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NAS WHITING FIELD
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LETTER REGARDING U S NAVY RESPONSE TO U S EPA REGION 4 COMMENTS ON THE DRAFT RECORD OF DECISION FOR SUBSURFACE SOIL AT SITE 3 NAS WHITING FL
8/3/2000
TETRA TECH

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0800-A139

August 3, 2000

Commander, Southern Division, Naval Facilities Engineering Command
Department of the Navy
SOUTHNAVFACENGCOM
ATTN: Ms. Linda Martin, Code 1859
Remedial Project Manager
2155 Eagle Drive
North Charleston, SC 29419

Subject: Response to EPA's Draft Record of Decision
For Surface and Subsurface Soil
Site 3, Underground Waste Solvent Storage Area
NAS Whiting Field, Milton, Florida

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order No. 0028

Dear Ms. Martin:

Tetra Tech NUS, Inc. is pleased to submit responses to EPA's comments on the Draft Record of Decision for Surface and Subsurface Soil at Site 3, Underground Waste Solvent Storage Area, Naval Air Station Whiting Field in Milton, Florida.

Copies of the responses have been forwarded to the persons listed below on behalf of Southern Division, Naval Facilities Engineering Command for Naval Air Station Whiting Field.

Please call me at (865) 483-9900 if you have any questions or comments regarding this submittal.

Sincerely yours,

Phillip Ottinger

Phillip E. Ottinger
Task Order Manager

PEO:ckf

Enclosure

c: Mr. Rao Angara, Harding Lawson Associates (1 copy)
Mr. Craig Benedikt, USEPA (3 copy)
Mr. Jim Cason, FDEP (2 copies)
Mr. Terry Hansen, Tetra Tech NUS (1 copy)
Mr. Jim Holland, NAS Whiting Field (1 copy)
Ms. Amy Twitty, CH2M Hill (1 copy)
Mr. Gerry Walker, Tetra Tech NUS (1 copy)
Mr. Mark Perry (1 copy)
Ms. Debbie Wroblewski, Tetra Tech NUS (w/o enclosure)
File/Edb

RESPONSE TO COMMENTS
EPA REVIEW COMMENTS
RECORD OF DECISION FOR
SURFACE AND SUBSURFACE SOIL
SITE 3, UNDERGROUND WASTE SOLVENT STORAGE AREA
NAS WHITING FIELD, DATED MAY 2000

1. **Page 1-1, Section 1.1, Site Name and Location.** Provide a description or map locating the site relative to the overall boundaries of the facility.

   Response: *A site location map will be inserted in this section as requested.*

2. **Page 1-1, Section 1.2, Statement of Basis and Purpose.** Identify the type of contamination present and the general location (example, solvent contamination in surface and subsurface soils, etc.) In the first sentence of the second full paragraph, insert "to implement" before "land use controls" for clarity. The last sentence of the second paragraph should reflect that the Land Use Control Memorandum of Agreement has already been signed. In the first sentence of the third paragraph, insert "(Navy)" after the "...the Department of the Navy". In the third sentence of the fourth paragraph, change "NAS Whiting Field" to the "the Navy" and insert "at NAS Whiting Field" in between "additional measures" and "to adequately".

   Response: *The type of contamination present and its general location will be added to Section 1.3 (see response to Comment 3). The other suggested text revisions will be made as requested*

3. **Page 1-2, Section 1.3, Assessment of the Site.** Identify the type of contamination present and the general location (example, solvent contamination in surface and subsurface soils, etc.)

   Response: *The following paragraph will be added to the beginning of Section 1.3.*

   Investigation and evaluation of chemicals present in the surface and surface soil at Site 3 identified one pesticide (dieldrin) and five inorganics (aluminum, arsenic, chromium, iron, and vanadium) exceeding State of Florida (FDEP, 1999) or USEPA (USEPA, 1999) risk-based screening values for residential land use. In subsurface soil, only arsenic exceeded State of Florida or USEPA commercial/industrial risk-based screening values.

4. **Page 1-2, Section 1.4, Description of the Selected Remedy.** Delete the references to sites 4, 6, 30, 32, and 33 in the first sentence of the first paragraph. In the fourth

sentence, add "as defined in the Site 3 Feasibility Study and Proposed Plan between "Alternative 2" and "Limited". In the tenth sentence, change "will be" to "have been".

Response: *The RI and FS for Site 3 is combined in a report with Sites 4, 6, 30, 32, and 33; however, to reduce confusion the first sentence will be revised as follows:*

This ROD presents the final action for surface and subsurface soil at Site 3 and is based on the results of the Remedial Investigation (RI) (Tetra Tech NUS, 1999) and Feasibility Study (FS) (Tetra Tech NUS, 2000a).

The fourth sentence has been revised as follows:

The preferred RA at Site 3 is Alternative 2, Limited Surface Soil Removal and LUCs, as defined in the FS (Tetra Tech NUS, 2000a) and the Proposed Plan (Tetra Tech NUS, 2000b).

The tenth sentence (and the fourth sentence in the second paragraph of Section 1.2) will be revised as requested.

5. **Page 1-3, Section 1.5, Declaration Statement.** Include the statutory determinations required by CERCLA Section 121 and the ROD Data Certification Checklist certifying that the ROD contains certain key remedy selection information.

Response: *The text has been revised as follows:*

1.5 STATUTORY DETERMINATIONS

The RA selected for surface and subsurface soil at Site 3 is protective of human health and the environment, complies with Federal and State requirements legally applicable or relevant and appropriate to the RA, is cost effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

This remedy does not satisfy the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment) due to the nature of the contaminants (inorganics) and their location in

an industrial area with heavy human activity. The remedy does reduce the mobility of the contaminated soil excavated by moving it from the unsecured site to a regulated disposal facility.

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above residential health-based levels, a statutory review will be conducted within 5 years after initiation of the RA to ensure the remedy continues to be protective of human health and the environment.

1.6 DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the NAS Whiting Field Administrative Record.

- *Chemicals of concern (COCs) and their respective concentrations.*
- *Baseline risk represented by the COCs.*
- *Cleanup levels established for COCs and the basis for these levels.*
- *How source materials constituting principal threats are addressed.*
  - *Source materials present at Site 3 are low toxicity and do not constitute a principal threat; therefore a discussion of principal threats will not be addressed.*
- *Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and the ROD.*
  - *Groundwater at NAS Whiting Field has been identified as a separate site (Site 40) and is not addressed in this ROD. Therefore, potential future beneficial uses of groundwater will not be discussed.*
- *Potential land use available as a result of the selected remedy.*
- *Estimated capital, annual operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected.*
- *Key factors leading to selection of the remedy.*

1.7 SIGNATURE AND SUPPORT AGENCY ACCEPTANCE OF THE REMEDY

6. **Page 2-1, Section 2.1, Site Name, Location and Description** Provide a description or map locating the site relative to the overall boundaries of the facility.

Response: *A reference will be made in Section 2.1 to the site location map included in Section 1.1.*

7. **Page 2-1, Section 2.2, Site History and Enforcement Activities and Page 2-6,** Please provide a more detailed description of the activities leading to the inorganic contamination. Please describe the type of solvents stored in the USTs and whether the solvents were product or waste. The Site Characteristics section limits its discussion of contamination to metals with no discussion of solvent waste. Please expand to include a discussion of solvent contamination and the known/potential routes of migration, including human and ecological receptors for both solvents and metals.

Response: *The first sentence of Section 2.2 will be revised as follows to provide more information on the type of solvents stored in the USTs.*

Wastes (paint-stripping waste solvents and residue) from the waste solvent USTs were periodically removed for off-base disposal.

The following paragraph will be added to Section 2.2 to address the inorganic contamination:

The source of elevated inorganics (aluminum, arsenic, chromium, iron, and vanadium) present at Site 3 is not known. There are no documented uses of these inorganics at Site 3. Due to the widespread distribution of the inorganics, they may be the result of naturally occurring or anthropogenic sources.

See the response to Comment No. 13 for revisions to Section 2.5, Site Characteristics.

8. **Page 2-1, Section 2.3, Highlights of Community Participation.** This section should state that the RI report, the FS, and the proposed plan are available for review in the information repository rather than stating the documents were released for public review and comment. As a rule, the public does not review and comment on the RI report, the FS, and the Proposed Plan.

Response: *The first paragraph of Section 2.3 will be revised as follows:*

The RI report (Tetra Tech NUS, 1999), the FS report (Tetra Tech NUS, 2000a), and the Proposed Plan (Tetra Tech NUS, 2000b) for Site 3 were made available to the public for review in August 2000. These documents, and other Installation Restoration (IR) program information, are contained within the Administrative Record in the information repository located at the West Florida Regional Library, Milton, Florida.

9. **Page 2-6, Section 2.4.** In the last sentence of the third paragraph, change "NAS Whiting Field" to "the Navy" and add "at NAS Whiting Field" between "measures" and "to".

Response: *The text has been revised as suggested.*

10. **Page 2-6, Section 2.5, Site Characteristics.** In the first sentence of this section, change the word "derived" to "specific".

Response: *The text has been revised as suggested.*

11. **Page 2-7, Section 2.5.2, Background.** Delete the words "the main base of" from the first sentence.

Response: *The text has been revised as suggested.*

12. **Page 2-7, Section 2.5.5, Groundwater.** Delete the words "and remediated". It is premature to state that groundwater is being remediated.

Response: *Section 2.5.5, Groundwater, has been replaced with Section 2.5.5, Ecological Habitat, since groundwater is not addressed in this ROD. This revised section is included in the response to Comment 13.*

13. **Page 2-7 through 2-8.** List all constituents sampled.

Response: *Section 2.5, Site Characteristics, has been revised as shown below:*

2.5 SITE CHARACTERISTICS

Site 3 is approximately 2.5 acres in size and is characterized by concrete, asphalt, buildings, mowed turfgrass, and heavy human activity. The site is flat with very little relief.

As part of the RI conducted for Site 3, data were collected to determine the nature and extent of releases of site-specific contaminants in surface and subsurface soil, to identify potential pathways of migration in surface and subsurface soil, and to evaluate risks to human and ecological receptors. The receptors evaluated in the human health and ecological risk assessments are discussed in Sections 2.6.1 and 2.6.2.

2.5.3 Surface Soil

Surface soil sampling was conducted at Site 3 to determine the nature and extent of contamination at the site and to assess whether or not surface soil could potentially serve as an exposure pathway to human or ecological receptors. Chemicals detected in surface soil at Site 3 include volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), pesticides, and inorganics. A complete list of all constituents sampled and their concentration in surface soil, if detected, is available in the RI report (Tetra Tech NUS, 1999). Evaluation of the chemicals present in the surface soil at Site 3 identified one pesticide (dieldrin) and five inorganics (aluminum, arsenic, chromium, iron, and vanadium) exceeding State of Florida (FDEP, 1999) or USEPA (USEPA, 1999) risk-based human health screening values for residential land use. Of these chemicals, only arsenic was identified in the FS as a chemical of concern (COC) exceeding chemical-specific criteria for the current and anticipated future commercial/industrial use of the site. No solvents were detected in surface soil at Site 3 above risk-based screening levels.

Arsenic was detected in all Site 3 surface soil samples at concentrations ranging from 0.58 to 5.5 mg/kg. Only one surface soil sample had arsenic concentrations exceeding the RG of 3.7 mg/kg. Figure 2-2 shows the estimated extent of surface soil contamination exceeding the RG and requiring remedial action.

2.5.4 Subsurface Soil

Subsurface soil sampling was conducted at Site 3 to determine the vertical extent of contamination and to assess whether or not subsurface soil could potentially serve as an exposure pathway to human or ecological receptors. Chemicals detected in subsurface soil at Site 3 include VOCs, SVOCs, TPH, pesticides, and inorganics. A complete list of all constituents sampled and their concentration in surface and subsurface soil, if detected, is available in the RI report (Tetra Tech NUS, 1999). Evaluation of the chemicals present in the subsurface soil at Site 3 identified one inorganics (arsenic) exceeding State of Florida (FDEP, 1999) or USEPA (USEPA, 1999) risk-based human health screening values for commercial/industrial land use. Arsenic was also identified in the FS as a COC exceeding chemical-specific criteria for the current and anticipated future commercial/industrial use of the site. No solvents were detected in subsurface soil at Site 3 above risk-based screening levels.

Arsenic was detected in 25 of 30 Site 3 subsurface soil samples at concentrations ranging from 0.29 to 16 mg/kg. Three samples had arsenic concentrations exceeding the RG of 6.2 mg/kg. Figure 2-2 shows the estimated extent of subsurface soil contamination exceeding the RG and requiring remedial action.

2.5.5 Ecological Habitat

Site 3 is severely limited in the quantity and quality of habitat for ecological receptors because it is heavily industrialized characterized by concrete, asphalt, buildings, small areas of mowed turfgrass, and heavy human activity. Most importantly, the site comprises only a small portion of the home ranges of most of the terrestrial wildlife species found on-base.

2.5.6 Migration Pathways

Arsenic detected in soil is the primary contaminant of concern at Site 3. The primary agents of migration acting on soil include wind, water, and human and ecological receptor activity. Soil can also act as a source medium, allowing the COCs to be transported to other media.

Transport of the COCs from soil via wind is not expected to be a major transport mechanism due to the presence of vegetation and concrete/asphalt pavement at Site 3. Vegetative and concrete covers are an effective means of limiting wind erosion of soil. Contaminated fugitive dust generated construction activities are of potential concern.

Humans and, to a lesser extent, ecological receptors are effective at moving soil and can greatly affect the transport of soil-bound chemicals at hazardous waste sites. Under the current use of Site 3, human and ecological receptor activity is not a major transport mechanism for the COCs in soils. This condition could change based on the future use of Site 3.

The transport of soil by water and, therefore, arsenic and other contaminants in soil, via the mechanisms of physical transport of soil or the leaching of constituents from the soil to groundwater is a potential concern. Soil erosion—the physical transport of soil via surface water runoff—is currently not considered a major mechanism for the transport of the COCs in soil at Site 3 because of (1) the low grade (slope) of the land surface at the site, (2) the vegetation or concrete/asphalt covering the site, and (3) the nature of the constituents remaining in the soil at the site.

Arsenic in the soil at Site 3 is likely to remain attached to the soil because most metal analytes adsorb readily to or are natural constituents of clays and other minerals. Leaching of constituents from the soil to the groundwater will be evaluated as part of the RI/FS for Site 40, Facility-wide Groundwater.

14. **Page 2-9, Table 2-2.** The listing of inorganic analytes lists metals that were not discussed in the text on pages 2-7 through 2-8. Please list all constituents analyzed and detected in surface and subsurface soil.

Response: *See the response for Comment 13.*

15. **Page 2-10, Section 2.6.1, Risk Characterization.** EPA's risk range and FDEP's risk goal of 10^{-6} should be discussed in this section.

Response: *Section 2.6.1, Risk Characterization, will be revised as follows:*

Risk Characterization. In the final step of the risk assessment, the results of the exposure and toxicity assessments are combined to estimate the overall risk from reasonable maximum exposure to site contamination. For cancer-causing chemicals, risk is estimated to be a probability. For example, a particular exposure to chemicals at a site may present a 1 in 1,000,000 (or 1.0E-06) chance of development of cancer over an estimated lifetime of 70 years. The USEPA allowable carcinogen risk range is 1.0E-04 to 1.0E-06 and the FDEP acceptable incremental cancer risk (ICR) is 1.0E-06. Therefore, carcinogenic risks greater than 1.0E-06 are unacceptable.

For noncancer-causing chemicals, the dose of a chemical a receptor may be exposed to is estimated and compared to the reference dose (RfD). The RfD is developed by USEPA scientists and represents an estimate of the amount of a chemical a person (including the most sensitive persons) could be exposed to over a lifetime without developing adverse effects. The measure of the likelihood of adverse effects other than cancer occurring in humans is called the hazard index. An HI greater than 1 suggests adverse effects are possible.

16. **Page 2-10, Section 2.6.2, Ecological Risk Assessment.** "Step 3A" should be described in detail or the reference to this step should be removed.

Response: *See the response to Comment 19.*

17. **Page 2-11, Table 2-3 and Page 2-12, Table 2-4.** The risk values provided in the tables should be correlated to a particular hazardous substance.

Response: *The numbers presented in Tables 2-3 and 2-4 are cumulative risk values representing the risk from all chemicals present in surface or subsurface soil exceeding State of Florida and USEPA risk-based screening levels.*

18. **Page 2-13, Table 2-5.** There was no prior discussion of the volatiles, semivolatiles and pesticides listed in this table. Please explain and correct the text or table accordingly.

Response: *The first paragraph of Section 2.6.2 will be revised as follows:*

The purpose of the ERA for Site 3 was to evaluate the potential for adverse effects to ecological receptors at the Underground Waste Solvent Storage Area. A conservative screening level ERA was performed following the most-recent USEPA guidance. Components of the screening level ERA include (1) preliminary problem formulation, (2) preliminary ecological effects evaluation, (3) preliminary exposure estimate, and (4) preliminary risk calculation, In addition, Step 3A, Refinement of Chemicals of Potential Concern, was also performed in accordance with USEPA and Navy ERA guidance. The ERA completed for Site 3 considered exposure of terrestrial plants, terrestrial invertebrates, and wildlife to chemicals in surface soil at the site. All chemicals detected in surface soil at Site 3 including VOCs, SVOCs, TPH, pesticides, and inorganics were evaluated during the screening level assessment. A complete list of all constituents sampled and their concentration in surface soil, if detected, is available in the RI report (Tetra Tech NUS, 1999). Table 2-5 provides a summary of the ecological chemicals of potential concern (ECOPCs) selected for Site 3 surface soil from the screening level assessment.

19. **Page 2-13.** Include a cite for the "suggested screening values" in the second paragraph. In the third paragraph, "Step 3A" should be described in detail or the reference to this step should be removed.

Response: *The second and third paragraphs of Section 2.6.2 will be revised as follows:*

Selection of the ECOPCs shown in Table 2-5 was made by comparing the maximum concentration of each chemical detected in surface soil against USEPA Region 4 recommended screening values (USEPA, 1998). Chemicals whose maximum concentration exceeded the screening value as well as chemicals without screening values were retained as ECOPCs. All chemicals detected in surface soils were also evaluated using food chain modeling. Chemicals with at least one food chain modeling hazard quotient (HQ) greater than 1.0 were also retained as ECOPCs.

The conservative screening is an appropriate initial tool for assessing ecological risks so potential risks are not underestimated. However, assessing ecological risk using only maximum concentrations and very conservative guidelines as a tool to determine the need to perform additional ecological risk assessment

has severe limitations and inherent uncertainties. The consideration of other relevant factors to more fully determine the potential for adverse effects to ecological receptors was performed as part of "Step 3A, Refinement of Contaminants of Potential Concern." The screening phase of the ERA process as described above comprises the first two steps of the ERA process. Step 3 is the first step in the baseline risk assessment process. The baseline risk assessment is a more thorough rigorous ecological study. Thus, the Navy (Navy, 1999) developed "Step 3A" to more fully determine if a baseline risk assessment is necessary and reassess the conservatism inherent in the screening phase. The relevant factors evaluated as part of Step 3A include:

The references cited for paragraphs two and three are listed below and will be added to the references section of the ROD.

USEPA, 1998. "Ecological Risk Assessment at Military Bases: Process Considerations, Timing of Activities, and Inclusion of Stakeholders". Memorandum from Ted. W. Simon, Region 4 USEPA Office of Technical Services, December 22.

Navy, (Department of the Navy), 1999. Navy Policy for Conducting Ecological Risk Assessment. *Office of the Chief of Naval Operations, Washington, D.C., April 6.*

20. **Page 2-15, Table 2-5.** The description of key components for Alternative 3 should clearly state that only soil containing contaminants exceeding industrial standards will be removed and that the LUCs will be required to address contaminants in soil above residential standards.

Response: *The description of key components for Alternatives 2 and 3 will be modified as follows:*

The text will be revised to add "commercial/industrial land use" between "exceeding" and "RGs" in the second bullet of Alternative 2 and in the third bullet of Alternative 3.

The first sentence of the next-to-last bullet of Alternatives 2 and 3 will be revised as follows: "Implementation of Land-Use Controls will address contaminants in soil above residential standards."

21. **Pages 2-15 and 2-16, Section 2.7, Description of Alternatives.**

1. Include a more detailed costs itemization for capital and O&M costs or reference the document in which a more detailed itemization can be found.
2. List and discuss the applicability of ARARs for each remedy.

Response: *The alternative descriptions will be modified as follows:*

Alternative 1: *The No Action alternative (estimated present worth cost of $18,000) is required by CERCLA as a baseline for comparison with the other alternatives. The No Action alternative assumes no remedial action would occur and establishes a basis for comparison with the other alternatives. No remedial action, treatment, LUCs, or monitoring of site conditions would be implemented under the No Action alternative. Alternative 1 does not meet chemical-specific ARARs. The No Action alternative includes an estimated present worth cost of $18,000 for Operation and Maintenance (O&M) (conducting 5-year reviews over a 30-year monitoring period) and a capital cost of $0.*

Alternative 2: *Surface soil removal and LUCs (estimated present worth cost $153,000): removal and off-site disposal of surface soil exceeding levels allowed for Florida commercial/industrial sites and restriction on the use of the site to activities involving less than full-time human contact with the soil, such as commercial/industrial, limited agricultural, or recreational. Future land-use concerns are addressed by LUCs. Alternative 2 meets chemical-specific ARARs for exposed surface soil and LUCs to prevent exposure to covered (asphalt/concrete) surface soil and subsurface soil. Compliance with action-specific ARARs will be achieved by proper design and execution of contaminated soil removal and off-site disposal activities. Alternative 2 includes an estimated present worth cost of $60,500 for O&M (over a 30-year monitoring period) and an estimated capital cost of $92,600.*

Alternative 3: *Surface and subsurface soil removal and LUCs (estimated present worth cost $821,000): removal and off-site disposal of surface and subsurface soil exceeding levels allowed for Florida commercial/industrial sites and LUCs, as described above. Alternative 3 meets chemical-specific ARARs for surface and subsurface soil. Compliance with action-specific ARARs will be achieved by proper design and execution of contaminated soil removal and off-site disposal activities. Alternative 3 includes an estimated present worth cost of $57,000 for O&M (over a 30-year monitoring period) and an estimated capital cost of $764,000.*

22. **Page 2-15, Section 2.7, Alternative 1.** The narrative for Alternative 1 should include an estimated present worth cost. The narrative should describe the no action alternative in more detail.

Response: *See response to Comment #21.*

23. **Page 2-16, Section 2.7, Alternative 2 and 3.** The cost information should be labeled as "estimated present worth cost...."

Response: *See response to Comment #21.*

24. **Section 2.8, Summary of the Comparative Analysis of Alternatives.** Revise to include a discussion of ARARs. State which ARARs cannot be achieved and why. Provide a more detailed cost itemization. Page 2-18, Reduction of Toxicity, Mobility, and Volume of Contaminants Through Treatment mentions natural attenuation for the first time in this document. Natural attenuation is considered a remedy but there has been no discussion under Alternative 2 that natural attenuation is one of the elements of this remedy. Please explain.

Response: *The second paragraph of Section 2.8, Summary of the Comparative Analysis of Alternatives, will be deleted. The "Compliance with ARARs" paragraph in Section 2.8.1 will be revised as shown below to provide more discussion on ARARs.*

Compliance with ARARs. Chemical-specific ARARs include Florida SCTLs (FDEP, 1999) and USEPA Region III Risk Based Concentrations (USEPA, 1999). Action-specific ARARs for all alternatives, except the No Action Alternative, are associated with the excavation and off-site disposal of contaminated soil and implementation of LUCs to prevent residential land use. No location-specific ARARs are applicable for Site 3.

Alternative 1, No Action, does not comply with the chemical-specific ARARs. Alternatives 2 and 3 comply with ARARs by the removal and proper disposal of exposed impacted surface soil, construction of horizontal barriers (e.g., soil, asphalt, or concrete covers) to prevent exposure to impacted subsurface soil, and LUCs to prevent exposure to surface soil (covered with asphalt/concrete) and subsurface soil exceeding residential land use standards.

The cost criteria section of the comparative analysis will reference the FS for detailed cost estimate information as shown below. However, a detailed cost estimate table for the selected alternative will be added to the selected alternative section of the ROD.

Cost. The total estimated present worth cost for the three alternatives evaluated is presented below. A detailed cost estimate summary table for selected Alternative 2 is included in Section 2.9. Detailed cost information for the other two alternatives can be found in the FS (Tetra Tech NUS, 2000a).

The statement concerning natural attenuation will be deleted from the Reduction of Toxicity, Mobility, and Volume of Contaminants Through Treatment paragraph since natural attenuation is not included in the elements of any of the alternatives.

25. **Page 2-17, Section 2.8.1.** The second full paragraph on this page should more clearly state that only soils containing contaminants above industrial standards will be removed and that the LUCs will be required to address contaminants in soil above residential standards.

Response: *The second paragraph will be revised as follows.*

Human receptors, namely site workers, would be protected if Alternative 2 were implemented. Regulatory controls (i.e., LUCs) would prohibit potential future residents from exposure to the site because residential use of the site would be restricted under the proposed LUCs. Because Alternative 2 only removes exposed surface soil exceeding commercial/industrial standards, LUCs would be required to prevent exposure to covered (asphalt/concrete) surface soil and subsurface soil exceeding commercial/industrial and residential land use standards. Excavation of all exposed surface soils exceeding cleanup levels and backfilling with clean soil would also provide protection to the environment. By implementing this alternative, no adverse short-term or cross-media effects are anticipated.

Implementation of Alternative 3 would provide the highest standard of protection to human receptors, since all surface and subsurface soil exceeding commercial/industrial cleanup levels would be removed and regulatory controls (i.e., LUCs) would prohibit residential use of the site. Because Alternative 3 only removes soil exceeding industrial standards, LUCs would be required to prevent exposure to chemicals remaining in soil above residential standards. This alternative would also provide protection for ecological receptors at the site; however, in doing so, this alternative may alter the native ecological habitat present at the site.

26. **Page 2-17, Section 2.8.2.** In the second sentence of the second paragraph, change the word "controlled" to "administered" and delete the words "being developed". In the final sentence of the second paragraph, change "maintains its MOA." to "adheres to the provisions of the MOA."

Response: *The text will be revised as requested.*

27. **Page 2-18.** The second sentence in the paragraph at the top of the page is in contradiction to the preceding page. If Alternative 1 were to be implemented, contamination requiring treatment and/or disposal would remain onsite. In the fourth sentence of the second paragraph, the term "containment barriers" should be defined.

Response: *The second sentence will be deleted. The term "containment barriers" will be changed to "horizontal barriers (e.g. soil, concrete, or asphalt cover)."*

28. **Page 2-19, Implementability.** This paragraph is in contradiction to the second paragraph of Section 2.8 on page 2-16. Please state more clearly that the permits discussed on page 2-19 may be required due to the transportation offsite of the contaminated soil.

Response: *Paragraph will be revised as follows:*

Implementability. All the alternatives would be easily implementable. Under CERCLA Section 121(e), permits are not required for remedial actions conducted entirely on-site at Superfund sites. This permit exemption applies to all administrative requirements, including approval of or consultation with administrative bodies, documentation, record keeping, and enforcement. However, the substantive requirements of these ARARs must be attained. Any alternative involving phased construction would require appropriate integrated scheduling of construction. All remedial technologies are proven and reliable.

29. **Page 2-20, Section 2.9, Selected Alternative.** This paragraph should be revised to reflect that the LUC MOA has been signed. In addition, the total cost should be identified as total present worth cost.

Response: *Paragraph will be revised as following:*

Of the three alternatives evaluated, the selected remedial action for Site 3 is Alternative 2. Alternative 2 consists of limited surface soil removal, construction of horizontal barriers to prevent exposure to impacted

subsurface soil, LUCs, and 5-year site reviews. The LUCs will establish restrictions limiting land use at the site to nonresidential uses. The location and approximate area of surface soil removal and the LUC area for Site 3 are shown on Figure 2-1. These restrictions will be incorporated into the existing NAS Whiting Field LUC MOA. The 5-year site reviews will verify the selected alternative continues to be protective of human health and the environment. When implemented predicted site risks will be minimized.

The total estimated present worth cost of Alternative 2 is $153,000 over a 30-year period. Table 2-7 summarizes cost estimate data for Alternative 2. The information in the cost estimate summary table is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Major changes may be documented in the form of a memorandum in the Administrative Record file, an explanation of significant differences, or a ROD amendment. The estimate is an order-of-magnitude engineering cost estimate expected to be within +50 to –30 percent of the actual project cost.

30. **Page 2-20, Statutory Statement.** State whether the remedy complies with ARARs or justify the need for a waiver. State whether the remedy is cost effective.

Response: *Section 2.10, Statutory Statement will be revised as shown below:*

The alternative selected for implementation at Site 3 is consistent with the Navy's Installation Restoration program, the Comprehensive Environmental Response, Compensation, and Liability Act, and the National Oil and Hazardous Substances Pollution Contingency Plan. The selected remedy for surface and subsurface soil is protective of human health and the environment.

The selected remedy eliminates, reduces, or controls risks by the removal and proper disposal of exposed impacted surface soil, construction of horizontal barriers (e.g., soil, asphalt, or concrete covers) to prevent exposure to impacted subsurface soil, and LUCs to prevent exposure to surface soil (covered with asphalt/concrete) and subsurface soil exceeding residential land use standards. No unacceptable short-term risks or cross-media impacts will be caused by implementation of the remedy. Comparison of the selected remedy to the nine USEPA evaluation criteria is summarized in Table 2-8.

The selected remedy also complies with chemical-specific ARARs for exposed surface soil and utilizes LUCs to prevent exposure to covered (asphalt/concrete) surface soil and subsurface soil exceeding residential land use standards. Compliance with action-specific ARARs will be achieved by proper design

and execution of contaminated soil removal and off-site disposal activities. Table 2-9 provides a summary of ARARs specific to the selected remedy.

The selected remedy is cost effective and provides a balance between cost and overall effectiveness in the protection of human health and the environment. Permanent solutions and treatment are utilized to the maximum extent practicable. However, the selected remedy does not provide for on-site treatment of contaminated material due to the nature of the contaminants (inorganics) and their location in an industrial area with heavy human activity. The remedy provides the best trade-off among the alternatives evaluated with respect to the balancing and modifying evaluation criteria listed in Table 2-8. The statutory preference for treatment is not met by the selected remedy, but the mobility of the excavated contaminated soil is reduced by moving it from the unsecured site to a regulated disposal facility. Source Materials present at Site 3 are of low toxicity and do not constitute a principal threat at the site.

Because Alternative 2 would result in hazardous substances remaining on-site, a review would be conducted within 5 years after commencement of the RA to ensure the remedy continues to provide adequate protection of human health and the environment.

31. **Page R-1.** The Feasibility Study for Site 3 should be listed as a reference.

Response: *The Feasibility Study will be listed as a reference.*

32. **Page B-1, Land Use Control Objective.** In the first bulleted item, the word "site" at the end of the first sentence should be changed to "soils at the site." The second and third bulleted items in this section are duplicative.

Response: *The first bulleted item will be revised as requested and the third bulleted item will be deleted.*

33. **Page B-2.** The bulleted item at the top of the page should indicate that the LUC MOA has already been signed.

Response: *The bulleted item will be revised to indicate the LUC MOA has been signed.*

34. **Page B-3, Other Pertinent Information.** The discussion of allowable uses of groundwater at Site 3 is premature as groundwater is still under investigation. In addition, the LUC MOA does not address groundwater usage.

Response: *The paragraph discussing allowable uses of groundwater will be deleted.*