	4.5	NS	NS	--	10.5					
B10	TP-16	14.0	10.0	3.3	ND	3.0	3.0	3.0	7.8	0.0	Average of MW-9R (topsoil), SB412 (topsoil), and TP16, no excavation below WT	10,000	-
	B-15	27.6	10.5	3.9	NS	NS	--	10.0					
B10	SB412	24.5	10.5	3.9	ND	ND	--	10					
	TP-13	13.0	10.0	3.3	ND	6.0	3.0	3.0					
B10	SB413	10.6	10.6	3.4	ND	6.6	6.6	6.6	6.6	0.0	no excavation below WT	5,000	-

ENCLOSURE 3

**TABLE A-1
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM IMPACTED SOIL
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND**

Grid Cell	Boring Number	Ground Surface Elev (1)	Base Grade Elev (1)	Water Table Elev.(1) (3)	PAH PRG Exceed.	TPH PRG Exceed	Free Product Present	Target Excavation	Target Limited to lowest Avg. PRG exceedance in Grid Cell		Controlling depth	Area (sq ft)	Volume (CY)	
									Elevation (1)	Thickness				
C8	TP-08	11.5	11.5	4.5	ND	ND	--	11	11.2	0.0	Average of 3 points, no excavation below WT	4145	-	
	TP-09	12.0	12.0	4.5	NS	NS	--	11.5						
	B-4	11.5	11.5	4.5	NA	NA	--	11						
C9	B-2	12.9	12.9	4.6	NA	NA	--	12.4	11.5	0.0	Average of 4 points, no excavation below WT	6,150	-	
	B-17	11.5	11.5	4.6	NA	NA	--	11.0						
	SB423	11.8	11.9	4.6	ND	ND	--	11.4						
	SB434	11.5	11.5	4.5	ND	ND	--	11.0						
C10	MW-8R	12.7	12.7	4.5	NS	NS	--	12.2	10.3	0.0	Average of 4 points, no excavation below WT	9,450	-	
	TP-08	12.5	12.5	4.5	5.5	ND	--	5.5						
	TP-07	12.5	12.5	4.5	NA	ND	--	12.0						
	SB424	12.0	12.0	4.1	ND	ND	--	11.5						
C11	MW-1R	11.3	11.3	3.3	NS	NS	--	10.8	11.5	0.0	TP-02 pipe at 3'. Average of 4 points, no excavation below WT	10,000	-	
	TP-02	12.0	12.0	4.5	NA	ND	--	11.5						
	TP-03	12.5	12.5	4.0	NS	NS	--	12						
	SB425	12.1	12.1	4.0	ND	ND	--	11.6						
C12	B-1	12.5	12.5	3.5	NA	NA	--	12	9.5	0.0	Average of 4 points, no excavation below WT	8,875	-	
	TP-04	12.5	12.5	4.0	NS	NS	--	12						
	TP-05	11.0	11.0	3.5	3.0	ND	--	3.0						
	SB426	11.5	11.5	3.4	ND	ND	--	11.0						
AREA 6 sub total													-	-
AREA 8														
A7	SB428	8.0	8.0	2.1	0.0	4.0	--	4.0	-2.0	4.1	Petroleum compound (7)	2,000	304	
	TP3	15.0	10.0	3.3	7.0	NA	--	7.0						
A8	B-13	8.9	8.9	2.5	NA	NA	--	8.4	3.1	0.0	Average of 6 points, no excavation below WT	8,775	-	
	MW-102	8.3	8.3	2.1	0.3	0.3	0.3	0.3						
	TP-15 (B)	9.0	9.0	2.4	3.0	3.0	3.0	3.0						
	SB403	9.4	9.4	2.8	1.4	1.4	1.4	1.4						
	SB429	8.6	8.6	2.2	0.6	0.6	-1.4	-1.4						
A9	B-16	9.2	9.2	2.8	5.2	NA	--	5.2	3.0	0.0	Average of 4 points, no excavation below WT	5,875	-	
	MW-2B	9.1	9.1	2.6	1.1	NA	--	1.1						
	MW-2D	9.2	9.2	2.6	NA	NS	--	8.7						
	SB404	8.9	8.9	2.7	0.9	-3.1	-3.1	-3.1						
A10	TP-14	10.0	10.0	2.8	NS	6.0	6.0	6.0	6.0	0.0	no excavation below WT	1783	-	
	SB413	10.6	10.6	3.4	ND	6.6	6.6	6.6						
B10	B-3	10.1	10.1	2.8	2.1	NA	--	2.1	3.2	0.0	Average of SB413 and SB430, no excavation below WT	5,000	-	
	MW-108	10.4	10.4	2.9	ND	NA	--	9.9						
	SB430	9.8	9.8	2.9	5.8	-0.2	-0.2	-0.2						
	B11	SB414	10.7	10.7	2.9	2.7	-1.3	-1.3						-1.3
B12	SB431	11.1	11.1	3.0	ND	-0.9	-0.9	-0.9	-2.9	5.9	Petroleum compound (7)	1,050	229	
Area total												2,003		
Total												13,876		

- material not encountered in the boring
- (1) elevations are presented as feet NGVD 1929 (MLW)
- (2) Target depth from Table F-5
- (3) Water table elevations for areas 1 and 2 are approximated using MW-4S
- (4) Surrounding data points used to adjust target depth (SB-330, B16)
- (5) Bottom of fill estimated from cross-section H-H'
- (6) Excavation depth adjusted for the difference of Table C
- (7) Two feet added to excavation depth to ensure removal of contaminants

**TABLE A-2
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM AND LEAD IMPACTED SOIL
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND**

Grid Cell	Boring Number	Ground Surface Elev. (1)	Base Grade Elev. (1)	Water Table Elev. (1) (3)	PAH PRG Exceed.	TPH PRG Exceed.	Free Product Present	Lead PRG Exceed.	Target Excavation	Target Limited to lowest Avg. PRG exceedance in Grid Cell		Controlling depth	Area (sq ft)	Volume (CY)
										Elevation (1)	Thickness			
AREA 1														
C1	SB415	13.3	8.0	1.9	ND	ND	--	1.3	1.3	-0.7	2.6	Lead (7)	3,675	354
	B-10	13.7	8.0	1.9	NS	NS	--	NS	7.5					
C2	B-11	8.4	8.4	2.0	ND	NA	--	2.4	2.4	5.5	0.0	SB416, Water Table	9,350	-
	SB416	11.5	8.5	2.0	5.5	ND	--	NA	5.5					
C3	SB417	8.5	8.5	2.1	ND	ND	2.5	NA	2.5	5.0	0.0	Average of two points, no excavation below WT	7,875	-
	SB433	17.3	8.0	2.2	ND	ND	--	NA	7.5					
C4	B-9	17.7	8.0	2.3	NS	NS	--	NS	7.5	5.8	0.0	Average of two points, no excavation below WT	8,625	-
	SB418	10.0	8.0	2.3	ND	ND	--	4.0	4.0					
AREA 1 sub total													354	
AREA 2														
B2	SB405	7.0	7.0	2.0	-1.0	ND	--	3.0	-1	-3.0	5.0	Petroleum compound (7)	3,525	653
	SB406	11.4	7.0	2.1	3.4	ND	--	NA	3.4					
B4	B-6	11.5	7.0	2.4	1.5	NA	--	1.5	1.5	-3.2	5.5	Average of 3 points, Petroleum compounds (7)	7,500	1,537
	MW-48(B-7)	8.1	8.1	2.4	0.1	NA	--	NA	0.1					
	SB407	12.9	7.0	2.3	-1.1	-1.1	-5.1	NA	-5.1					
AREA 2 sub total													2,180	
AREA 3														
B5	SB408	8.0	8.0	2.7	0.0	4.0	--	NA	0	2.0	6.0	Petroleum compound (7)	10,000	2,222
	TP-12	9.0	9.0	3.3	ND	4.0	4.0	4.0	4.0					
B6	SB409	9.1	9.1	3.3	ND	1.1	1.1	NA	1.1	0.6	2.8	Average of 2 points, Petroleum, Pb (7)	10,000	1,019
	MW-3S	9.8	9.8	3.8	NA	NA	1.8	NA	1.8					
B7	TP-11	10.0	10.0	3.9	4.0	4.0	4.0	4.0	4.0	-0.6	4.2	SB410, Petroleum compounds (7)	10,000	1,558
	SB410	9.4	9.4	3.8	ND	1.4	1.4	NA	1.4					
C5	SB419	8.4	8.4	2.9	ND	0.4	--	NA	0.4	-1.6	4.5	Petroleum compound (7)	9,875	1,613
	TP-17	10.0	10.0	3.6	ND	ND	2.0	NA	2.0					
C6	MW-101	9.4	9.4	3.5	1.4	1.4	--	NA	1.4	-1.2	4.8	Average of 4 points, Pb, Petroleum compounds (7)	10,000	1,778
	SB420	10.0	10.0	3.7	6.0	-2.0	0.0	NA	-2.0					
	SB432	9.8	9.8	3.6	1.8	1.8	--	1.6	1.6					
	B-6	10.1	10.1	3.8	ND	NA	--	NA	9.4					
C7	MW-7S	10.9	10.9	4.6	6.9	NA	--	NA	6.9	2.8	-0.5	Based on SB421, Petroleum compounds (7)	10,000	(185)
	TP1	10.5	10.5	4.3	8.5	NA	--	8.5	8.5					
	TP-10	10.5	10.5	4.3	NS	NS	--	NS	10					
	SB421	10.8	10.8	4.3	2.8	2.8	2.8	6.8	2.8					
C8	SB422	11.8	11.8	4.5	7.8	ND	--	NA	7.8	7.8	0.0	no excavation below WT	3,475	-
AREA 3 sub total													8,001	
AREA 4														
A5	SB400	7.3	7.3	2.6	ND	ND	--	NA	6.8	6.8	0.0	no excavation below WT	5,175	-
	B-5	7.8	7.8	3.0	NA	NA	--	NA	7.3					
A6	B-12	7.9	7.9	3.2	ND	NA	--	NA	7.4	1.1	2.0	Based on MW-11S, SB-427, Petroleum compounds (7)	10,850	804
	MW-11R	7.6	7.6	3.2	NA	NA	--	3.6	3.6					
	MW-11S	7.9	7.9	3.2	NA	NA	--	3.9	3.9					
	SB401	7.9	7.9	3.2	3.9	ND	--	NA	3.9					
	SB427	8.3	8.3	3.0	4.3	ND	2.3	NA	2.3					
A7	SB402	8.4	8.4	3.0	ND	ND	--	-1.6	-1.6	-3.6	6.6	Lead (7)	7,575	1,852
AREA 4 sub total													2,655	
AREA 5														
B8	B-14	30.7	10.5	4.0	NS	NS	--	NS	10	10.0	0.0	Average of B-14 and SB411, no excavation below WT	10,000	-
	TP2	13.0	10.0	3.5	ND	NA	--	NA	9.5					
	SB411	31.0	10.5	3.9	ND	ND	--	NA	10					
B9	MW-9R	11.7	11.0	4.5	NS	NS	--	NS	10.5	7.8	0.0	Average of MW-9R (topsoil), SB412 (topsoil), and TP16, no excavation below WT	10,000	-
	TP-16	14.0	10.0	3.3	ND	3.0	3.0	3.0						
	B-15	27.6	10.5	3.9	NS	NS	--	NA	10.0					
	SB412	24.5	10.5	3.9	ND	ND	--	NA	10					
B10	TP-13	13.0	10.0	3.3	ND	6.0	3.0	3.0	3.0	6.6	0.0	no excavation below WT	5,000	-
	SB413	10.6	10.6	3.4	ND	6.6	6.6	NA	6.6					

TABLE A-2
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM AND LEAD IMPACTED SOIL
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Grid Cell	Boring Number	Ground Surface Elev. (1)	Base Grade Elev. (1)	Water Table Elev.(1) (3)	PAH PRG Exceed	TPH PRG Exceed	Free Product Present	Lead PRG Exceed	Target Excavation	Target Limited to lowest Avg PRG exceedance in Grid Cell		Controlling depth	Area (sq ft)	Volume (CY)	
										Elevation (1)	Thickness				
C8	TP-08	11.5	11.5	4.5	ND	ND	--	NA	11	11.2	0.0	Average of 3 points, no excavation below WT	4,145	-	
	TP-09	12.0	12.0	4.5	NS	NS	--	NA	11.5						
	B-4	11.5	11.5	4.5	NA	NA	--	NA	11						
C9	B-2	12.9	12.9	4.6	NA	NA	--	NA	12.4	11.5	0.0	Average of 4 points, no excavation below WT	6,150	-	
	B-17	11.5	11.5	4.6	NA	NA	--	NA	11.0						
	SB423	11.9	11.9	4.6	ND	ND	--	NA	11.4						
	SB434	11.5	11.5	4.5	ND	ND	--	NA	11.0						
C10	MW-0R	12.7	12.7	4.5	NS	NS	--	NS	12.2	10.3	0.0	Average of 4 points, no excavation below WT	9,450	-	
	TP-06	12.5	12.5	4.5	5.5	ND	--	NA	5.5						
	TP-07	12.5	12.5	4.5	NA	ND	--	NA	12.0						
	SB424	12.0	12.0	4.1	ND	ND	--	NA	11.5						
C11	MW-1R	11.3	11.3	3.3	NS	NS	--	NS	10.6	11.5	0.0	TP-02 pipe at 3', Average of 4 points, no excavation below WT	10,000	-	
	TP-02	12.0	12.0	4.5	NA	ND	--	NA	11.5						
	TP-03	12.5	12.5	4.0	NS	NS	--	NA	12						
	SB425	12.1	12.1	4.0	ND	ND	--	NA	11.6						
C12	B-1	12.5	12.5	3.5	NA	NA	--	4.5	4.5	6.8	0.0	Average of 4 points, no excavation below WT	8,875	-	
	TP-04	12.5	12.5	4.0	NS	NS	--	12							
	TP-05	11.0	11.0	3.5	3.0	ND	--	3.0	3.0						
	SB426	11.5	11.5	3.4	ND	ND	--	NA	7.5						
AREA 5 sub total													-		
AREA 6															
A7	SB428	8.0	8.0	2.1	0.0	4.0	--	4.0	4.0	-2.0	4.1	Petroleum compound (7)	2,000	304	
	TP3	15.0	10.0	3.3	7.0	NA	--	2.0	2.0						
A8	B-13	8.9	8.9	2.5	NA	NA	--	NA	8.4	0.0	3.7	Average of 6 points, Topsoil, Petroleum compounds, Pb (8)(7)	8,775	1,188	
	MW-102	8.3	8.3	2.1	0.3	0.3	0.3	0.3	0.3						
	TP-15 (6)	9.0	9.0	2.4	3.0	3.0	3.0	3.0	3.0						
	SB403	9.4	9.4	2.6	1.4	1.4	1.4	1.4	1.4						
	SB429	8.6	8.6	2.2	0.6	0.6	-1.4	-3.4	-3.4						
A9	B-16	9.2	9.2	2.8	5.2	NA	--	NA	5.2	-3.9	6.6	Average of 4 points, Pb, Petroleum compounds (7)	5,675	1,382	
	MW-2B	9.1	9.1	2.6	1.1	NA	--	-4.9	-4.9						
	MW-2D	9.2	9.2	2.6	NA	NS	--	-4.8	-4.8						
	SB404	8.9	8.9	2.7	0.9	-3.1	-3.1	-3.1	-3.1						
A10	TP-14	10.0	10.0	2.8	NS	6.0	6.0	NA	6.0	6.0	0.0	no excavation below WT	1,783	-	
	SB413	10.6	10.6	3.4	ND	6.6	6.6	NA	6.6						
B10	B-3	10.1	10.1	2.8	2.1	NA	--	NA	2.1	-0.6	4.0	Average of SB413 and SB430, Pb, Petroleum compounds (7)	5,000	731	
	MW-10S	10.4	10.4	2.9	ND	NA	--	NA	9.9						
	SB430	9.8	9.8	2.9	5.8	-0.2	-0.2	-4.2	-4.2						
B11	SB414	10.7	10.7	2.9	2.7	-1.3	-1.3	6.7	-1.3	-3.3	6.2	Pb (7)	6,400	1,470	
B12	SB431	11.1	11.1	3.0	ND	-0.9	-0.9	1.1	-0.9	-2.9	5.9	Petroleum compound (7)	1,050	229	
Area total													5,302		
Total													18,503		

- material not encountered in the boring
- (1) elevations are presented as feet NGVD 1929 (M.W)
- (2) Target depth from Table F-5
- (3) Water table elevations for areas 1 and 2 are approximated using MW-4S
- (4) Surrounding data points used to adjust target depth (SB-330, B16)
- (5) Bottom of fill estimated from cross-section H-H'
- (6) Excavation depth adjusted for the difference of Table C
- (7) Two feet added to excavation depth to ensure removal of contaminants

**TABLE A-3
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM, LEAD, ARSENIC, AND MANGANESE IMPACTED SOIL
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND**

Grid Cell	Boring Number	Ground Surface Elev (1)	Base Grade Elev (1)	Water Table Elev (1) (2)	PAH PRG Exceed.	TPH PRG Exceed.	Free Product Present	Lead PRG Exceed.	Arsenic	Manganese	Target Excavation	Adjusted Grid Cell Excavation		Controlling depth	Area (sq ft)	Volume (CY)
												Elevation (1)	Elevation (1)			
AREA 1																
C1	SB415	13.3	8.0	1.9	ND	NA	NA	1.3	1.3	1.3	1.3	-0.7	2.6	Pb, As, Mn (7)	3,675	354
	B-10	13.7	8.0	1.9	NS	NS	NA	NS	NA	NA	7.5					
C2	B-11	8.4	8.4	2.0	ND	NS	NA	2.4	2.4	2.4	2.4	-0.9	2.8	As, Mn (7)	9,350	981
	SB418	11.5	8.5	2.0	5.5	NA	NA	NA	-8.5	-8.5	-8.5					
C3	SB417	8.5	8.5	2.1	ND	NA	2.5	NA	-11.5	-7.5	-11.5	-14.1	16.3	Average of two points, As, Mn (7)	7,875	4,619
	SB433	17.3	8.0	2.2	ND	NA	NA	NA	2.3	-12.7	-12.7					
C4	B-9	17.7	8.0	2.3	NS	NS	NA	NS	NA	NA	7.5	-2.3	4.6	Fill, Average of two points, As, Mn (7)	8,825	1,453
	SB418	10.0	8.0	2.3	ND	NA	NA	4.0	-8.0	-8.0	-8.0					
AREA 1 sub total																7,408
AREA 2																
B2	SB405	7.0	7.0	2.0	-1.0	NA	NA	3.0	NA	NA	-1.0	-3.0	5.0	Petroleum compounds (7)	3,525	653
B3	SB406	11.4	7.0	2.1	3.4	NA	NA	NA	NA	NA	3.4	3.4	0.0	no excavation below WT	4,650	-
B4	B-9	11.5	7.0	2.4	1.5	NS	NA	1.5	NA	1.5	1.5					
	MW-4S(B-7)	8.1	8.1	2.4	0.1	NA	NA	NA	NA	NA	0.1	-3.2	5.5	Average of 3 points, Pb, Mn, Petroleum compounds (7)	7,500	1,537
	SB407	12.9	7.0	2.3	-1.1	-1.1	-5.1	NA	NA	NA	-5.1					
AREA 2 sub total																2,190
AREA 3																
B5	SB408	8.0	8.0	2.7	0.0	4.0	NA	NA	NA	NA	0	-2.0	8.0	Petroleum compounds (7)	10,000	2,222
B6	TP-12	9.0	9.0	3.3	ND	4.0	4.0	4.0	NA	4.0	4.0					
	SB409	9.1	9.1	3.3	ND	1.1	1.1	NA	NA	NA	1.1	0.6	2.8	Average of 2 points, Petroleum compounds (7)	10,000	1,019
B7	MW-3S	9.8	9.8	3.6	NA	NA	1.8	NA	NA	NA	1.8					
	TP-11	10.0	10.0	3.9	4.0	4.0	4.0	4.0	4.0	4.0	4.0	0.4	3.3	Average of 3 points, Pb, Petroleum compounds (7)	10,000	1,222
	SB410	9.4	9.4	3.6	ND	1.4	1.4	NA	NA	NA	1.4					
C5	SB419	8.4	8.4	2.9	ND	0.4	NA	NA	-3.6	-3.6	-3.6	-5.6	8.5	Avg. 3 pts, metals, P C (7)	9,875	3,046
	TP-17	10.0	10.0	3.8	ND	NA	2.0	NA	1.0	1.0	1.0					
C6	MW-101	9.4	9.4	3.5	1.4	1.4	NA	NA	1.4	1.4	1.4	-4.5	8.1	Average of 3 points, Mn, As, Petroleum compounds (7)	10,000	2,981
	SB420	10.0	10.0	3.7	8.0	-2.0	0.0	NA	-8.0	-8.0	-8.0					
	SB432	9.8	9.8	3.6	1.8	1.8	NA	1.8	-8.2	-8.2	-8.2					
C7	B-6	10.1	10.1	3.8	ND	NS	NA	NA	NA	NA	-1.9	-1.9				
	MW-7S	10.9	10.9	4.8	8.9	NA	NA	NA	NA	NA	8.9					
	TP1	10.5	10.5	4.3	6.5	NS	NS	6.5	NA	NA	6.5	-11.2	15.5	Based on SB421, As (7)	10,000	5,741
	TP-10	10.5	10.5	4.3	NS	NS	NA	NS	NA	NA	10					
C8	SB421	10.8	10.8	4.3	2.8	2.8	2.8	6.8	-9.2	-5.2	-9.2					
	SB422	11.8	11.8	4.5	7.8	NA	NA	NA	NA	NA	-8.2	-10.2	14.7	Mn (7)	3,475	1,892
AREA 3 sub total																18,123
AREA 4																
A5	SB400	7.3	7.3	2.8	ND	NA	NA	NA	NA	NA	6.8	6.8	0.0	Topsoil	5,175	-
A6	B-5	7.9	7.8	3.0	NA	NS	NA	NA	NA	1.8	1.8					
	B-12	7.9	7.9	3.2	ND	NS	NA	NA	NA	3.9	3.9					
	MW-11R	7.6	7.6	3.2	NA	NS	NA	3.8	NA	NA	3.8	1.1	2.0	Based on MW-11S, SB-427, Petroleum compounds	10,850	604
	MW-11S	7.9	7.9	3.2	NA	NS	NA	3.9	NA	3.9	3.9					
	SB401	7.9	7.9	3.2	3.9	NA	NA	NA	NA	NA	3.9					
	SB427	8.3	8.3	3.0	4.3	NA	2.3	NA	4.3	4.3	2.3					
A7	SB402	8.4	8.4	3.0	ND	NA	NA	-1.6	NA	NA	-1.6	-3.6	6.6	Pb (7)	7,575	1,852
AREA 4 sub total																2,655
AREA 5																
B8	B-14	30.7	10.5	4.0	NS	NS	NA	NS	NA	NA	10					
	TP2	13.0	10.0	3.5	ND	NS	NA	NA	NA	NA	9.5	10.0	0.5	Average of B-14 and SB411, topsoil	10,000	185
	SB411	31.0	10.5	3.9	ND	NA	NA	NA	NA	NA	10					
B9	MW-9R	11.7	11.0	4.5	NS	NS	NS	NS	NA	NA	10.5					
	TP-16	14.0	10.0	3.3	ND	3.0	3.0	3.0	3.0	3.0	3.0	7.8	0.0	Average of MW-9R, SB412, and TP16, no excation below WT	10,000	-
	B-15	27.6	10.5	3.9	NS	NA	NA	NA	NA	NA	8.6					
	SB412	24.5	10.5	3.9	ND	NA	NA	NA	NA	NA	10					
B10	TP-13	13.0	10.0	3.3	ND	3.0	3.0	3.0	6.0	6.0	3.0					
	SB413	10.6	10.6	3.4	ND	6.6	6.6	NA	NA	NA	6.6	6.6	0.0	no excavation below WT	5,000	-

**TABLE A-3
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM, LEAD, ARSENIC, AND MANGANESE IMPACTED SOIL.
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND**

Grid Cell	Boring Number	Ground Surface Elev. (1)	Base Grade Elev. (1)	Water Table Elev. (1) (2)	PAH PRG Exceed	TPH PRG Exceed	Free Product Present	Lead PRG Exceed	Arsenic	Manganese	Target Excavation	Adjusted Grid Cell Excavation		Controlling depth	Area (sq ft)	Volume (CY)
												Elevation (1)	Elevation (1)			
C8	TP-06	11.5	11.5	4.5	ND	NA	NA	NA	7.5		7.5	10.0	0.0	Average of 3 points, no excavation below WT	4145	
	TP-09	12.0	12.0	4.5	NS	NS	NA	NA	NA	NA	11.5					
	B-4	11.5	11.5	4.5	NA	NS	NA	NA	NA	NA	11					
C9	B-2	12.9	12.9	4.6	NA	NS	NA	NA	4.9	2.9	2.9	5.5	0.0	Average of 4 points, no excavation below WT	6,150	
	B-17	11.5	11.5	4.6	NA	NS	NA	NA	NA	7.5	7.5					
	SB423	11.9	11.9	4.6	ND	NA	NA	NA	NA	7.9	7.9					
	SB434	11.5	11.5	4.5	ND	NA	NA	NA	7.5	3.5	3.5					
C10	MW-8R	12.7	12.7	4.5	NS	NS	NS	NS	NA	NA	12.2	7.6	0.0	Average of 4 points, no excavation below WT	9,450	
	TP-06	12.5	12.5	4.5	5.5	NA	NA	NA	NA	5.5	5.5					
	TP-07	12.5	12.5	4.5	NA	NA	NA	NA	NA	4.5	4.5					
	SB424	12.0	12.0	4.1	ND	NA	NA	NA	NA	8.0	8.0					
C11	MW-1R	11.3	11.3	3.3	NS	NS	NS	NS	NA	NA	10.8	10.6	0.0	TP-02 pipe at 3'. Average of 4 points, no excavation below WT	10,000	
	TP-02	12.0	12.0	4.5	NA	NA	NA	NA	NA	NA	11.5					
	TP-03	12.5	12.5	4.0	NS	NS	NA	NA	NA	NA	12					
	SB425	12.1	12.1	4.0	ND	NA	NA	NA	8.1	8.1	8.1					
C12	B-1	12.5	12.5	3.5	NA	NS	NA	4.5	4.5	NA	4.5	6.6	0.0	Average of 4 points, no excavation below WT	8,875	
	TP-04	12.5	12.5	4.0	NS	NS	NA	NA	NA	NA	12					
	TP-05	11.0	11.0	3.5	3.0	NA	NA	3.0	3.0	3.0	3.0					
	SB426	11.5	11.5	3.4	ND	NA	NA	NA	7.5	7.5	7.5					
AREA 5 sub total																165
AREA 6																
A7	SB426	8.0	8.0	2.1	0.0	4.0	NA	4.0	-12.0	-12.0	-12.0	-14.0	16.1	As, Mn (7)	2,000	1,193
A8	TP3	15.0	10.0	3.3	7.0	NS	NA	2.0	7.0	8.0	2.0	0.0	2.6	Average of 6 points, Pb, As, Mn, Petroleum compounds (7)	8,775	834
	B-13	8.9	8.9	2.5	NA	NS	NA	NA	NA	NA	8.4					
	MW-102	8.3	8.3	2.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3					
	TP-15 (6)	9.0	9.0	2.4	3.0	3.0	3.0	3.0	3.0	3.0	3.0					
	SB403	9.4	9.4	2.6	1.4	1.4	1.4	1.4	NA	NA	1.4					
	SB429	8.6	8.6	2.2	0.6	0.6	-1.4	-3.4	0.6	0.6	-3.4					
A9	B-16	9.2	9.2	2.8	5.2	NS	NA	NA	NA	NA	5.2	-3.9	6.6	Average of 4 points, Pb, As, Mn, Petroleum compounds (7)	5,675	1,382
	MW-2S	9.1	9.1	2.6	1.1	NS	NA	-4.9	-4.9	-4.9						
	MW-2D	9.2	9.2	2.6	NA	NS	NA	-4.8	NA	NA	-4.8					
	SB404	8.9	8.9	2.7	0.9	-3.1	-3.1	-3.1	NA	NA	-3.1					
A10	TP-14	10.0	10.0	2.8	NS	8.0	8.0	NA	8.0	6.0	6.0	6.0	0.0	no excav below WT	1783	
B10	SB413	10.6	10.6	3.4	ND	6.6	6.6	NA	NA	NA	6.6	-1.8	5.0	Average of SB413 and SB430, As (7)	5,000	917
	B-3	10.1	10.1	2.8	2.1	NS	NA	NA	-3.9	NA	-3.9					
	MW-10S	10.4	10.4	2.9	ND	NS	NA	NA	4.4	4.4	4.4					
	SB430	9.8	9.8	2.9	5.8	-0.2	-0.2	-4.2	-6.2	5.8	-6.2					
B11	SB414	10.7	10.7	2.9	2.7	-1.3	-1.3	6.7	NA	NA	-1.3	-3.3	6.2	Petroleum compounds (7)	6,400	1,470
B12	SB431	11.1	11.1	3.0	ND	-0.9	-0.9	1.1	1.1	1.1	-0.9	-2.9	5.9	Petroleum compounds (7)	1,050	467
Area total																6,282
Total																36,823

- material not encountered in the boring
- (1) elevations are presented as feet NGVD 1929 (MLW)
- (2) Target depth from Table F-5
- (3) Water table elevations for areas 1 and 2 are approximated using MW-4S
- (4) Surrounding data points used to adjust target depth (SB-330, B16)
- (5) Bottom of fill estimated from cross-section H-H'
- (6) Excavation depth adjusted for the difference of Table C
- (7) Two feet added to excavation depth to ensure removal of contaminants

**TABLE B-1
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM IMPACTED SOIL UP TO THREE FEET BELOW THE WATER TABLE
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND**

Grid Cell	Boring Number	Ground Surface Elev (1)	Base Grade Elev (1)	Water Table Elev.(1) (3)	PAH PRG Exceed	TPH PRG Exceed	Free Product Present	Target Excavation	Target Limited to 3' below WT		Controlling depth	Area (sq ft)	Volume (CY)
					Elevation (1)			Elevation (1)	Elevation (1)	Thickness			
AREA 1													
C1	SB415	13.3	8.0	1.9	ND	ND	--	1.3	7.5	0.0	none below WT	3,675	-
	B-10	13.7	8.0	1.9	NS	NS	--	7.5					
C2	B-11	8.4	8.4	2.0	ND	NA	--	7.9	5.5	0.0	SB416, no excavation below WT	9,350	-
	SB416	11.5	8.5	2.0	5.5	ND	--	5.5					
C3	SB417	8.5	8.5	2.1	ND	ND	2.5	2.5	5.0	0.0	Average of two points, no excavation below WT	7,875	-
	SB433	17.3	8.0	2.2	ND	ND	--	7.5					
C4	B-9	17.7	8.0	2.3	NS	NS	--	7.5	7.5	0.0	Average of two points, none below the WT	8,625	-
	SB418	10.0	8.0	2.3	ND	ND	--	7.5					
AREA 1 sub total													-
AREA 2													
B2	SB405	7.0	7.0	2.0	-1.0	ND	--	-1	-1.0	3.0	Petroleum compound	3,525	392
B3	SB406	11.4	7.0	2.1	3.4	ND	--	3.4	3.4	0.0	no excavation below WT	4,650	-
	B-8	11.5	7.0	2.4	1.5	NA	--	1.5					
B4	MW-4S(B-7)	8.1	8.1	2.4	0.1	NA	--	0.1	-0.8	3.0	Average of 3 points, Petroleum, Stop at 3 ft below WT	7,500	833
	SB407	12.9	7.0	2.3	-1.1	-1.1	-5.1	-5.1					
AREA 2 sub total													1,225
AREA 3													
B5	SB408	8.0	8.0	2.7	0.0	4.0	--	4	4.0	0.0	no excavation below WT	10,000	-
B6	TP-12	9.0	9.0	3.3	ND	4.0	4.0	4.0	2.6	0.8	Average of 2 points, Petroleum compound	10,000	278
	SB409	9.1	9.1	3.3	ND	1.1	1.1	1.1					
B7	MW-3S	9.8	9.8	3.6	NA	NA	1.8	1.8	1.4	2.2	SB410 and Petroleum compound	10,000	815
	TP-11	10.0	10.0	3.9	4.0	4.0	4.0	4.0					
C5	SB410	9.4	9.4	3.6	ND	1.4	1.4	1.4	0.4	2.5	Petroleum compound	9,875	696
	SB419	8.4	8.4	2.9	ND	0.4	--	0.4					
C6	TP-17	10.0	10.0	3.6	ND	ND	2.0	2.0	0.6	3.0	Average of 4 points, Petroleum compound	10,000	1,111
	MW-101	9.4	9.4	3.5	1.4	1.4	--	1.4					
	SB420	10.0	10.0	3.7	6.0	-2.0	0.0	-2.0					
	SB432	9.8	9.8	3.6	1.8	1.8	--	1.8					
C7	B-6	10.1	10.1	3.8	ND	NA	--	9.6	2.8	1.5	Based on SB421, Petroleum compound	10,000	556
	MW-7S	10.9	10.9	4.8	6.9	NA	--	6.9					
	TP1	10.5	10.5	4.3	6.5	NA	--	6.5					
	TP-10	10.5	10.5	4.3	NS	NS	--	10					
C8	SB421	10.8	10.8	4.3	2.8	2.8	2.8	2.8	7.8	0.0	no excavation below WT	3,475	-
	SB422	11.8	11.8	4.5	7.8	ND	--	7.8					
AREA 3 sub total													3,655
AREA 4													
A5	SB400	7.3	7.3	2.6	ND	ND	--	6.8	6.8	0.0	no excavation below WT	5,175	-
A6	B-5	7.8	7.8	3.0	NA	NA	--	7.3	4.9	0.0	Based on MW-11S, SB-427, no excavation below WT	10,850	-
	B-12	7.9	7.9	3.2	ND	NA	--	7.4					
	MW-11R	7.6	7.6	3.2	NA	NA	--	7.1					
	MW-11S	7.9	7.9	3.2	NA	NA	--	7.4					
	SB401	7.9	7.9	3.2	3.9	ND	--	3.9					
A7	SB427	8.3	8.3	3.0	4.3	ND	2.3	2.3	7.9	0.0	no excavation below WT	7,575	-
	SB402	8.4	8.4	3.0	ND	ND	--	7.9					
AREA 4 sub total													-
AREA 5													
B8	B-14	30.7	10.5	4.0	NS	NS	--	10	9.5	0.0	Average of B-14 and SB411, no excavation below WT	10,000	-
	TP2	13.0	10.0	3.5	ND	NA	--	9.5					
	SB411	31.0	10.5	3.9	ND	ND	--	10					
B9	MW-9R	11.7	11.0	4.5	NS	NS	--	10.5	7.8	0.0	Average of MW-9R, SB412, and TP16, no excavation below Water Table	10,000	-
	TP-16	14.0	10.0	3.3	ND	3.0	3.0	3.0					
	B-15	27.6	10.5	3.9	NS	NS	--	8.6					
	SB412	24.5	10.5	3.9	ND	ND	--	10					
B10	TP-13	13.0	10.0	3.3	ND	6.0	3.0	3.0	6.6	0.0	no excavation below WT	5,000	-
	SB413	10.6	10.6	3.4	ND	6.6	6.6	6.6					

**TABLE B-1
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM IMPACTED SOIL UP TO THREE FEET BELOW THE WATER TABLE
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND**

Grid Cell	Boring Number	Ground Surface Elev. (1)	Base Grade Elev. (1)	Water Table Elev.(1) (3)	PAH PRG Exceed.	TPH PRG Exceed.	Free Product Present	Target Excavation Elevation (1)	Target Limited to 3' below WT		Controlling depth	Area (sq ft)	Volume (CY)	
									Elevation (1)	Thickness				
C8	TP-08	11.5	11.5	4.5	ND	ND	--	7.5	10.0	0.0	Average of 3 points, no excavation below Water Table	4145	-	
	TP-09	12.0	12.0	4.5	NS	NS	--	11.5						
	B-4	11.5	11.5	4.5	NA	NA	--	11						
C9	B-2	12.9	12.9	4.6	NA	NA	--	2.9	9.1	0.0	no excavation below Water Table	6,150	-	
	B-17	11.5	11.5	4.6	NA	NA	--	11.0						
	SB423	11.9	11.9	4.8	ND	ND	--	11.4						
	SB434	11.5	11.5	4.5	ND	ND	--	11.0						
C10	MW-8R	12.7	12.7	4.5	NS	NS	--	12.2	10.3	0.0	Average of 4 points, no excavation below Water Table	9,450	-	
	TP-08	12.5	12.5	4.5	5.5	ND	--	5.5						
	TP-07	12.5	12.5	4.5	NA	ND	--	12.0						
	SB424	12.0	12.0	4.1	ND	ND	--	11.5						
C11	MW-1R	11.3	11.3	3.3	NS	NS	--	10.8	11.5	0.0	TP-02 pipe at 3', no excavation below Water Table	10,000	-	
	TP-02	12.0	12.0	4.5	NA	ND	--	11.5						
	TP-03	12.5	12.5	4.0	NS	NS	--	12						
	SB425	12.1	12.1	4.0	ND	ND	--	11.5						
C12	B-1	12.5	12.5	3.5	NA	NA	--	12	9.5	0.0	no excavation below Water Table	8,875	-	
	TP-04	12.5	12.5	4.0	NS	NS	--	12						
	TP-05	11.0	11.0	3.5	3.0	ND	--	3.0						
	SB426	11.5	11.5	3.4	ND	ND	--	11.0						
AREA 6 sub total													-	-
AREA 6														
A7	SB426	8.0	8.0	2.1	0.0	4.0	--	4.0	4.0	0.0	no excavation below WT	2,000	-	
	TP3	15.0	10.0	3.3	7.0	NA	--	7.0						
A8	B-13	8.9	8.9	2.5	NA	NA	--	8.4	3.1	0.0	Average of 6 points, no excavation below Water Table	8,775	-	
	MW-102	8.3	8.3	2.1	0.3	0.3	0.3	0.3						
	TP-15 (5)	9.0	9.0	2.4	3.0	3.0	3.0	3.0						
	SB403	9.4	9.4	2.6	1.4	1.4	1.4	1.4						
	SB429	8.6	8.6	2.2	0.6	0.6	-1.4	-1.4						
	B-16	9.2	9.2	2.8	5.2	NA	--	5.2						
A9	MW-25	9.1	9.1	2.6	1.1	NA	--	1.1	3.0	0.0	Average of 4 points, no excavation below Water Table	5,675	-	
	MW-20	9.2	9.2	2.6	NA	NS	--	8.7						
	SB404	8.9	8.9	2.7	0.9	-3.1	-3.1	-3.1						
	SB413	10.8	10.6	3.4	ND	6.6	6.6	6.6						
A10	TP-14	10.0	10.0	2.8	NS	6.0	6.0	6.0	6.0	0.0	no excavation below WT	1783	-	
	SB413	10.8	10.6	3.4	ND	6.6	6.6	6.6						
B10	B-3	10.1	10.1	2.8	2.1	NA	--	2.1	3.2	0.0	Average of SB413 and SB430, no excavation below WT	5,000	-	
	MW-10S	10.4	10.4	2.9	ND	NA	--	9.9						
	SB430	9.8	9.8	2.9	5.8	-0.2	-0.2	-0.2						
	B11	SB414	10.7	10.7	2.9	2.7	-1.3	-1.3						-1.3
B12	SB431	11.1	11.1	3.0	ND	-0.9	-0.9	-0.9	0.0	3.0	Petroleum compound	6,400	711	
									0.0	3.0	Petroleum compound	1,050	117	
Area total												828		
Total												5,768		

- material not encountered in the boring
- (1) elevations are presented as feet NGVD 1929 (MLW)
- (2) Target depth from Table F-5
- (3) Water table elevations for areas 1 and 2 are approximated using MW-4S
- (4) Surrounding data points used to adjust target depth (SB-330, B16)
- (5) Bottom of fill estimated from cross-section H-H'
- (6) Excavation depth adjusted for the difference of Table C

TABLE B-2
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM AND LEAD IMPACTED SOIL UP TO THREE FEET BELOW THE WATER TABLE
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Grid Cell	Boring Number	Ground Surface Elev. (1)	Base Grade Elev (1)	Water Table Elev.(1) (3)	PAH PRG Exceed.	TPH PRG Exceed	Free Product Present	Lead PRG Exceed.	Target Excavation	Target Limited to 3' below WT		Controlling depth	Area (sq ft)	Volume (CY)
										Elevation (1)	Thickness			
AREA 1														
C1	SB415	13.3	8.0	1.9	ND	ND	--	1.3	1.3	1.3	0.6	Lead	3,675	82
C2	B-10	13.7	8.0	1.9	NS	NS	--	NS	7.5	5.5	0.0	SB416, no excavation below WT	9,350	-
	B-11	8.4	8.4	2.0	ND	NA	--	2.4	2.4					
C3	SB416	11.5	8.5	2.0	5.5	ND	--	NA	5.5	5.0	0.0	Average of two points, no excavation below WT	7,875	-
	SB417	8.5	8.5	2.1	ND	ND	2.5	NA	2.5					
C4	SB433	17.3	8.0	2.2	ND	ND	--	NA	7.5	5.8	0.0	Average of two points, no excavation below WT	8,825	-
	B-9	17.7	8.0	2.3	NS	NS	--	NS	7.5					
	SB418	10.0	8.0	2.3	ND	ND	--	4.0	4.0					
AREA 1 sub total														82
AREA 2														
B2	SB405	7.0	7.0	2.0	-1.0	ND	--	3.0	-1	-1.0	3.0	Petroleum compound	3,525	392
B3	SB408	11.4	7.0	2.1	3.4	ND	--	NA	3.4	3.4	0.0	no excavation below WT	4,850	-
	B-8	11.5	7.0	2.4	1.5	NA	--	1.5	1.5	-0.6	3.0	Average of 3 points, Petroleum. Stop at 3 ft below WT	7,500	633
B4	MW-45(B-7)	8.1	8.1	2.4	0.1	NA	--	NA	0.1					
	SB407	12.9	7.0	2.3	-1.1	-1.1	-5.1	NA	-5.1					
AREA 2 sub total														1,328
AREA 3														
B5	SB406	8.0	8.0	2.7	0.0	4.0	--	NA	4	4.0	0.0	no excavation below WT	10,000	-
B6	TP-12	9.0	9.0	3.3	ND	4.0	4.0	4.0	4.0	2.6	0.8	Average of 2 points, Petroleum compound	10,000	278
	SB409	9.1	9.1	3.3	ND	1.1	1.1	NA	1.1					
B7	MW-33	9.8	9.8	3.6	NA	NA	1.8	NA	1.8	1.4	2.2	SB410 and Petroleum compound	10,000	815
	TP-11	10.0	10.0	3.9	4.0	4.0	4.0	4.0	4.0					
C6	SB410	9.4	9.4	3.6	ND	1.4	1.4	NA	1.4	0.4	2.5	Petroleum compound	8,875	886
	SB419	8.4	8.4	2.9	ND	0.4	--	NA	0.4					
C8	TP-17	10.0	10.0	3.8	ND	ND	2.0	NA	2.0	0.6	3.0	Average of 4 points, limited to 3 ft below WT, Petroleum compound	10,000	1,111
	MW-101	9.4	9.4	3.5	1.4	1.4	--	NA	1.4					
C7	SB420	10.0	10.0	3.7	6.0	-2.0	0.0	NA	-2.0	2.8	1.5	Based on SB421, Petroleum compound	10,000	558
	SB432	9.8	9.8	3.6	1.8	1.8	--	1.8	1.0					
C8	B-6	10.1	10.1	3.8	ND	NA	--	NA	9.8	7.8	0.0	no excavation below WT	3,475	-
	MW-73	10.9	10.9	4.8	6.9	NA	--	NA	6.9					
C7	TP1	10.5	10.5	4.3	6.5	NA	--	6.5	6.5	2.8	1.5	Based on SB421, Petroleum compound	10,000	558
	TP-10	10.5	10.5	4.3	NS	NS	--	NS	1.0					
C8	SB421	10.8	10.8	4.3	2.8	2.8	2.8	6.8	2.8	7.8	0.0	no excavation below WT	3,475	-
	SB422	11.8	11.8	4.5	7.8	ND	--	NA	7.8					
AREA 3 sub total														3,655
AREA 4														
A5	SB400	7.3	7.3	2.8	ND	ND	--	NA	6.8	6.8	0.0	no excavation below WT	5,175	-
A6	B-5	7.8	7.8	3.0	NA	NA	--	NA	7.3	3.1	0.1	Based on MW-11S, Sb-427, and Pb	10,850	40
	B-12	7.9	7.9	3.2	ND	NA	--	NA	7.4					
A6	MW-11R	7.6	7.6	3.2	NA	NA	--	3.6	3.6	3.1	0.1	Based on MW-11S, Sb-427, and Pb	10,850	40
	MW-11S	7.9	7.9	3.2	NA	NA	--	3.9	3.9					
A7	SB401	7.9	7.9	3.2	3.9	ND	--	NA	3.9	0.0	3.0	Pb, 3 ft below WT	7,575	842
	SB427	8.3	8.3	3.0	4.3	ND	2.3	NA	2.3					
	SB402	8.4	8.4	3.0	ND	ND	--	-1.6	-1.6					
AREA 4 sub total														882
AREA 5														
B8	B-14	30.7	10.5	4.0	NS	NS	--	NS	10	10.0	0.0	Average of B-14 and SB411, no excavation below WT	10,000	-
	TP2	13.0	10.0	3.5	ND	NA	--	NA	9.5					
B9	SB411	31.0	10.5	3.9	ND	ND	--	NA	10	7.8	0.0	Average of MW-9R, SB412, and TP16, no excavation below WT	10,000	-
	MW-9R	11.7	11.0	4.5	NS	NS	--	NS	10.5					
B9	TP-16	14.0	10.0	3.3	ND	3.0	3.0	3.0	3.0	7.8	0.0	Average of MW-9R, SB412, and TP16, no excavation below WT	10,000	-
	B-15	27.6	10.5	3.9	NS	NS	--	NA	8.8					
B10	SB412	24.5	10.5	3.9	ND	ND	--	NA	10	8.8	0	no excavation below WT	5,000	-
	TP-13	13.0	10.0	3.3	ND	6.0	3.0	3.0	3.0					
	SB413	10.6	10.6	3.4	ND	6.8	6.8	NA	6.8					

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OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND**

Grid Cell	Boring Number	Ground Surface Elev. (1)	Base Grade Elev. (1)	Water Table Elev.(1)(3)	PAH PRG Exceed.	TPH PRG Exceed	Free Product Present	Lead PRG Exceed.	Target Excavation	Target Limited to 3' below WT		Controlling depth	Area (sq ft)	Volume (CY)
										Elevation (1)	Thickness			
C8	TP-08	11.5	11.8	4.5	ND	ND	--	NA	7.5	100	00	Average of 3 points, no excavation below WT	4145	-
	TP-09	12.0	12.0	4.5	NS	NS	--	NA	11.5					
	B-4	11.5	11.5	4.5	NA	NA	--	NA	11					
C9	B-2	12.9	12.9	4.8	NA	NA	--	NA	2.9	91	00	Average of 4 points, no excavation below WT	6,150	-
	B-17	11.5	11.5	4.8	NA	NA	--	NA	11.0					
	SB423	11.9	11.9	4.8	ND	ND	--	NA	11.4					
	SB434	11.5	11.5	4.5	ND	ND	--	NA	11.0					
C10	MW-8R	12.7	12.7	4.5	NS	NS	--	NS	12.2	103	00	Average of 4 points, no excavation below WT	9,450	-
	TP-08	12.5	12.5	4.5	5.5	ND	--	NA	5.5					
	TP-07	12.5	12.5	4.5	NA	ND	--	NA	12.0					
	SB424	12.0	12.0	4.1	ND	ND	--	NA	11.5					
C11	MW-1R	11.3	11.3	3.3	NS	NS	--	NS	10.8	115	00	TP-02 pipe at 3', Average of 4 points, no excavation below WT	10,000	-
	TP-02	12.0	12.0	4.5	NA	ND	--	NA	11.5					
	TP-03	12.5	12.5	4.0	NS	NS	--	NA	12					
	SB425	12.1	12.1	4.0	ND	ND	--	NA	11.5					
C12	B-1	12.5	12.5	3.5	NA	NA	--	4.5	4.5	76	00	Average of 4 points, no excavation below WT	8,875	-
	TP-04	12.5	12.5	4.0	NS	NS	--	--	12					
	TP-05	11.0	11.0	3.5	3.0	ND	--	3.0	3.0					
	SB428	11.5	11.5	3.4	ND	ND	--	NA	11.0					
AREA 5 sub total														-
AREA 6														
A7	SB428	8.0	8.0	2.1	0.0	4.0	--	4.0	4.0	4.0	0.0	no excavation below WT	2,000	-
A8	TP3	15.0	10.0	3.3	7.0	NA	--	2.0	2.0	20	0.5	Average of 6 points, Petroleum compounds, Pb	8,775	168
	B-13	8.9	8.9	2.5	NA	NA	--	NA	8.4					
	MW-102	8.3	8.3	2.1	0.3	0.3	0.3	0.3	0.3					
	TP-15 (6)	9.0	9.0	2.4	3.0	3.0	3.0	3.0	3.0					
	SB403	9.4	9.4	2.6	1.4	1.4	1.4	1.4	1.4					
	SB429	8.6	8.6	2.2	0.6	0.6	-1.4	-3.4	-3.4					
A9	B-16	9.2	9.2	2.8	5.2	NA	--	NA	5.2	-0.3	3.0	Average of 4 points, Petroleum compounds, Pb	5,675	625
	MW-2B	9.1	9.1	2.6	1.1	NA	--	-4.9	-4.9					
	MW-2D	9.2	9.2	2.6	NA	NS	--	-4.9	-4.9					
	SB404	8.9	8.9	2.7	0.9	-3.1	-3.1	-3.1	-3.1					
A10	TP-14	10.0	10.0	2.8	NS	6.0	6.0	NA	6.0	6.0	0.0	no excavation below WT	1783	-
B10	SB413	10.6	10.6	3.4	ND	6.6	6.6	NA	6.6	1.2	2.0	Average of SB413 and SB430, Petroleum compounds	5,000	361
	B-3	10.1	10.1	2.8	2.1	NA	--	NA	2.1					
	MW-10S	10.4	10.4	2.9	ND	NA	--	NA	9.9					
	SB430	9.8	9.8	2.9	5.8	-0.2	-0.2	-4.2	-4.2					
B11	SB414	10.7	10.7	2.9	2.7	-1.3	-1.3	6.7	-1.3	-0.1	3.0	Petroleum compound	6,400	711
B12	SB431	11.1	11.1	3.0	ND	-0.9	-0.9	1.1	-0.9	0.0	3.0	Petroleum compound	1,050	117
Area total														1,982
Total														7,826

- material not encountered in the boring
- (1) elevations are presented as feet NGVD 1929 (MLW)
- (2) Target depth from Table F-5
- (3) Water table elevations for areas 1 and 2 are approximated using MW-4S
- (4) Surrounding data points used to adjust target depth (SB-330 B16)
- (5) Bottom of fill estimated from cross-section H-H'
- (6) Excavation depth adjusted for the difference of Table C

**TABLE B-3
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM, LEAD, ARSENIC, AND MANGANESE IMPACTED SOIL UP TO THREE BELOW THE WATER TABLE
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND**

Grid Cell	Boring Number	Ground Surface Elev. (1)	Base Grade Elev. (1)	Water Table Elev. (1) (3)	PAH PRG Exceed.	TPH PRG Exceed.	Free Product Present	Lead PRG Exceed.	Arsenic	Manganese	Target Excavation	Target Limited to 3' below WT		Controlling depth	Area (sq ft)	Volume (CY)	
												Elevation (1)	Elevation (1)				Thickness
AREA 1																	
C1	SB415	13.3	8.0	1.9	ND	ND	--	1.3	1.3	1.3	1.3	1.3	0.6	Water Table, Pb, As, Mn	3,675	82	
C2	B-10	13.7	8.0	1.9	NS	NS	--	NS	NA		7.5			SB416, Water Table, As, Mn	9,350	1,039	
	B-11	8.4	8.4	2.0	ND	NA	--	2.4	2.4	2.4	2.4						
C3	SB416	11.5	8.5	2.0	5.5	ND	--	NA	-8.5	-8.5	-8.5			Average of two points, Water Table, As, Mn	7,675	853	
	SB417	8.5	8.5	2.1	ND	ND	2.5	NA	-11.5	-7.5	-11.5						
C4	SB433	17.3	8.0	2.2	ND	ND	--	NA	2.3	-12.7	-12.7			Average of two points, Water Table, As, Mn	8,825	958	
	B-9	17.7	8.0	2.3	NS	NS	--	NS	NA		7.5						
	SB418	10.0	8.0	2.3	ND	ND	--	4.0	-8.0	-8.0	-8.0						
															AREA 1 sub total		2,832
AREA 2																	
B2	SB405	7.0	7.0	2.0	-1.0	ND	--	3.0	NA		-1	-1.0	3.0	WT, Petrol comp	3,525	392	
B3	SB406	11.4	7.0	2.1	3.4	ND	--	NA	NA		3.4	3.4	0.0	no excavation below WT	4,650		
B4	B-8	11.5	7.0	2.4	1.5	NA	--	1.5	NA	1.5	1.5			Average of 3 points, Water Table, Petroleum compounds	7,500	833	
	MW-4S(B-7)	8.1	8.1	2.4	0.1	NA	--	NA	NA		0.1						
	SB407	12.9	7.0	2.3	-1.1	-1.1	-5.1	NA	NA		-5.1						
															AREA 2 sub total		1,225
AREA 3																	
B5	SB408	8.0	8.0	2.7	0.0	4.0	--	NA	NA		4	4.0	0.0	no excavation below WT	10,000		
B6	TP-12	9.0	9.0	3.3	ND	4.0	4.0	4.0	NA	4.0	4.0	1.1	2.2	Average of 2 points, WT, Petroleum compounds	10,000	815	
	SB409	9.1	9.1	3.3	ND	1.1	1.1	NA	NA		1.1						
B7	MW-3S	9.8	9.8	3.6	NA	NA	1.8	NA	NA		1.8			SB410 and Water Table, Petroleum compounds	10,000	815	
	TP-11	10.0	10.0	3.9	4.0	4.0	4.0	4.0	4.0	4.0	4.0	1.4	2.2				
	SB410	9.4	9.4	3.6	ND	1.4	1.4	NA	NA		1.4						
C5	SB419	8.4	8.4	2.9	ND	0.4	--	NA	-3.6	-3.6	-3.6	-0.1	3.0	Water Table, As, Mn	9,675	1,075	
C6	TP-17	10.0	10.0	3.6	ND	2.0	NA	1.0			1.0			Average of 4 points, Water Table, As, Mn	10,000	1,111	
	MW-101	9.4	9.4	3.5	1.4	--	NA	1.4			1.4						
	SB420	10.0	10.0	3.7	8.0	-2.0	0.0	NA	-6.0	-6.0	-6.0						
	SB432	9.8	9.8	3.6	1.8	1.8	--	1.8	-6.2	-6.2	-6.2						
C7	B-6	10.1	10.1	3.8	ND	NA	--	NA	NA	-1.9	-1.9			Based on SB421, Water Table, As, Mn	10,000	1,111	
	MW-7S	10.9	10.9	4.8	8.9	NA	--	NA	NA	8.9	8.9						
	TP1	10.5	10.5	4.3	6.5	NA	--	6.5	NA		6.5	1.3	3.0				
	TP-10	10.5	10.5	4.3	NS	NS	--	NS	NA		10						
	SB421	10.8	10.8	4.3	2.8	2.8	2.8	6.8	-9.2	-5.2	-9.2						
C8	SB422	11.8	11.8	4.5	7.8	ND	--	NA	NA	-8.2	-8.2	1.5	3.0	Water Table, As, Mn	3,475	386	
															AREA 3 sub total		5,313
AREA 4																	
A5	SB400	7.3	7.3	2.6	ND	ND	--	NA	NA		6.8	6.8	0.0	Top Soil	5,175		
A6	B-5	7.8	7.8	3.0	NA	NA	--	NA	NA	1.8	1.8			Based on MW-11S, SB-427, Petroleum compounds, Mn	10,850	362	
	B-12	7.9	7.9	3.2	ND	NA	--	NA	NA	3.9	3.9						
	MW-11R	7.6	7.6	3.2	NA	NA	--	3.8	NA		3.8						
	MW-11S	7.9	7.9	3.2	NA	NA	--	3.9	NA	3.9	3.9						
	SB401	7.9	7.9	3.2	3.9	ND	--	NA	NA		3.9						
	SB427	8.3	8.3	3.0	4.3	ND	2.3	NA	4.3		2.3						
A7	SB402	8.4	8.4	3.0	ND	ND	--	-1.8	NA		-1.8	0.0	3.0	Water Table, Pb	7,575	842	
															AREA 4 sub total		1,203
AREA 5																	
B8	B-14	30.7	10.5	4.0	NS	NS	--	NS	NA		10	10.0	0.0	Average of B-14 and SB411, no excavation below WT	10,000		
	TP2	13.0	10.0	3.5	ND	NA	--	NA	NA		9.5						
	SB411	31.0	10.5	3.9	ND	ND	--	NA	NA		10						
B9	MW-9R	11.7	11.0	4.5	NS	NS	--	NS	NA		10.5			Average of MW-9R, SB412, and TP16, no excavation below WT	10,000		
	TP-16	14.0	10.0	3.3	ND	3.0	3.0	3.0	3.0	3.0	3.0						
	B-15	27.6	10.5	3.9	NS	NS	--	NA	NA	8.6	8.6						
	SB412	24.5	10.5	3.9	ND	ND	--	NA	NA		10						
B10	TP-13	13.0	10.0	3.3	ND	6.0	3.0	3.0	6.0	6.0	3.0			no excavation below WT	5,000		
	SB413	10.6	10.6	3.4	ND	6.6	6.6	NA	NA	NA	6.6						

**TABLE B-3
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM, LEAD, ARSENIC, AND MANGANESE IMPACTED SOIL UP TO THREE BELOW THE WATER TABLE
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND**

Grid Cell	Boring Number	Ground Surface Elev. (1)	Base Grade Elev. (1)	Water Table Elev.(1) (2)	PAH PRG Exceed.	TPH PRG Exceed	Free Product Present	Lead PRG Exceed	Arsenic	Manganese	Target Excavation	Target Limited to 3' below WT		Controlling depth	Area (sq ft)	Volume (CY)
												Elevation (1)	Thickness			
C8	TP-06	11.5	11.5	4.5	ND	ND	--	NA	7.5		7.5	10.0	0.0	Average of 3 points, no excavation below WT	4145	-
	TP-09	12.0	12.0	4.5	NS	NS	--	NA	NA	11.5						
	B-4	11.5	11.5	4.5	NA	NA	--	NA	NA	11						
C9	B-2	12.9	12.9	4.8	NA	NA	--	NA	4.9	2.9	2.9	5.5	0.0	Average of 4 points, no excavation below WT	6,150	-
	B-17	11.5	11.5	4.8	NA	NA	--	NA	NA	7.5	7.5					
	SB423	11.9	11.9	4.8	ND	ND	--	NA	NA	7.9	7.9					
	SB434	11.5	11.5	4.5	ND	ND	--	NA	7.5	3.5	3.5					
C10	MW-8R	12.7	12.7	4.5	NS	NS	--	NS	NA		12.2	7.8	0.0	Average of 4 points, no excavation below WT	9,450	-
	TP-06	12.5	12.5	4.5	5.5	ND	--	NA	NA	5.5	5.5					
	TP-07	12.5	12.5	4.5	NA	ND	--	NA	NA	4.5	4.5					
	SB424	12.0	12.0	4.1	ND	ND	--	NA	NA	8.0	8.0					
C11	MW-1R	11.3	11.3	3.3	NS	NS	--	NS	NA		10.8	10.6	0.0	TP-02 pipe at 3', Average of 4 points, no excavation below WT	10,000	-
	TP-02	12.0	12.0	4.5	NA	ND	--	NA	NA		11.5					
	TP-03	12.5	12.5	4.0	NS	NS	--	NA	NA		12					
	SB425	12.1	12.1	4.0	ND	ND	--	NA	8.1	8.1	8.1					
C12	B-1	12.5	12.5	3.5	NA	NA	--	4.5	4.5		4.5	6.8	0.0	Average of 4 points, no excavation below WT	8,875	-
	TP-04	12.5	12.5	4.0	NS	NS	--	NA	NA		12					
	TP-05	11.0	11.0	3.5	3.0	ND	--	3.0	3.0	3.0	3.0					
	SB426	11.5	11.5	3.4	ND	ND	--	NA	7.5	7.5	7.5					
AREA 5 sub total																
AREA 6																
A7	SB428	8.0	8.0	2.1	0.0	4.0	--	4.0	12.0	-12.0	-12.0	-0.9	3.0	Water Table, As, Mn	2,000	222
A8	TP3	15.0	10.0	3.3	7.0	NA	--	2.0	7.0	8.0	2.0	2.0	0.6	Average of 6 points, WT, Petroleum compounds, Pb, As, Mn	8,775	184
	B-13	8.9	8.9	2.5	NA	NA	--	NA	NA		8.4					
	MW-102	8.3	8.3	2.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3					
	TP-15 (6)	9.0	9.0	2.4	3.0	3.0	3.0	3.0	3.0	3.0	3.0					
	SB403	9.4	9.4	2.8	1.4	1.4	1.4	NA			1.4					
	SB429	8.8	8.8	2.2	0.6	0.6	-1.4	-3.4	0.6		-3.4					
A9	B-16	9.2	9.2	2.8	5.2	NA	--	NA	NA		5.2	-0.3	3.0	Average of 4 points, Water Table, Petroleum compounds, Pb, As, Mn	5,875	625
	MW-2S	9.1	9.1	2.6	1.1	NA	--	-4.9	-4.9	-4.9	-4.9					
	MW-2D	9.2	9.2	2.6	NA	NS	--	-4.8	NA		-4.8					
	SB404	8.9	8.9	2.7	0.9	-3.1	-3.1	-3.1	NA		-3.1					
A10	TP-14	10.0	10.0	2.8	NS	6.0	6.0	NA	6.0		6.0	6.0	0.0	no excavation below WT	1783	-
B10	SB413	10.6	10.6	3.4	ND	6.6	6.6	NA	NA		6.6	0.2	3.0	Average of SB413 and SB430, Petroleum compounds, WT, Pb, As	5,000	546
	B-3	10.1	10.1	2.8	2.1	NA	--	NA	-3.9		-3.9					
	MW-10S	10.4	10.4	2.9	ND	NA	--	NA	NA	4.4	4.4					
	SB430	9.8	9.8	2.9	5.8	-0.2	-0.2	-4.2	-6.2	5.8	-6.2					
B11	SB414	10.7	10.7	2.9	2.7	-1.3	-1.3	6.7	NA		-1.3	-0.1	3.0	WT, Petrol comp	6,400	711
B12	SB431	11.1	11.1	3.0	ND	-0.9	-0.9	1.1	1.1	1.1	-0.9	0.0	3.0	WT, Petrol comp	1,050	117
Area total															2,408	
Total															13,079	

- material not encountered in the boring
- (1) elevations are presented as feet NGVD 1929 (MLW)
- (2) Target depth from Table F-5
- (3) Water table elevations for areas 1 and 2 are approximated using MW-4S
- (4) Surrounding data points used to adjust target depth (SB-330, B16)
- (5) Bottom of fill estimated from cross-section H-H
- (6) Excavation depth adjusted for the difference of Table C

TABLE C
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM, LEAD, ARSENIC, AND MANGANESE IMPACTED SOIL TO THE WATER TABLE ONLY
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Grid Cell	Boring Number	Ground Surface Elev. (1)	Base Grade Elev. (1)	Water Table Elev.(1) (3)	PAH PRO Exceed.	TPH PRO Exceed	Free Product Present	Lead PRO Exceed.	Arsenic	Manganese	Target Excavation Elevation (1)	Target Limited to Water Table Elevation (1)	Adjusted Grid Cell Excavation		Controlling depth	Area (sq ft)	Volume (CY)
													Elevation (1)	Thickness			
AREA 1																	
C1	SB415	133	80	19	ND	ND	--	13	13	13	13	19	19	61	Water Table	3,675	830
	B-10	137	80	19	NS	NS	--	NS	NA		75	75					
C2	B-11	84	84	20	ND	NA	--	24	24	24	24	24	20	65	SB416, Water Table	9,350	2,282
	SB416	115	85	20	55	ND	--	NA	-6.5	-6.5	-6.5						
C3	SB417	85	85	21	ND	ND	25	NA	-11.5	-7.5	-11.5		22	61	Average of two points, Water Table	7,875	1,734
	SB433	173	80	22	ND	ND	--	NA	23	-12.7	-12.7						
C4	B-9	177	80	23	NS	NS	--	NS	NA		75	75	23	57	Water Table	8,825	1,821
	SB418	100	80	23	ND	ND	--	40	-8.0	-8.0	-8.0						
AREA 1 sub total																	6,848
AREA 2																	
B2	SB405	70	70	20	-10	ND	--	30	NA		-1	-1	20	50	Water Table	3,525	653
B3	SB406	114	70	21	34	ND	--	NA	NA		34	34	21	49	Water Table	4,650	844
	B-6	115	70	24	15	NA	--	15	NA	15	15						
B4	MW-48(B-7)	81	81	24	01	NA	--	NA	NA		01	01	24	50	Average of 3 points, Water Table	7,500	1,389
	SB407	129	70	23	-11	-11	-51	NA	NA		-51						
AREA 2 sub total																	2,686
AREA 3																	
B5	SB409	80	80	27	00	40	--	NA	NA		4	4	27	53	Water Table	10,000	1,963
B6	TP-12	90	90	33	ND	40	40	40	NA	40	40	40	33	58	Average of 2 points, WT, Petroleum compounds	10,000	2,148
	SB409	91	91	33	ND	11	11	NA	NA		11						
B7	MW-33	98	98	36	NA	NA	18	NA	NA		18						
	TP-11	100	100	39	40	40	40	40	40	40	40	40	37	57	SB410 and Water Table	10,000	2,111
C5	SB410	94	94	36	ND	14	14	NA	NA		14						
	SB419	84	84	29	ND	04	--	NA	-3.6	-3.6	-3.6		29	55	Water Table	9,875	1,971
C6	TP-17	100	100	36	ND	20	NA	10			10						
	MW-101	94	94	35	14	14	--	NA	14		14						
C7	SB420	100	100	37	60	-20	00	NA	-6.0	-6.0	-6.0		36	62	Average of 4 points, Water Table	10,000	2,296
	SB432	98	98	36	18	18	--	18	-6.2	-6.2	-6.2						
C8	B-8	101	101	38	ND	NA	--	NA	NA	-1.9	-1.9						
	MW-78	109	109	48	69	NA	--	NA	NA	69	69	69	43	65	Based on SB421, Water Table	10,000	2,407
C9	TP1	105	105	43	65	NA	--	65	NA		65						
	TP-10	105	105	43	NS	NS	--	NS	NA		10						
C8	SB421	108	108	43	28	28	28	68	-9.2	-5.2	-9.2						
	SB422	118	118	45	78	ND	--	NA	NA	-8.2	-8.2		45	73	Water Table	3,475	840
AREA 3 sub total																	13,636
AREA 4																	
A5	SB400	73	73	26	ND	ND	--	NA	NA		68	68	68	05	Top Soil	5,175	96
A6	B-5	78	78	30	NA	NA	--	NA	NA	18	18						
	B-12	79	79	32	ND	NA	--	NA	NA	39	39	39	31	50	Based on MW-11S, SB-427, Water Table, Petroleum compounds, Mn	10,850	2,009
A7	MW-11R	76	76	32	NA	NA	--	38	NA		36						
	MW-11S	79	79	32	NA	NA	--	39	NA	39	39	39					
A7	SB401	79	79	32	39	ND	--	NA	NA		39						
	SB427	83	83	30	43	ND	23	NA	43		23						
A7	SB402	84	84	30	ND	ND	--	-1.6	NA		-1.6						
AREA 4 sub total																	3,620
AREA 5																	
B8	B-14	307	105	40	NS	NS	--	NS	NA		10	10	100	05	Average of B-14 and SB411, Top Soil	10,000	185
	TP2	130	100	35	ND	NA	--	NA	NA		95	95					
B9	SB411	310	105	39	ND	ND	--	NA	NA		10	10					
	MW-8R	117	110	45	NS	NS	--	NS	NA		105	105					
B9	TP-16	140	100	33	ND	30	30	30	30	30	30	30	39	66	Average of MW-8R, SB412, and TP16, Water Table	10,000	2,444
	B-15	278	105	39	NS	NS	--	NA	NA	86	86	86					
B10	SB412	245	105	39	ND	ND	--	NA	NA		10	10					
	TP-13	130	100	33	ND	60	30	30	60	60	30	30					
B10	SB413	106	106	34	ND	66	66	NA	NA		66	66	34	72	Petroleum compounds	5,000	1,333

TABLE C
PRELIMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE ALL PETROLEUM, LEAD, ARSENIC, AND MANGANESE IMPACTED SOIL TO THE WATER TABLE ONLY
SOIL PREDESIGN INVESTIGATION REPORT APPENDIX F
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Grid Cell	Boring Number	Ground Surface Elev. (1)	Base Grade Elev (1)	Water Table Elev.(1) (3)	PAH PRG Exceed.	TPH PRG Exceed	Free Product Present	Lead PRG Exceed.	Arsenic	Manganese	Target Excavation Elevation (1)	Target Limited to Water Table Elevation (1)	Adjusted Grid Cell Excavation		Controlling depth	Area (sq ft)	Volume (CY)
													Elevation (1)	Thickness			
C8	TP-08	11.5	11.5	4.5	ND	ND	--	NA	7.5		7.5	7.5	10.0	1.7	Average of 3 points, As (TP-08)	4145	256
	TP-09	12.0	12.0	4.5	NS	NS	--	NA	NA		11.5	11.5					
	B-4	11.5	11.5	4.5	NA	NA	--	NA	NA		11	11					
C9	B-2	12.9	12.9	4.6	NA	NA	--	NA	4.9	2.9	2.9	7.5	4.6	7.4	Average of 4 points, Water Table	6,150	1,680
	B-17	11.5	11.5	4.6	NA	NA	--	NA	NA	7.5	7.5	7.5					
	SB423	11.9	11.9	4.6	ND	ND	--	NA	NA	7.9	7.9	7.9					
	SB434	11.5	11.5	4.5	ND	ND	--	NA	7.5	3.5	3.5	7.5					
C10	MW-6R	12.7	12.7	4.5	NS	NS	--	NS	NA		12.2	12.2	4.4	8.0	Average of 4 points, Water Table	9,450	2,809
	TP-06	12.5	12.5	4.5	5.5	ND	--	NA	NA	5.5	5.5	5.5					
	TP-07	12.5	12.5	4.5	NA	ND	--	NA	NA	4.5	4.5	4.5					
	SB424	12.0	12.0	4.1	ND	ND	--	NA	NA	8.0	8.0	8.0					
C11	MW-1R	11.3	11.3	3.3	NS	NS	--	NS	NA		10.8	10.8	10.6	1.4	TP-02 pipe at 3', Average of 4 points, Top Soil, As, Mn	10,000	509
	TP-02	12.0	12.0	4.5	NA	ND	--	NA	NA		11.5	11.5					
	TP-03	12.5	12.5	4.0	NS	NS	--	NA	NA		12	12					
	SB425	12.1	12.1	4.0	ND	ND	--	NA	8.1	8.1	8.1	8.1					
C12	B-1	12.5	12.5	3.5	NA	NA	--	4.5	4.5		4.5	4.5	3.6	8.3	Average of 4 points, WT, Pb, As, Mn	8,875	2,720
	TP-04	12.5	12.5	4.0	NS	NS	--	NA	NA		12	12					
	TP-05	11.0	11.0	3.5	3.0	ND	--	3.0	3.0	3.0	3.0	3.0					
	SB426	11.5	11.5	3.4	ND	ND	--	NA	7.5	7.5	7.5	7.5					
AREA 6 sub total																	11,937
AREA #	SB428	8.0	8.0	2.1	0.0	4.0	--	4.0	12.0	-12.0	-12.0	2.1	5.9	Water Table	2,000	437	
A8	TP3	15.0	10.0	3.3	7.0	NA	--	2.0	7.0	8.0	2.0	8.4	2.5	6.5	Average of 6 points, Topsoil, WT, Petroleum compounds, Pb, As, Mn	8,775	2,118
	B-13	8.9	8.9	2.5	NA	NA	--	NA	NA		8.4	8.4					
	MW-102	8.3	8.3	2.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3					
	TP-15 (6)	9.0	9.0	2.4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0					
	SB403	9.4	9.4	2.6	1.4	1.4	1.4	1.4	NA		1.4	1.4					
A9	SB429	8.6	8.6	2.2	0.6	0.6	-1.4	-3.4	0.6		-3.4	-3.4	2.7	6.4	Average of 4 points, Water Table	5,875	1,350
	B-16	9.2	9.2	2.8	5.2	NA	--	NA	NA		5.2	5.2					
	MW-28	9.1	9.1	2.6	1.1	NA	--	-4.9	-4.9	-4.9	-4.9	-4.9					
	SB404	8.9	8.9	2.7	0.9	-3.1	-3.1	-3.1	NA		-3.1	-3.1					
A10	TP-14	10.0	10.0	2.8	NS	6.0	6.0	NA	6.0		6.0	6.0	2.8	7.2	Water Table	1783	475
	SB413	10.6	10.6	3.4	ND	6.6	6.6	NA	NA		6.6	6.6					
	B-3	10.1	10.1	2.8	2.1	NA	--	NA	-3.9		-3.9	-3.9					
B10	MW-108	10.4	10.4	2.9	ND	NA	--	NA	NA	4.4	4.4	4.4	3.0	7.2	Average of SB413 and SB430, Water Table	5,000	1,333
	SB430	9.8	9.8	2.9	5.8	-0.2	-0.2	-4.2	-6.2	5.8	-6.2	-6.2					
	B11	SB414	10.7	10.7	2.9	2.7	-1.3	-1.3	6.7	NA		-1.3					
B12	SB431	11.1	11.1	3.0	ND	-0.9	-0.9	1.1	1.1	1.1	-0.9	-0.9	3.0	6.1	Water Table	1,050	315
Area total																	7,878
Total																	46,804

- material not encountered in the boring
- (1) elevations are presented as feet NGVD 1929 (MLW)
- (2) Target depth from Table F-5
- (3) Water table elevations for areas 1 and 2 are approximated using MW-4S
- (4) Surrounding data points used to adjust target depth (SB-330, B16)
- (5) Bottom of TB estimated from cross-section H-44
- Adjusted upwards to match with water table

OFFTA Excavation Constructability Review

At the Navy's direction, Tetra Tech FW, Inc. has performed a constructability review of seven excavation scenarios for a removal action at the Old Fire Fighting Training Area (OFFTA) at Naval Station Newport. The scenarios involve excavation of contaminated soil to groundwater and various depths below groundwater. Each of the scenarios were analyzed to develop a general approach to execution, approximate cost comparisons, individual schedules and a general comparison of constructability.

The "A" scenarios involve removal to depth of all petroleum compounds "A-1", all petroleum compounds and lead "A-2", and all petroleum compounds, lead, arsenic and manganese "A-3". Due to depths of these excavations, many of the grid cells will require sheet piling and dewatering. The "B" scenarios involve removal to 3 feet below groundwater for all petroleum compounds "B-1", all petroleum compounds and lead "B-2", and all petroleum compounds, lead, arsenic and manganese "B-3". The 3 feet depth was selected as this is estimated to be the deepest that excavation with conventional equipment can practically be performed without use of sheet piling and dewatering equipment. Deeper excavations can be performed, but become increasingly impractical due to lack of visibility, potential of side slope failure and cross contamination. Also analyzed was scenario "C", excavation only to groundwater.

The technical approach is generally the same in all cases except for the need to sheet pile and dewater in the various "A" scenarios.

TECHNICAL APPROACH

Excavation From Ground Surface To 3 Feet Below Water Table (Scenarios B-1, B-2, B-3 and C)

In each of these scenarios, excavation will begin at the shoreline to permit construction of the revetment. Excavation will generally proceed from west to east across the site. Prior to site disturbance, a floating turbidity curtain will be installed along the shoreline boundary of the areas to be disturbed minimize the migration of sediments into the Narragansett Bay. The curtain will prevent sediments from passing through the material, while allowing water to pass through due to tidal fluctuations. After installation of the floating turbidity curtain, the construction will be executed by excavating one grid or two at a time starting from Grid C1 followed by B2, C2, B3, C3, B4, C4, A5, B5, C5, A6, A7, A8, A9, A10, B10, B11, B12, C12, C11, C10, B9, C9, B8, C8, B7, B6, C6, and finally C7. The removal and backfill will be conducted in the following sequence:

- Excavate contaminated material along the shoreline in order to construct the revetment.
- Once an area has been excavated and post excavation samples taken, begin constructing the revetment as shown in Figure 1 beginning at the southern edge of Grid C-1. The conceptual revetment design will consist of placing an 8-oz non-woven geotextile fabric, a minimum of 1-foot thick of gravel filter, and a minimum of 3.6 feet thick of layer armor. As the revetment is constructed, on land excavation of contaminated soil will proceed behind the constructed revetment.
- Excavation of contaminated material will be to the elevations as shown in Figures 2, 3, 4 and 5 for Scenarios C, B-1, B-2 and B-3 respectively. If groundwater or tidal water is encountered during excavation of a grid, then a turbidity curtain will be installed between the excavation and the backfill to prevent cross contamination of backfill material as depicted in Figure 2. The same methodology will be used in the "B" scenarios, but is not depicted on Figures 3, 4, and 5 for clarity.

- Excavated soil will be directly loaded into off-road dump trucks for transportation to the staging area within the area of contamination in Grids C-6 and C-7 where the material will be staged in 500-cubic yard (CY) stockpiles to be dewatered and characterized for off-site disposal. This area will be surrounded by erosion control measures. The excavated soil will remain in the stockpiles until waste characterization of the material has been performed.
- It is assumed that approximately 15 percent of the total soil volume will be classified as Resource Conservation and Recovery Act (RCRA) hazardous waste due to the lead content. The non-hazardous soil will be beneficially reused at a RCRA Subtitle D landfill as daily cover and the hazardous soil will require disposal at a RCRA Subtitle C hazardous waste disposal facility.
- When a grid cell has been excavated to the specified depth, post-excavation samples will be collected from the base and sidewalls of the excavation. Since the excavation bottom will be saturated and in the "B" scenarios under water, samples will be collected using the excavator bucket. The samples will be analyzed for Polynuclear Aromatic Hydrocarbons (PAH), Total Petroleum Hydrocarbons (TPH), and metals. Since under the "B" and "C" scenarios excavation is only occurring to a prescribed depth, post-excavation samples will be taken for information only.
- Once post-excavation samples in a given area have been collected, the area will be backfilled to the final grade. Where required due to the presence of groundwater, a granular material will be first installed followed by a layer of common fill, and a six-inch layer of topsoil. Backfill material will be hauled directly to the grid cells in off-site trailer or tri-axle dump trucks.
- The final grades will be documented by performing a post-construction survey at the completion of the construction activities.
- Restore the site by hydroseeding the topsoil and any other disturbed area.
- Following completion of construction activities, temporary facilities and utilities, personnel, equipment, and materials will be removed from the Site. The support zone areas will be restored. Construction equipment will be cleaned before leaving the Site.

Scenarios A1, A2, and A3: Excavation From Ground Surface to 2-Foot Below Exceedance

Under these scenarios, various grids will be enclosed with sheet piling to support the sidewalls and minimize groundwater infiltration into the excavation. The grids to be enclosed are depicted on Figures 6, 7, and 8 for Scenarios A-1, A-2, and A-3 respectively. Adjoining grids will share a common sheet wall. Sheet piling will be driven to bedrock to minimize groundwater infiltration. The grids not enclosed with sheet piling will be excavated in a manner similar to Scenario C above.

A dewatering system including an on-site water treatment system will be required. The dewatering system includes a primary and backup 250 gallon per minute (GPM) pump. The pump will be piped to a 21,000 gallon Frac Tank to allow particulate separation and for flow equalization. The pump will transfer water through a set of particulate bag filters and then through liquid-phase granular activated carbon (LGAC) absorbers. There will be six bag filters plumbed in parallel to remove particulate matter prior to the LGAC units. It is anticipated that each bag filter will need to be changed at least two times per 8-hour shift. The water is passed through a set of two 10,000-pound LGAC units plumbed in series to remove dissolved-phase volatile organic compounds (VOC) from the groundwater. Carbon change out is anticipated to occur monthly. Treated water will either be discharged to surface water requiring a Rhode Island Pollutant Discharge Elimination System (RIPDES) permit or discharged to the Publicly Owned Treatment Works (POTW). The water treatment equipment is intended to operate through the winter months, so winterization measures will be taken. The water treatment equipment (frac tank, transfer pumps, particulate filters and LGAC units) will be located in a sprung structure to protect the equipment from extreme cold and weather conditions. The sprung structure will be equipped with lighting, heating and ventilation (for diesel exhaust) and will be erected on a concrete pad. Additionally, piping or other

system components will be fitted with heat trace and insulation to protect them from cold weather conditions. The location of the sprung structure will be outside the footprint of the excavation in an area determined by the Navy. The general layout of the groundwater treatment system is shown in Figure 9.

The construction sequence for Scenarios A-1, A-2, and A-3 are as follows:

- Excavate areas not requiring sheet piling in a manner similar to the B and C scenarios above.
- Install sheet piling, keying into the bedrock.
- Excavate approximately to the water table.
- Install the first row of tiebacks.
- Perform dewatering and treatment.
- Continue with the excavation.
- Install another row of tiebacks.
- Complete the excavation to the required elevations.
- Perform confirmatory sampling.
- Backfill with clean material.
- Remove the tiebacks.
- Extract the sheet piling.

SUMMARY

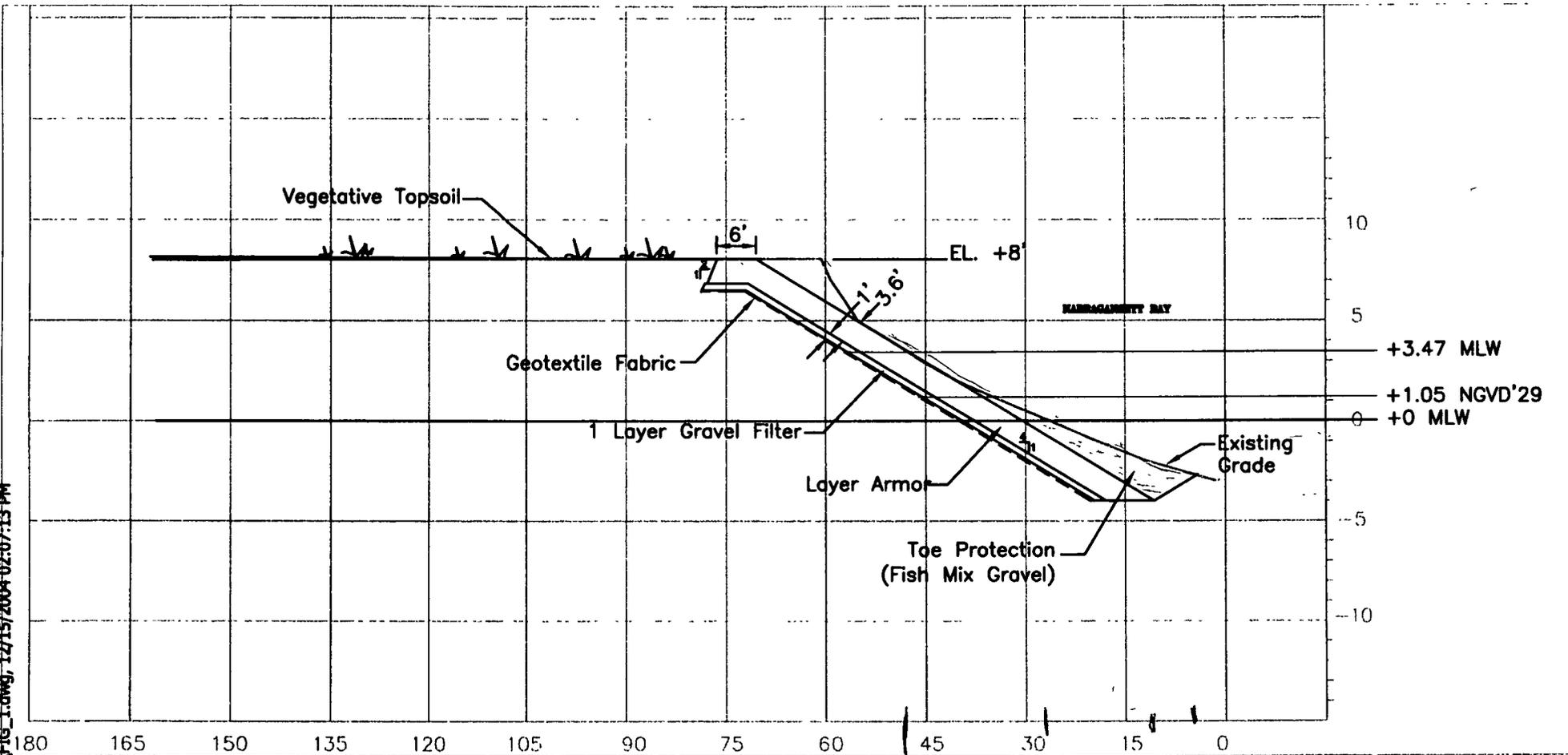
The C scenario is the most constructable and cost effective.

The B scenarios are not significantly more expensive. The cost differential is primarily increased disposal costs and corresponding schedule extension related costs. Since much of these excavations will be below the water elevation, we will be unable to accurately inspect the bottom of the excavation. The excavated material will be wetter requiring additional processing efforts to dewater. Excavation below the groundwater in the B scenarios could potentially be recontaminated from groundwater flowing from the adjacent Sea Warfare Officer's School (SWOS) parking lot area.

The deep excavation required under the "A" scenarios are the most challenging and expensive. A RIPDES permit would be required and may be difficult to obtain to permit surface discharge of excavation water. It is unlikely that the POTW will be capable of or willing to accept the high volume of water flow. The pricing does not include any POTW treatment charges. Furthermore, the volume of groundwater to be handled could vary by an order of magnitude due to rock seepages, inadequate pile seating, split piling and irregular bedrock surfaces. Batch discharge of the water similar to McAllister Point, if required, would not be feasible. Sidewall sampling will not be able to be taken to ensure extent of contamination has been captured. The potential for recontamination from the adjacent SWOS parking lot area will be even greater than in the "B" Scenarios.

Figures

P:\Navy RAC\NEWPORT\OFFTA\Cost Estimate\FIG_1.dwg, 12/15/2004 02:07:13 PM



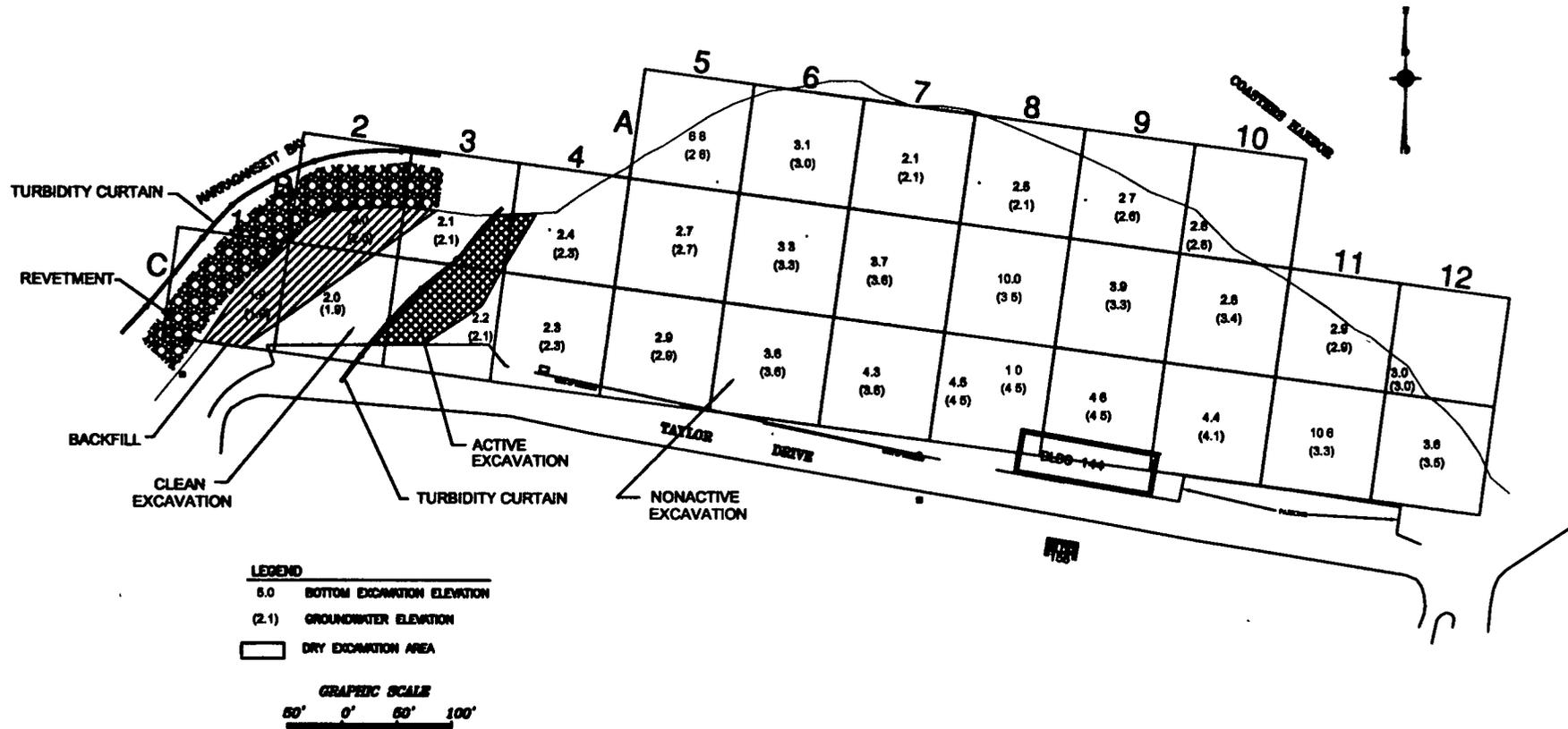
NOTES:

- 1.) VERTICAL DATUM MLW AS DEFINED BY NOAA AT BENCHMARK # 8452680 (NEWPORT, RI)
- 2.) DATUM FOR EXISTING GRADE IS DEFINED AS THE NAVY MLW, WHICH ASSUMED TO BE SAME AS NOTE 1 ABOVE.

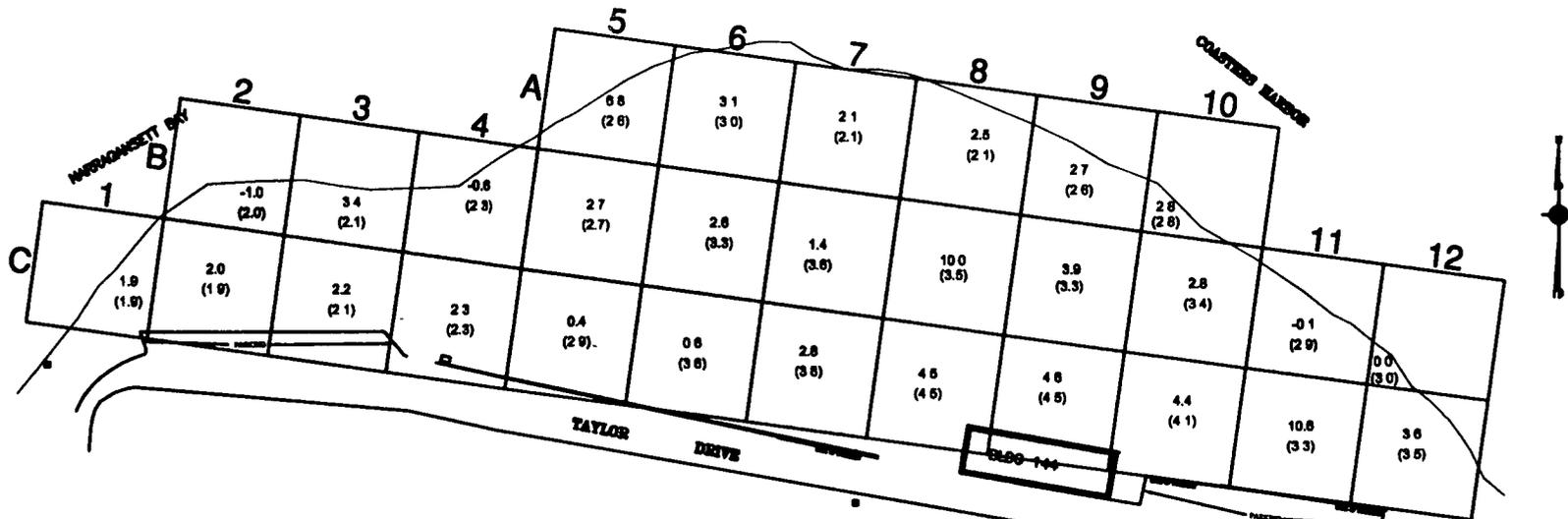
U.S. Navy RAC
OFFTA Newport, Rhode Island

Figure 1
Revetment

 TETRA TECH FW, INC.

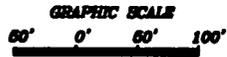


<p>U.S. Navy RAC OFFTA Newport, Rhode Island</p>
<p>FIGURE 2 EXCAVATION PLAN C FROM GROUND SURFACE TO WATER TABLE</p>
<p> TETRA TECH FW, INC.</p>

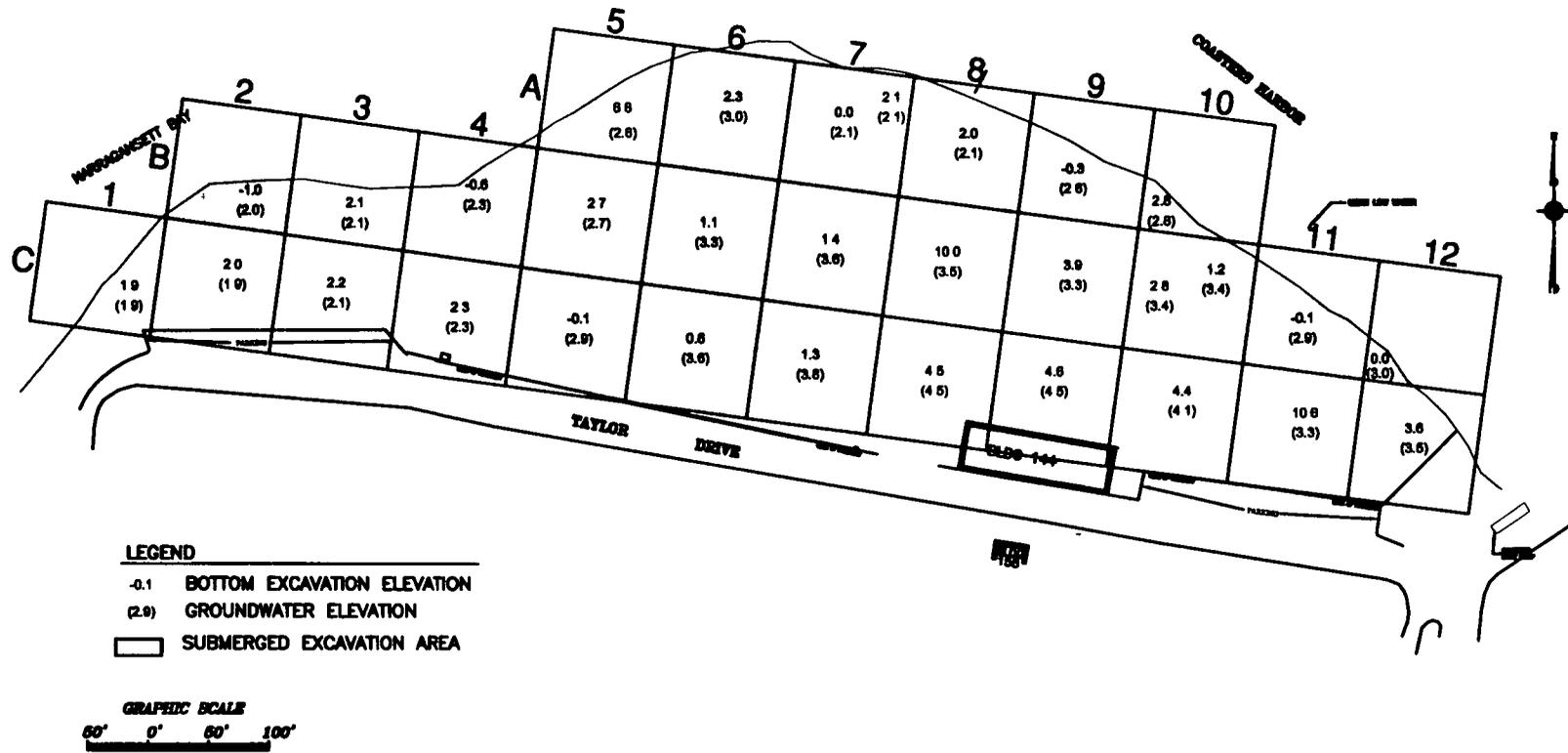


LEGEND

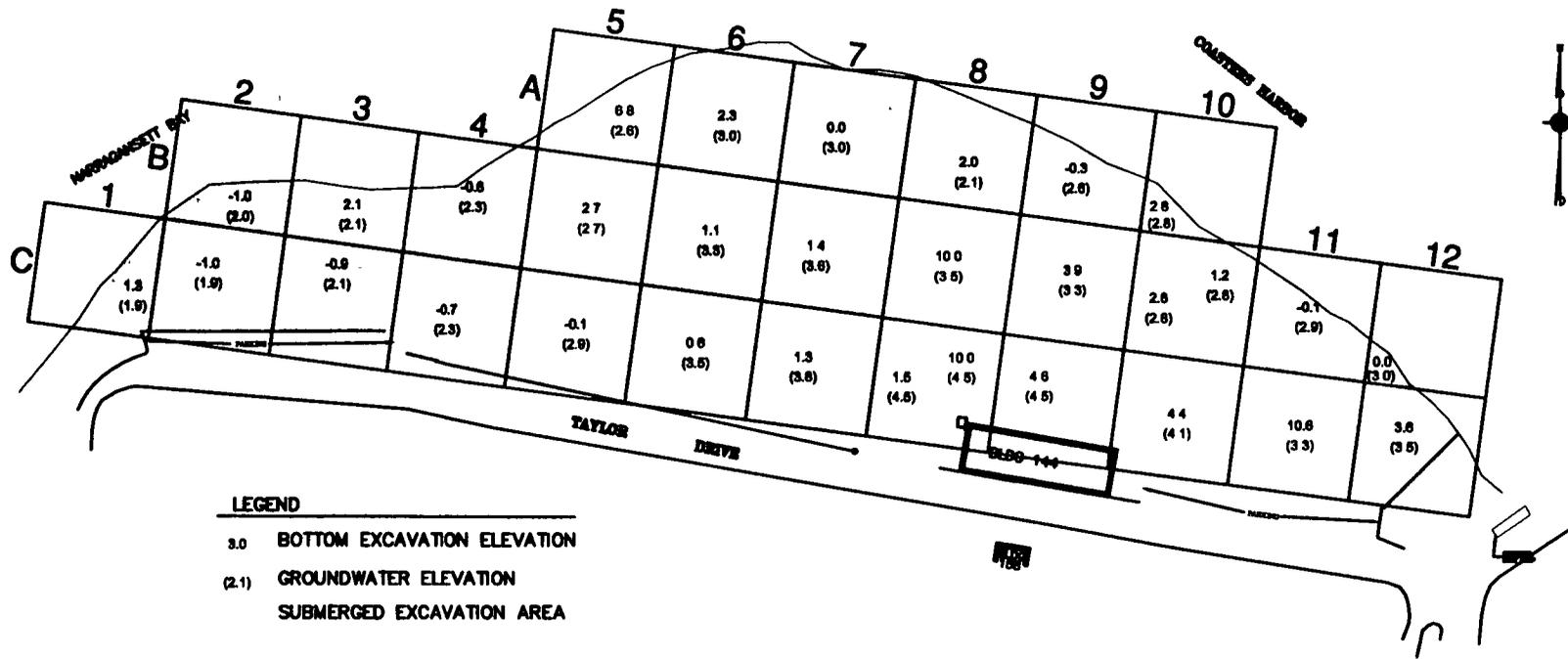
- 6.0 BOTTOM EXCAVATION ELEVATION
- (2.1) GROUNDWATER ELEVATION
- SUBMERGED EXCAVATION AREA



<p>U.S. Navy RAC OFFTA Newport, Rhode Island</p>
<p>FIGURE 3 EXCAVATION PLAN, B-1 BELOW WATER TABLE NO DEWATERING</p>
<p> TETRA TECH FW, INC.</p>



<p>U.S. Navy RAC OFFTA Newport, Rhode Island</p>
<p>FIGURE 4 EXCAVATION PLAN, B-2 BELOW WATER TABLE NO DEWATERING</p>
 TETRA TECH FW, INC.



LEGEND

- 3.0 BOTTOM EXCAVATION ELEVATION
- (2.1) GROUNDWATER ELEVATION
- SUBMERGED EXCAVATION AREA

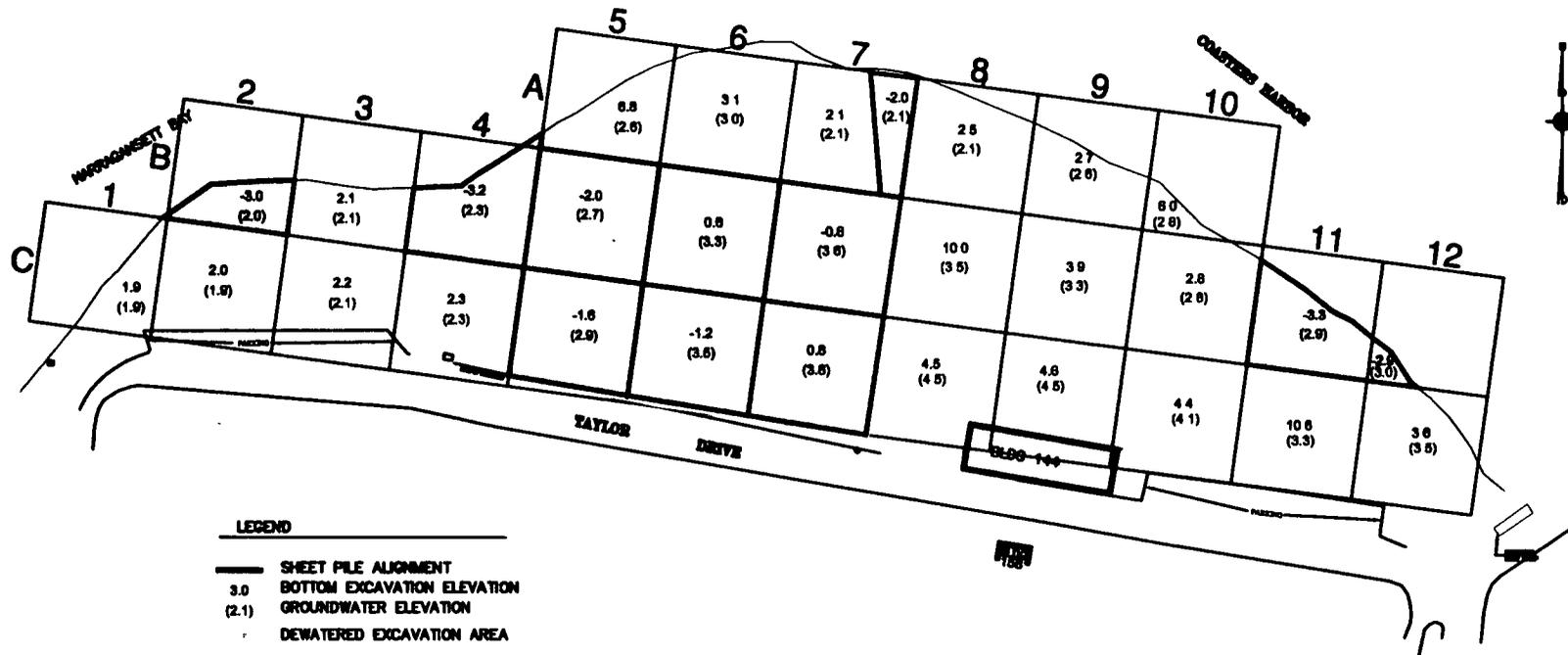


U.S. Navy RAC
OFFTA Newport, Rhode Island

FIGURE 5
EXCAVATION PLAN, B-3 BELOW WATER TABLE
NO DEWATERING



TETRA TECH FW, INC.



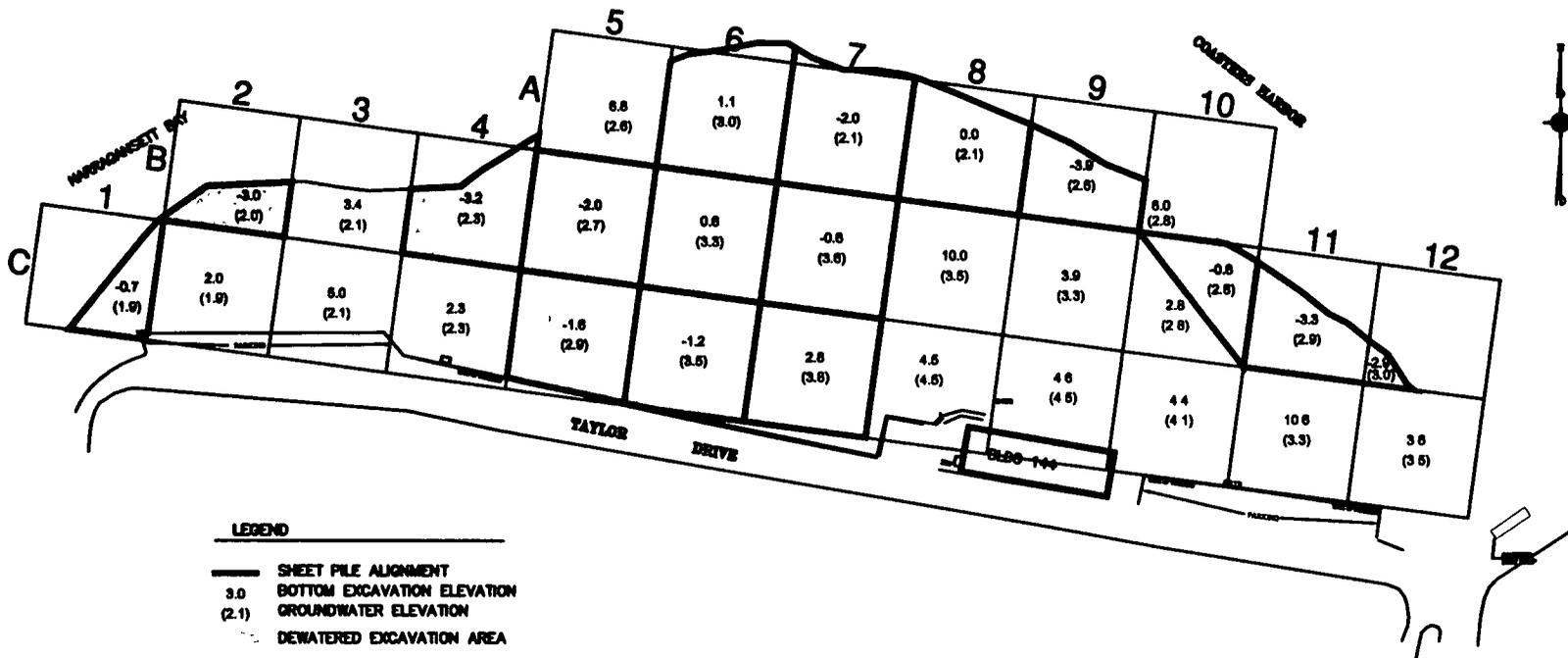
LEGEND

- SHEET PILE ALIGNMENT
- 3.0 BOTTOM EXCAVATION ELEVATION
- (2.1) GROUNDWATER ELEVATION
- DEWATERED EXCAVATION AREA

GRAPHIC SCALE

60' 0' 60' 100'

<p>U.S. Navy RAC OFFTA Newport, Rhode Island</p>
<p>FIGURE 6 EXCAVATION PLAN, A-1 BELOW WATER TABLE WITH SHEET PILING AND DEWATERING</p>
<p> TETRA TECH FW, INC.</p>

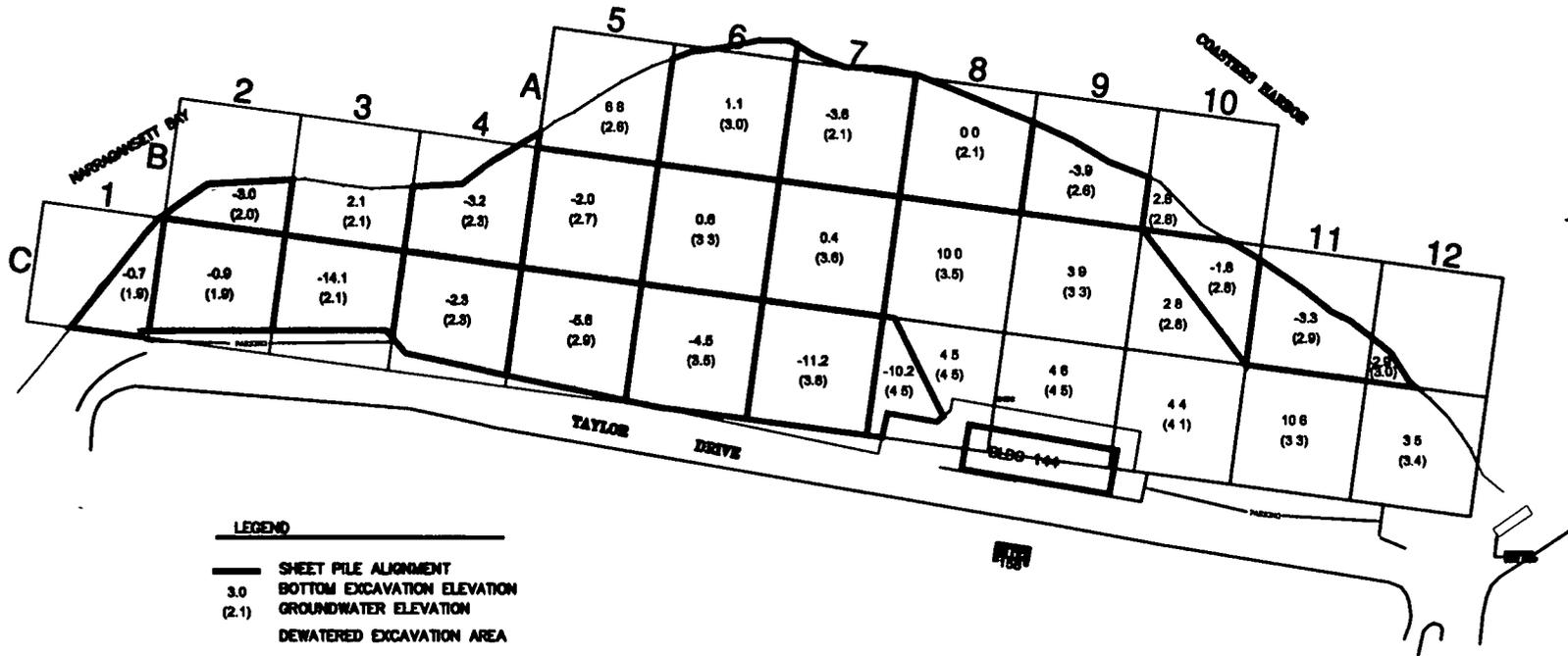


LEGEND

- SHEET PILE ALIGNMENT
- 3.0 BOTTOM EXCAVATION ELEVATION
- (2.1) GROUNDWATER ELEVATION
- - - DEWATERED EXCAVATION AREA

GRAPHIC SCALE
 60' 0' 60' 100'

<p>U.S. Navy RAC OFFTA Newport, Rhode Island</p>
<p>FIGURE 7 EXCAVATION PLAN, A-2 BELOW WATER TABLE WITH SHEET PILING AND DEWATERING</p>
<p> TETRA TECH FW, INC.</p>

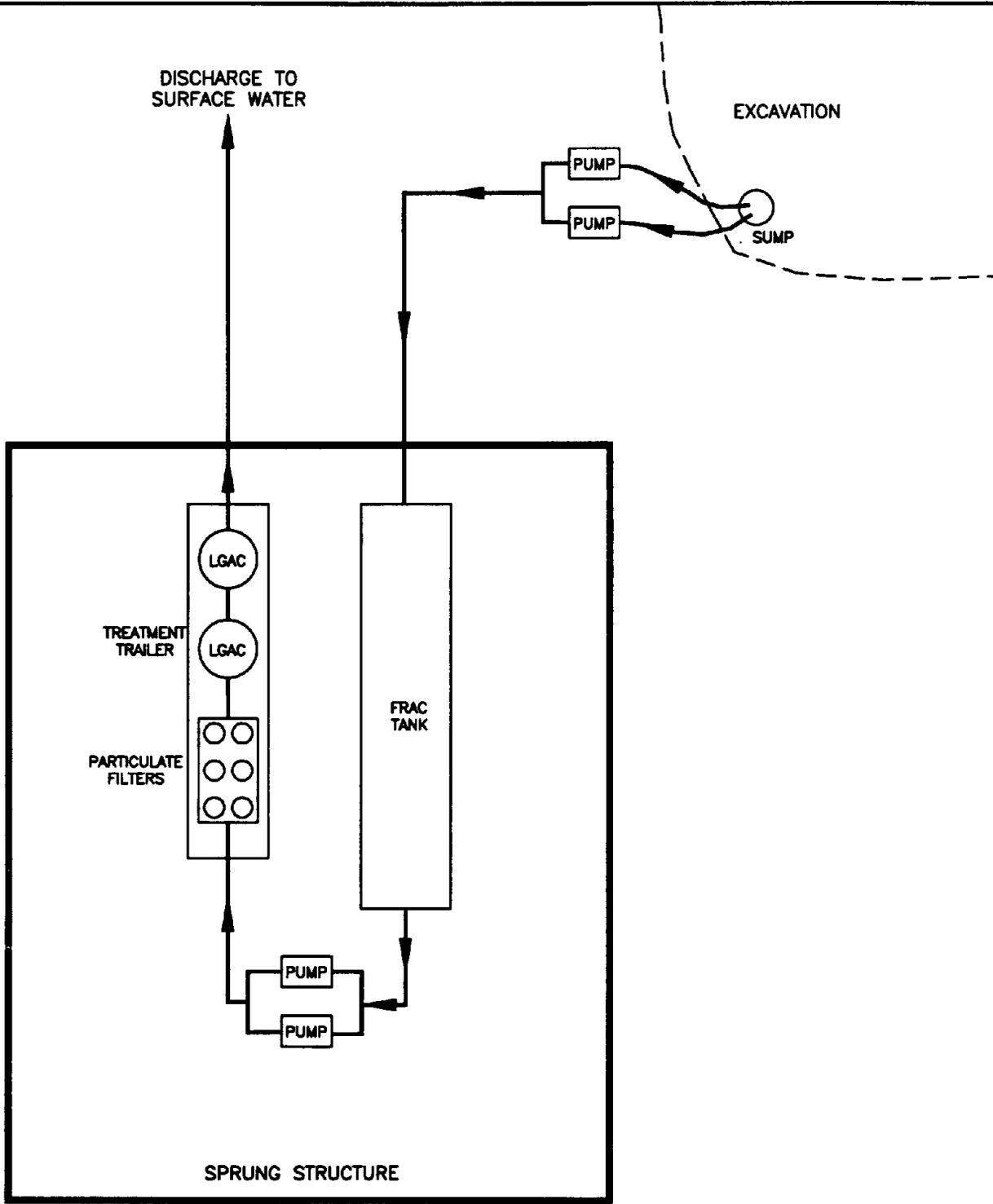


LEGEND

- SHEET PILE ALIGNMENT
- 3.0 BOTTOM EXCAVATION ELEVATION
- (2.1) GROUNDWATER ELEVATION
- DEWATERED EXCAVATION AREA

GRAPHIC SCALE
 60' 0' 60' 100'

<p>U.S. Navy RAC OFFTA Newport, Rhode Island</p>
<p>FIGURE 8 EXCAVATION PLAN, A-3 BELOW WATER TABLE WITH SHEET PILING AND DEWATERING</p>
<p> TETRA TECH FW, INC.</p>



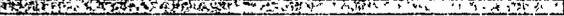
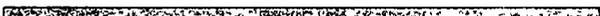
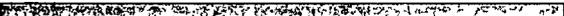
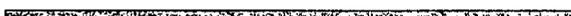
U.S. Navy RAC OFFTA Newport, Rhode Island
Figure 9 Water Treatment System
 TETRA TECH FW, INC.

Cost Comparison

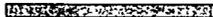
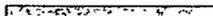
TETRA TECH FW, Inc
 U.S. Navy - Engineering Field Activity - Northeast
 Remedial Action Contract N62472-99-D-0032
 Contract Task Order No. 102 - NAVSTA Newport, RI - Analysis for Several Excavation Scenarios (Summary)
Estimated Costs - Cost Comparison

	Opt A1 60,480 CY	Opt A2 65,307 CY	Opt A3 83,390 CY	Opt B1 55,138 CY	Opt B2 57,362 CY	Opt B3 62,877 CY	Opt C 49,150 CY
Professional Labor	\$ 1,372,547	\$ 1,390,687	\$ 1,630,996	\$ 1,100,319	\$ 1,119,523	\$ 1,207,883	\$ 1,012,822
Craft Labor	\$ 1,211,175	\$ 1,299,059	\$ 1,644,319	\$ 886,511	\$ 922,272	\$ 1,004,012	\$ 784,336
Equipment	\$ 1,164,573	\$ 1,240,507	\$ 1,538,821	\$ 828,912	\$ 858,255	\$ 925,325	\$ 745,074
Materials & Supplies	\$ 1,589,371	\$ 1,686,085	\$ 2,049,113	\$ 1,472,619	\$ 1,516,985	\$ 1,626,705	\$ 1,218,996
Other Direct Costs	\$ 400,112	\$ 430,916	\$ 497,543	\$ 363,161	\$ 367,664	\$ 403,615	\$ 347,701
Subcontractors	\$ 12,783,746	\$ 16,648,861	\$ 20,424,311	\$ 6,175,677	\$ 6,699,718	\$ 7,186,990	\$ 5,628,084
T&D NonHaz	\$ 3,820,038	\$ 3,840,443	\$ 5,206,538	\$ 3,402,541	\$ 3,456,489	\$ 3,834,500	\$ 2,997,010
T&D Hazardous	\$ 2,464,862	\$ 3,890,011	\$ 3,659,987	\$ 2,592,846	\$ 3,057,081	\$ 3,153,918	\$ 2,465,073
- Sheetpile	\$ 3,175,360	\$ 4,847,174	\$ 6,076,593				
- Dewatering	\$ 3,140,754	\$ 3,877,940	\$ 5,247,344				
Others	\$ 182,732	\$ 193,292	\$ 233,849	\$ 180,290	\$ 186,148	\$ 198,572	\$ 166,001
Total Cost and Fee	\$ 18,521,524	\$ 22,696,115	\$ 27,785,103	\$ 10,827,199	\$ 11,484,417	\$ 12,354,529	\$ 9,737,013

Schedules

Early Start	Early Finish	% Comp	2005					2006					2007														
			JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY		
Excavation Scenario (Option - A1)																											
04JUL05*	08JUL05	0	<input type="checkbox"/> MOBILIZATION/ SUPPORT FACILITY SETUP																								
11JUL05	12JUL05	0	<input type="checkbox"/> INSTALL EROSION CONTROLS																								
13JUL05	15JUL05	0	<input type="checkbox"/> TEMPORARY DECON FACILITY																								
18JUL05	22JUL05	0	<input type="checkbox"/> CONSTRUCT SOIL STORAGE AREA																								
25JUL05	07APR06	0	 CONSTRUCT STONE REVETMENT																								
11JUL05*	07APR06	0	 C1 - SHEETPILE 60,479 CY TASK C1 SUMMARY BAR (Sheeting & Excavate)																								
11JUL05*	07APR06	0	 INSTALL SHEETING 2,771 LF																								
25JUL05	07APR06	0	 EXCAVATE 60,479,CY																								
01AUG05*	21APR06	0	 BACKFILL EXCAVATED AREAS																								
25JUL05*	14APR06	0	 LOAD SOIL OFFSITE DISPOSAL																								
25JUL05*	14APR06	0	 T&D CONTAMINATED SOILS																								
24APR06	28APR06	0	<input type="checkbox"/> PERFORM FINAL SITE RESTORATION																								
01MAY06	12MAY06	0	<input type="checkbox"/> DEMOBILIZATION																								

Start Date 04JUL05
 Finish Date 12MAY06
 Data Date 04JUL05
 Run Date 15DEC04 08 53

 Early Bar
 Progress Bar

R102

Sheet 1 of 1

CONTRACT TASK ORDER NO. 102

NEWPORT, RI

OLD FIRE FIGHTING TRAINING AREA (Option - A1)

Early Start	Early Finish	% Comp	2005					2006					2007												
			JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
Excavation Scenario (Option - A2)																									
04JUL05*	08JUL05	0	☐ MOBILIZATION/ SUPPORT FACILITY SETUP																						
11JUL05	12JUL05	0	☐ INSTALL EROSION CONTROLS																						
13JUL05	15JUL05	0	☐ TEMPORARY DECON FACILITY																						
18JUL05	22JUL05	0	☐ CONSTRUCT SOIL STORAGE AREA																						
25JUL05	21APR06	0	▬ CONSTRUCT STONE REVETMENT																						
11JUL05*	21APR06	0	▬ C2 - SHEETPILE 65,307 CY																						
11JUL05*	21APR06	0	▬ INSTALL SHEETING 4,365 LF																						
25JUL05	21APR06	0	▬ EXCAVATE 65,307 CY																						
01AUG05*	05MAY06	0	▬ BACKFILL EXCAVATED AREAS																						
25JUL05*	28APR06	0	▬ LOAD SOIL OFFSITE DISPOSAL																						
25JUL05*	28APR06	0	▬ T&D CONTAMINATED SOILS																						
08MAY06	12MAY06	0	☐ PERFORM FINAL SITE RESTORATION																						
15MAY06	26MAY06	0	☐ DEMOBILIZATION																						

Start Date 04JUL05
 Finish Date 26MAY06
 Data Date 04JUL05
 Run Date 15DEC04 08 54

☐ Early Bar
 ☐ Progress Bar

S102 Sheet 1 of 1
 CONTRACT TASK ORDER NO. 102
 NEWPORT, RI
 OLD FIRE FIGHTING TRAINING AREA (Option - A2)

Early Start	Early Finish	% Comp	2005						2006						2007											
			J	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	A	
Excavation Scenario (Option - A)																										
04JUL05*	08JUL05	0	<input type="checkbox"/> MOBILIZATION/ SUPPORT FACILITY SETUP																							
11JUL05	12JUL05	0	<input type="checkbox"/> INSTALL EROSION CONTROLS																							
13JUL05	15JUL05	0	<input type="checkbox"/> TEMPORARY DECON FACILITY																							
18JUL05	22JUL05	0	<input type="checkbox"/> CONSTRUCT SOIL STORAGE AREA																							
25JUL05	07JUL06	0	<input type="checkbox"/> CONSTRUCT STONE REVETMENT																							
11JUL05*	07JUL06	0	<input type="checkbox"/> C3 - SHEETPILE 83,390 CY TASK C SUMMARY BAR (Sheeting & Excavate)																							
11JUL05*	07JUL06	0	<input type="checkbox"/> SHEETPILE 5,463 LF																							
25JUL05	07JUL06	0	<input type="checkbox"/> EXCAVATE 83,390 CY																							
01AUG05*	21JUL06	0	<input type="checkbox"/> BACKFILL EXCAVATED AREAS																							
25JUL05*	14JUL06	0	<input type="checkbox"/> LOAD SOIL OFFSITE DISPOSAL																							
25JUL05*	14JUL06	0	<input type="checkbox"/> T&D CONTAMINATED SOILS																							
24JUL06	28JUL06	0	<input type="checkbox"/> PERFORM FINAL SITE RESTORATION																							
31JUL06	11AUG06	0	<input type="checkbox"/> DEMOBILIZATION																							

Start Date 04JUL05
 Finish Date 11AUG06
 Data Date 04JUL05
 Run Date 15DEC04 08 54

Early Bar
 Progress Bar

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 CONTRACT TASK ORDER NO 102
 NEWPORT, RI

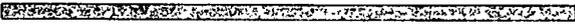
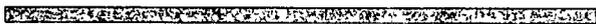
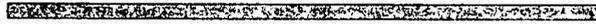
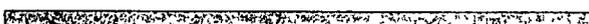
Early Start	Early Finish	% Comp	2005												2006												2007					
			J	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN					
Excavation Scenario (Option - B1)																																
04JUL05*	08JUL05	0	<input type="checkbox"/> MOBILIZATION/SUPPORT FACILITY SETUP																													
11JUL05	12JUL05	0	<input type="checkbox"/> INSTALL EROSION CONTROLS																													
13JUL05	15JUL05	0	<input type="checkbox"/> TEMPORARY DECON FACILITY																													
18JUL05	22JUL05	0	<input checked="" type="checkbox"/> CONSTRUCT SOIL STORAGE AREA																													
25JUL05	10MAR06	0	<input type="checkbox"/> CONSTRUCT STONE REVETMENT																													
18JUL05*	10MAR06	0	<input checked="" type="checkbox"/> B1 - BELOW WATER TABLE 55,138 CY																													
01AUG05*	24MAR06	0	<input type="checkbox"/> BACKFILL EXCAVATED AREAS																													
25JUL05*	17MAR06	0	<input type="checkbox"/> LOAD SOIL OFFSITE DISPOSAL																													
25JUL05*	17MAR06	0	<input type="checkbox"/> T&D CONTAMINATED SOILS																													
27MAR06	31MAR06	0	<input type="checkbox"/> PERFORM FINAL SITE RESTORATION																													
03APR06	07APR06	0	<input checked="" type="checkbox"/> DEMOBILIZATION																													

Start Date 04JUL05
 Finish Date 07APR06
 Data Date 04JUL05
 Run Date 15DEC04 08 52

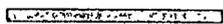
Early Bar
 Progress Bar

V102 Sheet 1 of 1
 CONTRACT TASK ORDER NO. 102
 NEWPORT, RI

OLD FIRE FIGHTING TRAINING AREA (Option - B1)

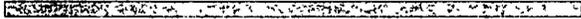
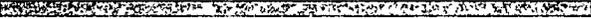
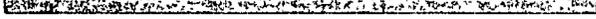
Early Start	Early Finish	% Comp	2005												2006												2007						
			J	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	M									
Excavation Scenario (Option - B2)																																	
04JUL05*	08JUL05	0	<input type="checkbox"/> MOBILIZATION/SUPPORT FACILITY SETUP																														
11JUL05	12JUL05	0	<input type="checkbox"/> INSTALL EROSION CONTROLS																														
13JUL05	15JUL05	0	<input type="checkbox"/> TEMPORARY DECON FACILITY																														
18JUL05	22JUL05	0	<input checked="" type="checkbox"/> CONSTRUCT SOIL STORAGE AREA																														
25JUL05	17MAR06	0	 CONSTRUCT STONE REVETMENT																														
18JUL05*	17MAR06	0	 B2 - BELOW WATER TABLE 57,362 CY																														
01AUG05*	31MAR06	0	 BACKFILL EXCAVATED AREAS																														
25JUL05*	24MAR06	0	 LOAD SOIL OFFSITE DISPOSAL																														
25JUL05*	24MAR06	0	 T&D CONTAMINATED SOILS																														
03APR06	07APR06	0	<input checked="" type="checkbox"/> PERFORM FINAL SITE RESTORATION																														
10APR06	14APR06	0	<input type="checkbox"/> DEMOBILIZATION																														

Start Date 04JUL05
 Finish Date 14APR06
 Data Date 04JUL05
 Run Date 15DEC04 09 07

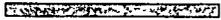
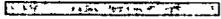
 Early Bar
 Progress Bar

W102 Sheet 1 of 1
 CONTRACT TASK ORDER NO. 102
 NEWPORT, RI

OLD FIRE FIGHTING TRAINING AREA (Option - B2)

Early Start	Early Finish	% Comp	2005					2006					2007														
			J	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	
Excavation Scenario (Option - B3)																											
04JUL05*	08JUL05	0	<input type="checkbox"/> MOBILIZATION/SUPPORT FACILITY SETUP																								
11JUL05	12JUL05	0	<input type="checkbox"/> INSTALL EROSION CONTROLS																								
13JUL05	15JUL05	0	<input type="checkbox"/> TEMPORARY DECON FACILITY																								
18JUL05	22JUL05	0	<input checked="" type="checkbox"/> CONSTRUCT SOIL STORAGE AREA																								
25JUL05	14APR06	0	 CONSTRUCT STONE REVETMENT																								
18JUL05*	14APR06	0	 B3 - BELOW WATER TABLE 62,877 CY																								
01AUG05*	28APR06	0	 BACKFILL EXCAVATED AREAS																								
25JUL05*	21APR06	0	 LOAD SOIL OFFSITE DISPOSAL																								
25JUL05*	21APR06	0	 T&D CONTAMINATED SOILS																								
01MAY06	05MAY06	0	<input checked="" type="checkbox"/> PERFORM FINAL SITE RESTORATION																								
08MAY06	12MAY06	0	<input type="checkbox"/> DEMOBILIZATION																								

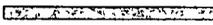
Start Date 04JUL05
 Finish Date 12MAY06
 Data Date 04JUL05
 Run Date 15DEC04 09 10

 Early Bar
 Progress Bar

X102 Sheet 1 of 1
 CONTRACT TASK ORDER NO 102
 NEWPORT, RI
 OLD FIRE FIGHTING TRAINING AREA (Option - B3)

Early Start	Early Finish	% Comp	2005					2006					2007															
			J	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	J	
Excavation Scenario (Option - C)																												
04JUL05*	08JUL05	0	☐ MOBILIZATION/SUPPORT FACILITY SETUP																									
11JUL05	12JUL05	0	☐ INSTALL EROSION CONTROLS																									
13JUL05	15JUL05	0	☐ TEMPORARY DECON FACILITY																									
18JUL05	22JUL05	0	☐ CONSTRUCT SOIL STORAGE AREA																									
25JUL05	10FEB06	0	☐ CONSTRUCT STONE REVETMENT																									
18JUL05*	10FEB06	0	☐ OPTION C - TOP WATER TABLE 49,150 CY																									
01AUG05*	24FEB06	0	☐ BACKFILL EXCAVATED AREAS																									
25JUL05*	17FEB06	0	☐ LOAD SOIL OFFSITE DISPOSAL																									
25JUL05*	17FEB06	0	☐ T&D CONTAMINATED SOILS																									
27FEB06	03MAR06	0	☐ PERFORM FINAL SITE RESTORATION																									
06MAR06	10MAR06	0	☐ DEMOBILIZATION																									

Start Date 04JUL05
 Finish Date 10MAR06
 Data Date 04JUL05
 Run Date 15DEC04 09 48

 Early Bar
 Progress Bar

Y102

Sheet 1 of 1

CONTRACT TASK ORDER NO. 102

NEWPORT, RI

OLD FIRE FIGHTING TRAINING AREA (Option - C)