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LETTER WITH RESPONSES TO REVIEW COMMENTS REGARDING SITE 41 DRAFT
FEASIBILITY STUDY NAS PENSACOLA FL
3/8/2012
NAVFAC SOUTHEAST



DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST
JACKSONVILLE, FL 32212-0030

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Ser OPUE3/167
March 8, 2012

U.S. Environmental Protection Agency, Region 4
Federal Facilities Branch
Sam Nunn Atlanta Federal Center
Attn: Mr. Tim Woolheater
61 Forsyth Street, SW
Atlanta, GA 30303

Dear Mr. Woolheater:

SUBJECT: RESPONSE TO REGULATORY COMMENTS ON THE DRAFT FEASIBILITY
STUDY FOR OPERABLE UNIT (OU) 16 SITE 41 WETLANDS AT NAVAL
AIR STATION (NAS) PENSACOLA, PENSACOLA, FLORIDA

In reference to the CLEAN Contract No. N62467-04-D-0055, Contract Task Order No. 030, attached in the enclosure is the Response to Regulatory Comments on Draft Feasibility Study for Operable Unit (OU) 16 Site 41 Wetlands at NAS Pensacola, Pensacola, Florida. Comments on the draft document were received from the U.S. Environmental Protection Agency (USEPA) on February 2, 2012 and from the Florida Department of Environmental Protection (FDEP) on July 1, 2011.

Should you require any further details or clarifications, please feel free to contact me at commercial (904) 542-6202 or email: patty.whittemore@navy.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "P. Marajh-Whittemore".

P. MARAJH-WHITTEMORE
Remedial Project Manager
By direction of the Commanding Officer

Enclosure: RESPONSE TO REGULATORY COMMENTS ON THE DRAFT FEASIBILITY
STUDY FOR OPERABLE UNIT (OU) 16 SITE 41 WETLANDS AT NAS
PENSACOLA, PENSACOLA, FLORIDA

Copy to:

Mr. David Grabka, FDEP
Mr. Greg Campbell, NASP PWC
Mr. Gerry Walker, Tetra Tech
Mr. Sam Niak, CH2M Hill
Mr. Brian Caldwell, Tetra Tech
Ms. Allison Harris, Ensafe

**RESPONSES TO USEPA FEBRUARY 2, 2012 COMMENTS ON THE
DRAFT FEASIBILITY STUDY FOR
OPERABLE UNIT (OU) 16 SITE 41 WETLANDS
NAVAL AIR STATION PENSACOLA, PENSACOLA, FLORIDA
NOVEMBER, 2010**

GENERAL COMMENTS

GC 1: Section 1.1, Purpose of the RI/FS, of the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, EPA/540/G-89/004 dated October 1988 (RI/FS Guidance) states that the objective of the remedial investigation (RI) and feasibility study (FS) process is not the unobtainable goal of removing all uncertainty, but rather to gather information sufficient to support an informed risk management decision regarding which remedy appears to be most appropriate for a given site. However, the current uncertainty associated with the nature and extent of contamination at each of the sites addressed by the Feasibility Study Report, Operable Unit (OU) 16, Site 41 Wetlands, Revision 1 dated December 2010 (FS Report) directly impacts the ability to make informed decisions regarding the level of risk presented by the sites and the appropriate type(s) of remedial response. The lack of delineation of the nature and extent of contamination directly impacts the contaminant fate and transport discussion, refinement of a conceptual site model (CSM), interpretation of the baseline human health and ecological risk assessment results, and development of remedial action objectives (RAOs). As a result, the objective of the RI/FS process is not met by the FS Report. Specifically only two to five samples were available to evaluate the potential ecological risks at Wetland 15 (n=4), Wetland 16 (n=5), Wetland 18A (n=4), and Wetland 18B (n=2). This concern was raised by the United States Environmental Protection Agency (EPA) during a partnering conference call conducted on August 23, 2010. The resulting consensus from this call was that “additional data could be collected as part of a monitoring program” [see Item D on Page 8 of Attachment D, Response to Regulators Comments, included in Appendix A, Technical Memorandum, Refined List of Chemicals of Concern for the Feasibility Study and Development of Preliminary Remediation Goals for Sediment, Site 41 – Combined Wetlands (TM)]. Revise the FS Report to provide further delineation of the nature and extent of contamination to address the required components of an RI/FS as outlined in the RI/FS Guidance. Specific examples of where this type of information is required are provided in the remaining comments.

Response: *This comment, as well as several other comments, indicates that additional sampling is needed to obtain current data and better define the nature and extent of contamination in many of the wetlands. The Navy agrees that additional delineation of the nature and extent of contamination is needed at some of the wetlands. This will be discussed in more detail at the March 27 and 28, 2012 technical meeting. The additional data may also result in updated conceptual site models.*

GC 2: Elimination of constituents based on frequency of detection (FOD) is a pragmatic methodology designed to allow risk assessors to focus available time and resources on the most likely drivers of site-related risk and hazard. However, this method is

generally perceived as dated and was used prior to the widespread availability of regulatory agency-promulgated health-based screening criteria [e.g., EPA Region 9 Preliminary Remedial Goals (PRGs), now replaced with Regional Screening Levels (RSLs), Florida's Soil Cleanup Target Levels (SCTLs) and a variety of ecological screening levels]. Further, Risk Assessment Guidance for Superfund (RAGS), Part A (EPA, 1989) clearly states that FOD is inappropriate for chemicals that are considered to be site-related. The identification of chemicals of concern (COCs) that represent the risk drivers at the conclusion of a human health or ecological risk assessment should be conducted irrespective of FOD results for individual constituents, as discussed in the partnering conference call conducted on August 23, 2010 regarding the TM. The Navy responded to EPA's concern (Item G on Page 4 of Attachment D, Response to Regulators Comments, included in the TM) stating that "if risks from other chemicals that are detected more frequently and at greater concentrations are addressed in the FS, risk from the less frequently detected chemicals also should be addressed." The basis for the Navy's response is not supported due to the limited sampling conducted at many of the wetlands included in the FS Report. The reduction of the COC list based on FOD for sites where the nature and extent of contamination is not fully delineated is unsupported since the distribution of individual chemicals exceeding the applicable screening criteria is not known. As a result, the COC list is truncated and it is uncertain whether targeting a class of chemicals for remediation will also capture chemicals removed from the COC list that are within another class (e.g., targeting metals may not necessarily target pesticides). Prior to removing chemicals based on FOD, the following additional lines of evidence should be provided where applicable:

- A discussion of the spatial distribution of detections to rule out the presence of a localized site-related release. However, an adequate data set must be available to support this discussion.
- A demonstration that other contaminants are co-located with the final COCs selected for remediation.
- A demonstration that the remedy would address the other chemicals which may not fall within the same class of chemicals that are represented by the final COC list.

Revise the FS Report to include multiple lines of evidence to support the assertion that the truncated list of COCs is acceptable as the final list of COCs for the site. Otherwise, additional data will need to be collected and presented as an addendum to the FS Report to support the exclusion of COCs from further evaluation.

Response: *Multiple lines of evidence were used to select the list of COCs to be evaluated in the FS. The frequency of detection was never the only line of evidence that was used to eliminate a chemical as a COC for a particular wetland. In most cases, the chemical was detected infrequently at a very low concentration and did not appear to be site-related. For example, in Wetland 3, endosulfan sulfate was detected in 3 of 12 samples at a maximum detected concentration of 7.2 ug/kg. Also, at Wetland 5a, endosulfan sulfate was detected in 1 of 10 samples, at a concentration of 5.2 ug/kg. Such low concentrations are not indicative of a release of this pesticide at the site and are more likely the results of typical spraying activities at the air station. The goal of the refinement was to determine which chemicals needed to be considered further*

in the FS. Chemicals detected infrequently and at such low concentrations in do not typically warrant consideration in the FS. Any additional nature and extent data that are collected in the wetlands can provide additional information, but the existing data may be used to determine which chemicals would be analyzed for in any additional sampling that is collected. This will be discussed in more detail at the March 27 and 28, 2012 technical meeting.

GC 3: Information that is necessary for risk-related clarity has not been provided in the FS Report. As such, a thorough evaluation of the FS alternatives cannot be conducted. Revise the FS Report to include the following information:

- The site descriptions in Section 1.0, Introduction, should provide brief summaries of the site CSM including the contaminant source(s) and transport pathways to the ecological “endpoints.”
- The description of the COCs to be addressed in the FS Report for each site should describe the receptors of concern associated with the contaminants to be addressed.
- Summary tables describing the COCs and exposure pathways to be addressed by the remedies should be provided (e.g., Section 2.0, Remedial Action Objectives and General Response Actions, should include a table providing a list of human health and ecological COCs retained for sediment at each Site 41 wetland).
- The FS alternatives analysis should describe how the ecological risk assessment endpoints are achieved by the alternative.

Response: ***The Navy agrees to do the following to address these comments [Note: The FS may change based on the additional data that will be collected, which could impact some of the comments on the FS]:***

- ***The Navy will add in additional information within each of the wetland subsections to indicate the source and transport pathways from the site to the ecological endpoints within each wetland.***
- ***The COCs that were retained for evaluation in the FS are presented in Table 23 of the technical memorandum, which is presented in Appendix A. The table will be modified to include the receptors of concern associated with each contaminant.***
- ***Summary tables describing the COCs are presented in Section 2.1.4 of the FS, on page 2-11. Additional information will be included in Section 2.1.4 to indicate the exposure pathways that need to be addressed by the remedies.***
- ***The Navy believes that the FS alternatives analysis does indicate how the ecological risk assessment endpoints are achieved, because the ecological risks being referred to in that section are risks to ecological benthic receptors (i.e. sediment invertebrates).***

GC 4: From the presentation in the FS Report, it is unclear where the total cancer risk estimates under the residential risk scenario fall within EPA's risk management range of 1E-06 to 1E-04. The contribution of contaminants attributed to background as compared to the total cancer risk has not been provided. Thus, the currently proposed RAOs can not be substantiated. Additionally, the FS should evaluate response actions to include all sites where the point of departure risk is exceeded and the risks are addressed by institutional controls (ICs) and a soil management plan.

Response: *The Human Health Risk Assessment (HHRA), prepared as part of the Remedial Investigation (RI), addressed exposure by trespassers and site maintenance workers directly exposed to contaminants of potential concern (COPC) in sediment and surface water (ingestion and dermal contact) in the various wetlands. The HHRA also evaluated the potential risks to a fisherman ingesting fish caught in the wetlands. The risks for the receptors at the various wetlands will be summarized and consolidated in a table in the FS. A residential receptor was not evaluated. At a minimum, a nearby resident would visit the wetlands as a trespasser.*

Reference (background) concentrations are only available for metals and DDT and metabolites. Therefore, this limited information restricts the assessment of risk that would be attributed to background. At a minimum, the maximum concentrations of the wetland data could be compared to two times the available reference concentrations, consistent with EPA Region 4 guidance for background comparisons. Additionally, Table 1 of the Technical Memorandum—Refined List of Chemicals of Concern for the Feasibility Study and the Development of Preliminary Remediation Goals for Sediment, Site 41, Combined Wetlands identifies the human health contaminants of concern (COC) and Table 13 of this document identifies the preliminary remediation goals for the COCs at the 10⁻⁶ risk level or a hazard index of one. This information, in combination with the ecological PRGs, identifies where institutional controls and a soil management plan are warranted.

GC 5: A CSM has not been provided in the FS Report. As a result, the relationship between sources of contamination, types of contaminants and affected media, routes of migration, and receptors is unclear. According to Section 2.2.2.2, Develop a Conceptual Site Model, of the RI/FS Guidance, "The conceptual site model should include known and suspected sources of contamination, types of contaminants and affected media, known and potential routes of migration, and known or potential human and environmental receptors." For example, elements of the CSM describing the contaminant sources, transport pathways, and exposure pathways to the ecological receptors or habitats of value (i.e., assessment endpoint receptors) have not been summarized. The integration of or transition from the pathways (CSM) to the endpoints (and receptors), then to the RAOs, and finally to a description of the cleanup is not clearly presented. Revise the FS Report to provide all elements critical to the selection of alternatives and include a CSM as part of the expanded discussion.

Response: *The wetland-specific CSMs were presented in the RI report. However, the Navy agrees to include a refined CSM for each of the wetlands in the FS report focusing on the contaminant sources, transport pathways, and exposure pathways to the ecological receptors of concern. Note that the CSMs will be refined based on the additional data that will be collected.*

GC 6: The FS Report does not adequately substantiate the exclusion of surface water from further action. The technical memorandum conclusions presented in Section E.4 and Section 1.6 state that “The source of the COCs that contribute to human health and/or ecological risk to surface water are currently being managed through permitted best management practices for storm water and through remedial decisions for groundwater for the individual OUs or sites. Therefore, because the surface water COPCs are being managed through other programs this FS does not address impacts to surface water.” Documentation of the protectiveness of these best management practices and clarification regarding how they will be synergistic to the proposed remedial actions being considered for sediments have not been presented. Revise the FS Report to discuss this issue and adequately support the assertions made in the quoted text with respect to surface water.

Response: *This issue was discussed previously in response to a similar comment made on the Technical Memorandum. The consensus from that discussion was that surface water was not included in the FS because sediment is the primary sink for the contaminants and it is difficult to clean up surface water. The text cited above in the comment will be replaced by the following text: “Surface water is not evaluated in this FS because the sediment is the ultimate sink for the contaminants, which consist of metals and pesticides. However, before any remedial actions are taken for sediment at the site, the Navy will need to review current surface water sources to the wetlands such as surface water currently being managed through permitted best management practices for storm water and through remedial decisions for groundwater for the individual OUs or sites to ensure that any sources of contaminants to the wetlands are being controlled.”*

GC 7: Based on Section 3.2, Detailed Screening of Sediment Remediation Technologies and Process Options, numerous remedial technologies and process options are eliminated. As such, it is unclear why innovative general response actions (GRAs) and remedial technologies were not evaluated for the COC-impacted soil, as discussed in Section 4.3.2.4, Innovative Technologies, of the RI/FS Guidance. Ensure the FS Report includes an appropriate range of alternatives. Revise the FS Report to provide additional GRAs and active remedial alternatives or clarify how the site conditions limited the number of GRAs developed. Further, clarify whether any innovative technologies were evaluated for the COC-impacted soil at Site 41.

Response: *Note that although the commenter is referring to soil in this and other comments, the Navy assumes that the reference should be to sediment. Please indicate if that is not correct. Remediation technologies and process are screened in Section 3. The table on page 3-3 lists the General Response Actions (GRAs) and corresponding technologies and process options. This list of options is consistent with Section 1.3.1 Remedial Approaches of the Contaminated Sediment Remediation Guidance for Hazardous Waste Sites (EPA, 2005) (Sediment Guidance). This document provides a basis for screening out other technologies often considered for soils and provides a list of technologies for further site-specific screening. This screening process is discussed in Section 3 which follows RI/FS Guidance procedures.*

The inclusion of innovative technologies is not required. Section 4.3.2.4 of the RI/FS Guidance only describes how innovative technologies, if selected for further consideration, are to be handled within the FS process. Based on discussions in the Sediment Guidance, reactive media cover and stabilization/solidification can be considered innovative, and these technologies were discussed and screened out in Section 3 of the FS.

References to the Sediment Guidance and the Remedial Approaches presented there will be included in Section 3 of the FS.

The comment about the range of alternatives will be addressed in the response to GC 9 below.

GC 8: Data to support the position that any level of cleanup will result in significant disturbance and impact has not been presented in the FS Report. As such, it is unclear if a level of cleanup exists that will not result in significant disturbance and potential harm to identified wetlands. Revise the FS Report to include a detailed discussion regarding the impacts associated with the various levels of cleanup.

Response: ***It is not clear exactly what type of data are being requested this comment to indicate that any level of cleanup will result in significant disturbance and impact to the wetlands. This can be discussed during the March 27-28, 2012 technical meeting.***

GC 9: The development and screening of alternatives was not conducted in accordance with the RI/FS Guidance:

- [A] Section 4.1.2.1, Development and Screening of Alternatives, of the RI/FS Guidance states that RAOs should specify the contaminants and media of interest, exposure pathways, and preliminary remediation goals that permit a range of treatment and containment alternatives to be developed. However, the RAOs presented in Section 2.1.1, Statement of Remedial Action Objectives, of the FS Report lack sufficient detail. The contaminants, media of interest, exposure pathways, and preliminary remediation goals that permit a range of treatment and containment alternatives to be developed have not been adequately identified. As such, it is unclear if the general response actions presented in Section 2.1.1 are appropriate. Revise the FS Report to provide clearly defined RAOs that specify the contaminants and media of interest, exposure pathways, and preliminary remediation goals that permit a range of treatment and containment alternatives to be developed.
- [B] Section 3.2, Detailed Screening of Sediment Remediation Technologies and Process Options, indicates that as part of the assessment of several of the response actions, the technologies would:
 - Likely pose a significant detriment to species within the benthic zone.
 - Adversely affect the wetland hydrology and result in unintended damage to areas that are not contaminated. These damages would typically include direct habitat loss, addition of suspended solids, and modification of water levels and flow regimes.

- Effect negative impacts associated with ecological damage which could range from changes to the chemistry and biology of the local area to changes in hydrology that go well beyond the immediate area.

This line of reasoning is used to recuse technologies from further assessment. The FS Report also indicates that excavation and dredging can have this effect but does not recuse this technology. Revise the FS Report to include an assessment of how it was determined that specific response actions did not warrant further consideration based on the conclusion that they would result in significant or detrimental impacts to ecological receptors. This assessment should demonstrate how these specific response actions would result in significant or detrimental impacts to ecological receptors or habitat.

- [C] It is unclear why innovative GRA and remedial technologies were not evaluated for the COC-impacted soil at Site 41, as per Section 4.3.2.4, Innovative Technologies, of the RI/FS Guidance. Further, the approach taken results in only one active remedial technology available for selection; the offering of only one active remedial technology should only occur if a presumptive remedy is being used. Note that the National Contingency Plan (NCP) (40 CFR Ch. I, 7–1–03 Edition) discusses FS development of alternatives in §300.430, stating that to the extent possible and appropriate, at least one alternative should be developed that includes treatment alternatives. Revise the FS Report to include an appropriate range of alternatives. Additionally, revise the FS Report to provide additional GRAs and active remedial alternatives that are consistent with EPA's *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites*, EPA-540-R-05-012, OSWER 9355.0-85 dated December 2005 (Sediment Guidance). Further, revise the FS Report to clarify whether any innovative technologies were evaluated for the COC-impacted soil at Site 41.
- [D] Based on Section 4.1.2.1, Development and Screening of Alternatives, of the RI/FS Guidance, remedial technologies should be identified and evaluated based on technical implementability. However, several remedial technologies have been eliminated for reasons other than technical implementability. For example, under Section 3.2.3.1, Physical Capping, the conclusions state that because of significant concerns regarding damage to the existing wetland ecology and hydrology, continued contaminant mobility, and operating and maintenance (O&M) costs, physical capping is eliminated for the development of sediment remedial alternatives. These statements are unsupported by the Sediment Guidance and the impacts discussed in Section 3.2.3.1 are not significantly different from the impacts associated with backhoes (the use of which may result in potential loss of sediment due to an open excavator bucket and result in damage to the existing wetland ecology and hydrology and continued contaminant mobility). Revise the FS Report to retain all technologies that are technically implementable for use in the development and screening of alternatives.
- [E] While the tables in Section 5.0, Comparative Analysis of Remedial Alternatives, appear to present an assessment of each alternative against the nine evaluating criteria, the information presented is unusable as the tables have not been correctly formatted and some of the information is illegible. Revise the FS Report to include legible versions of this information.

Response: [Note that because of the length of this comment, the paragraphs were labeled A, B, C, etc. for this comment and other comments, as necessary].

[A] *The RAOs include most of the components specified in the comment and the guidance. The RAOs state “COCs”, “sediment”, and “PRGs”. The receptors, maintenance workers and benthic organisms, are also specified. The RAOs will be revised to refer to a table that lists the specific COCs and the PRGs. The exposure route for the maintenance workers and benthic organisms will be added to the RAOs. In any case, per the response to GC 7, the list of GRAs and technologies is complete and appropriate.*

[B] *The FS will be revised to provide additional detail about the exclusion of several technologies in the development of the alternatives. However, although excavation/dredging will have a significant impact on the wetlands, the technology was retained so there would be a range of alternatives.*

[C] *As discussed in the response to GC 7, the screening of technologies is consistent with the RI-FS Guidance and the Sediment Guidance. An alternative with a treatment technology was not developed because no treatment technology was determined to be appropriate for these sites. There is no requirement for the inclusion of innovative processes or technologies.*

[D] *Figure 4-1 of the RI/FS Guidance illustrates that the process options are screened first on the basis of technical implementability, then further evaluated according to effectiveness, implementability, and relative cost. This is the evaluation in Section 3. The processes listed on the table on page 3-3 are the technologies considered to be technically implementable (per the Sediment Guidance) and these are further evaluated in Section 3 following the RI/FS Guidance. No changes are required for the list of technologies use in the development of the alternatives. Thus, an appropriate range of alternatives has been developed.*

The development of the alternatives addressed potential damage from the excavation/dredging alternatives. Damage from equipment is temporary and would be mitigated.

[E] *Table 5-1 was not properly produced in the report, and will be corrected for the final FS. It is attached to this response to comment document.*

GC 10: The known extent of contaminated sediments has not been sufficiently delineated. For example:

- Due to the limited number of investigative samples per unique wetland, the definition of the proposed extent of contamination presented under Alternative SED-4 should also be applied to determine the limits of the impacted areas associated with alternatives SED-2 and SED-3. This will allow for definition of the restoration footprint that requires long-term monitoring. Specifically, concerns exist that the current understanding of the extent of contamination is uncertain and will require clarification as part of any proposed action.
- Information to support the current interpretation that the vertical extent of contamination is within the top 12 inches of the sediments is not included in the

FS Report. The results presented on the figures and provided in the tables do not include information on the original sample collection interval or how the vertical extent of contaminated sediments has been defined. Without substantiation by site specific data, limiting the proposed actions to the initial 12 inches is unsupported by the FS Report. Revise the FS Report to present lines of evidence to support the current understanding of the vertical extent of contamination and the proposed vertical limit of the removal actions.

Response: *Please see the Navy's response to general Comment No. 1.*

GC 11: The calculated excavation volumes by investigation area presented in Appendix B, Contaminant Mass Calculations, and Appendix D, Sediment Excavation Calculations, is unsupported by the FS Report. As a result, it is unclear if the proposed excavation areas and volumes are sufficient to address contamination. Further, these calculations are not appropriately discussed within the FS Report. Revise the FS Report to present or allow for the collection of additional data to present point-by-point analytical results in defense of the designed excavation limits.

Response: *Please see the Navy's response to general Comment No. 1.*

GC 12: The summary of the comparative analysis presented in Table 5-1, Summary of Comparative Analysis of Remedial Alternatives – Sediments, does not rank the proposed alternatives by any criteria. Section 6.2.5, Comparative Analysis of Alternatives, Page 6-14, of the RI/FS Guidance states in “[a]n effective way of organizing this section is, under each individual criterion, to discuss the alternative(s) that performs the best overall in that category, with other alternatives discussed in the relative order in which they perform [emphasis added]...the presentation of differences among alternatives can be measured either qualitatively or quantitatively, as appropriate, and should identify substantive differences.” An assessment that includes discriminating factors is needed to make this process clear to the public and regulatory agencies. Revise the FS Report to provide a system of rating using a ranking scale that allows for differentiation (i.e., use a range of terminology and identify the differentiating features) so that a straightforward determination of the relative performance of the alternatives and identification of major trade-offs can be made. Also, ensure that the assessment clearly indicates the alternative(s) that performs the best overall in each category.

Response: *The discussion of each criterion (Sections 5.1.1 through 5.1.6) will be revised such that the alternatives will be discussed in the order in which they perform, with the alternative that performs the best discussed first. The cost tables in Section 5.1.7 will not be revised and will retain the same order based on the alternative number for ease of review. An assessment that includes discriminating factors will be added, where applicable.*

A ranking system will not be included. A ranking system is not typically developed in the FS. Concurrence on the weighting for each factor for this type of ranking system may be difficult to attain. Table 5-1 is sufficient for a side by side comparison and evaluation. A simplified table with symbols may be developed as part of the Proposed Plan or Record of Decision.

GC 13:

[A] The assumptions included in Section 4.0, Assembly and Detailed Analysis of Remedial Alternatives, and Appendix B, Contaminant Mass Calculations, are not sufficiently detailed to evaluate and compare remedial alternatives. For example, information to support the operation and maintenance costs has not been provided. Table 4-1, Sediment Monitoring, clarifies in a footnote that the number of samples has been assumed and will be designed in the future. However, because SED-4 does not include sampling, the lack of an appropriately developed sampling approach could cause the costs for SED-2 or SED-3 to be similar to those associated with SED-4. As such, it is unclear if the remedial alternatives were appropriately scoped and costed to reflect the -30% / +50% margin expected for cost estimates developed during the FS process. Revise Section 4.0 and Appendix B to ensure all assumptions are noted and substantiated. Further, revise SED-2 and SED-3 to include a more appropriately justified sampling approach to ensure the costs are comparable and within the allowed margin of error for an FS.

[B] Finally, ensure that any revisions to the cost estimates are consistent with the format specified in *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*, EPA 540-R-00-002, dated July 2000. Sufficient details to independently verify the units and costs should be provided. For example, specific estimated units (quantities) and costs for each alternative/site should include, but not be limited to, costs for mobilization (including costs for establishing pads for stockpiles), initial excavation, inspections, analytical samples, step-out/down excavation, separation of debris if encountered, transportation, disposal (debris and contaminated soil separately), backfill, site restoration, management of supersaturated sediments, dewatering, demobilization, and contingency. Revise Appendix B to provide sufficient detail to support the cost estimates ensuring that a line-item breakdown of costs is provided for each alternative.

Response: *[A] SED-4 does not have sampling and does not have an annual sampling cost component. The level of effort for sampling at each wetland is based on a reasonable estimate of the scope of the long-term sampling effort based on the existing level and extent of contamination. However, the assumed sampling effort (number of locations and analytes) can be discussed further during the March 27-28, 2012 technical meeting.*

[B] The costs estimates provide sufficient detail. For example, the cost estimate spreadsheet for SED-4 include mobilization, demobilization, a dewatering pad, site preparation, excavation equipment, hauling equipment, off-site transportation, off-site disposal, wetlands restoration, site restoration, and contingency. Analyses are included for disposal characterization. The estimate assumes that no additional delineation sampling is required. Step-out/down excavation is not included because it is assumed that the project is sufficiently delineated. In any case, the level of effort of additional excavation cannot be quantified.

These tables also include quantities and unit costs.

No changes in the format of the cost estimates are needed. However, any changes to the cost estimates can be discussed further during the March 27-28, 2012 technical meeting.

GC 14: The presentation and discussion of short-term effectiveness for each alternative for soil and groundwater should include an estimate of the time the specific remedy would take to achieve RAOs. As a result, the timeframe to achieve RAOs is unclear and a comparison of alternatives based on short-term effectiveness cannot be conducted. Revise the short-term effectiveness subsections in Section 5.0, Comparative Analysis of Remedial Alternatives, to provide a timeframe to achieve RAOs for each alternative at each site.

Response: *The short-term effectiveness discussions will be revised to include the timeframes to meet RAOs.*

GC 15: The assessment of long-term effectiveness and permanence in the FS Report is inconsistent with the NCP. The analysis to be conducted as part of the assessment of this criterion should focus on any residual risk remaining at the site after the completion of the remedial action. The assessment should include consideration of the degree of threat posed by the hazardous substances remaining at the site and the adequacy and reliability of any controls (e.g., engineering or institutional controls) used to manage the hazardous substances remaining at the site. The criterion is founded in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) mandates to select remedies that are protective of human health and the environment; that utilize permanent solutions and alternative treatment technologies or resource recovery technologies; and that maintain protection over time. Specifically, the ability of the proposed alternatives to withstand multiple hurricanes or limit the redistribution or exposure of previously buried contamination is a significant consideration that has not been addressed as part of an assessment of long-term effectiveness and permanence. Revise the FS Report to address the site specific and regional issues associated with each of the proposed alternatives with respect to assessment of long-term effectiveness and permanence.

Response: *The long-term effectiveness and permanence discussions will be revised to include site-specific issues, such as hurricanes.*

GC 16: It is unclear if the costs associated with site security features (e.g., fences, signs) and the protection of these features has been included in Appendix B, Contaminated Mass Calculations. The key land use control (LUC) implementation assumptions provided in Section 4.2.3.1, Description, do not include site security features. As such, it does not appear that the costs associated with the site security features or the protection of the features has been included in the cost estimates. Revise the FS Report to include the costs associated with all components of the remedial alternatives.

Response: *Warning signs are included as line item in SED-3. LUCs were not included as a component in SED-2. All components are covered in the cost estimates.*

GC 17: Green remediation is the practice of considering environmental impacts of remediation activities at every stage of the remedial process in order to maximize the net environmental benefit of a cleanup. Considerations include selection of a remedy, energy requirements, efficiency of on-site activities, and reduction of impacts on surrounding areas. Remediation activities can have a negative impact on the

environment such as greenhouse gas (GHG) emissions from combustible fuels used by remedial technologies or from off-site water quality impacts of cleanup activities.

To counter these negative environmental impacts, decisions are being made at many sites to utilize alternative energy sources for powering more traditional remedial systems such as soil vapor extraction (SVE). This strategy maintains the effectiveness of the remediation method while reducing emissions of greenhouse gasses from conventional power sources such as coal-fired power plants. Alternative fuels such as biofuel also are used to power heavy construction equipment thereby reducing emissions of harmful air pollutants.

The purpose of this study is to identify cleanup projects employing renewable, sustainable energy sources and/or alternative fuels for site remediation. Limited work has been done to determine the state of the practice. As a result, clear direction regarding EPA's cleanup programs and regional trends to provide a clearer understanding of the state of the practice are ongoing. Alternative energy use at cleanup sites is a form of green remediation that has not been adopted as frequently as other green remediation techniques. However, project managers increasingly consider the use of alternative sources of energy. Certain regions of the United States are better suited than others to capture solar or wind energy, thus creating more opportunities to use these technologies. In general, the GHGs targeted for emission reductions are:

- Carbon dioxide (CO₂);
- Methane (CH₄);
- Nitrous oxide (N₂O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulfur hexafluoride (SF₆).

Given that the FS Report has included a sustainability assessment (Appendix C, Sustainability Evaluation of Remedial Alternatives) but EPA has not yet finalized recommendations on where to best address sustainability within the RI/FS and remedial design (RD)/remedial action (RA) process, EPA reserves the right to comment on this information in the future.

Response: *Comment acknowledged.*

SPECIFIC COMMENTS

SC 1: Section 1.6, Technical Memorandum Conclusions, Page 1-35

The second paragraph of Section 1.6 states "The source of the COCs that contribute to human health and/or ecological risk to surface water are currently being managed through permitted best management practices for storm water and through remedial decisions for groundwater for the individual OUs or Sites." Therefore, the FS Report does not address impacts to surface water and defers surface water to other programs. While it is understood that regulatory agencies have collaborated on the approach to exclude surface water as a medium to be addressed by the Site 41 FS, a crosswalk of the COCs identified in surface water as part of the Final RI should be presented and the corresponding program where each COC is being addressed

should be identified in the FS Report. This ensures all COCs and impacted environmental media identified in the Final RI are addressed and not overlooked. If specific COCs are not accounted for by another regulatory program, a concern exists that the sediments will be re-contaminated.

Response: *The Navy does not believe that the crosswalk described in the comment is needed. Please see the Navy's response to general Comment No. 6.*

SC 2: **Section 2.1.4, Chemicals of Concern, Page 2-11**

The first bulleted item on Page 2-11 indicates that DDT, DDD, and DDE were not identified in the Final Remedial Investigation Report - Site 41 - OU 16, Naval Air Station (NAS) Pensacola Wetlands – dated August 2005 and revised in November 2007 (Final RI Report) as COCs in OU 1 wetlands (e.g., Wetland 3, 15, 16, 18A, and 18B) and OU 2 wetlands (e.g., Wetland 5A and 64). However, comments on the Final RI Report from National Oceanic and Atmospheric Administration (NOAA) dated March 22, 2001 indicated “triple-digit sediment HQs” for DDT and DDD in Wetland 3; “triple-digit sediment HQs” for DDD in Wetland 15; “triple-digit sediment HQs” in Wetland 18 (west side) for DDTx (i.e., DDT and metabolites), which are the “highest recorded concentrations at Pensacola NAS”; and “double-digit sediment HQs” for DDTx in Wetland 64. Although NOAA states that the concentrations at Wetland 3 dropped “precipitously after 20 months,” it is unclear why such elevated concentrations as indicated by hazard quotients (HQs) higher than HQs from reference areas did not result in the retention of DDTx as a COC at these wetlands. The risk assessment results from the Final RI were not available to verify the validity of this concern; therefore, this issue is raised to EPA for follow-on verification.

Response: *DDT, DDD and DDE are known to bioaccumulate or biomagnify within the food web and the potential for constituent movement from the environmental media into upper trophic level predators were evaluated using a food web model. The food web models for Phase IIA and IIB events are detailed in Section 10.8 for OU1, Section 11.4 for OU2. Based on the results of the food web models, the parameters were not retained as COCs.*

SC 3: **Section 2.1.4, Chemicals of Concern, Page 2-11**

The second bulleted item on Page 2-11 indicates that mercury was retained as a COC for Wetland 64. However, the table provided on Page 2-11 does not include mercury as an ecological COC. As a result, a PRG has not been developed for mercury. Since mercury was identified as a risk driver, a PRG should be developed for this metal. Revise the FS Report to ensure that mercury is included as a COC and that a PRG is developed for Wetland 64.

Response: *Mercury was eliminated as a COC at Wetland 64 for reasons presented in the Technical Memorandum. The bullet on page 2-11 will be corrected.*

SC 4: **Section 2.1.4 Chemicals of Concern, Page 2-11**

The table on Page 2-11 does not include arsenic as an ecological COC for sediment at Wetland 18B, which is not in agreement with Table 23, Refined List of Chemicals of

Concern for Evaluation in the Feasibility Study, located in the TM. Revise the FS Report to correct all discrepancies between the two tables.

Response: *The table on page 2-11 will be corrected to include arsenic as a COC for ecological receptors.*

ADDITIONAL DISCUSSION TOPICS FOR MARCH 27-28

1. **Transparency:** The documents could be a bit more transparent on how some of the wetlands were eliminated from further consideration. The chemicals of concern do not appear to be excessively high. Therefore if proper justification is provided, the document would be more transparent.

Response: *The wetlands elimination process is detailed in the Site 41 Remedial Investigation Report. All wetland eliminations were agreed upon by the subject matter experts from the EPA, FDEP, NOAA and the Navy as the process was completed. This will be discussed in more detail at the March 27 and 28, 2012 technical meeting.*

2. **Wetland Characterization:** It appears that some of the wetlands have not been fully characterized with respect to the chemicals of concern. For example, in Wetland 18B only one station was used to determine risk. Also, the latest DDT_r results from Wetland 48 in 2007 show a 3.6-fold increase in concentration from the same station analyzed in 1994 (sample 041M480101). Does this imply that there is a DDT plume somewhere in Wetland 48? Additional characterization is likely necessary.

This will be discussed during the March 27 and 28, 2012 technical meeting.

3. **Analytical Results:** It is not clear whether the analytical results have received independent validation. From looking at the RI report addendum for Wetlands 10 and 48 there is no transparency as to how the data were reported. Some of the samples for SVOC analysis were diluted with 0% surrogate recoveries. One would expect the surrogates to also be diluted 10-fold. Also for the pesticides analyses different results were recorded from the primary and secondary columns and there was no clear justification which results got selected. In some cases results from the primary and secondary columns were mixed. The data qualifiers used were not explained in the case narrative. Please explain.

Response: *All data in the Site 41 RI Report received independent validation. The data in the RI report addendum, however, did not receive independent validation.*

The data qualifiers in the laboratory report are those required by the Florida Department of Environmental Protection. Those relevant for use in electronic data assessment include:

A Value reported is the mean (average) of two or more determinations.

B Results based upon colony counts outside the acceptable range.

F Species: Female sex.

H Value based on field kit determination; results may not be accurate.

J Estimated value; value not accurate. All results with a "J" qualifier require comment.

- K** Off-scale low. Actual value is known to be less than the value given.
- L** Off-scale high. Actual value is known to be greater than value given.
- M** Chemical Analysis: Presence of material is verified but not quantified.
Oxygen Reduction Potential/Temperature: Indicates a negative value.
Species: Male sex
- N** Presumptive evidence of presence of material
- O** Sampled, but analysis lost or not performed
- Q** Sample held beyond the accepted holding time
- T** Value reported is less than the laboratory method detection limit. The value is reported for informational purposes, only and shall not be used in statistical analysis.
- U** Compound was analyzed for but not detected.
- V** Analyte was detected in both the sample and the associated method blank.
- Y** Laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z** Too many colonies were present (TNTC), the numeric value represents the filtration volume.
- I** The reported value is between the laboratory MDL and the laboratory PQL.
- ?** Data is rejected and should not be used. Some of all of the quality control data for the analyte were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
- *** Not analyzed due to interference.
- D** Measurement was made in the field.
- E** Extra samples were taken at composite stations
- R** Significant rain in the past 48 hours.
- !** Data deviates from historically established concentration ranges.

4. **Toxicity Report:** There were some unexplained inconsistencies in the toxicity report in the RI addendum. In one sample, survivorship ranged from 20% to 100%. Even though the average survival passed the acceptance, the 20% survival was obviously an outlier. Also, the reference toxicity test results were completely off. The LC50 for the reference toxicant ranged from 4.7 mg/L to 164 mg/L. Does this imply that the organisms used in the study with the high LC50 values (including the RI addendum results) were less sensitive?

Response: *The replicate with 20% survival could have been treated as an outlier, but the exclusion was not necessary after statistical analysis. The reference toxicant value ranges were due to different lots of sodium dodecyl sulfate which tend to differ significantly in toxicity values. The toxicity test report has a brief explanation addressing the differing values.*

5. **Food-web Model:** The food-web modeling results in the RI report addendum could also be more transparent. The biota sediment accumulation factor (BSAF) was used as the tissue concentration instead of the bioaccumulation factor (BAF). Also, the BSAF used was an average literature value from several sources with outliers which were not eliminated. Perhaps site-specific tissue concentrations could be used to provide more realistic results rather than using BAFs in food-web modeling.

Response: *Site-specific tissue concentrations were used the food-web models when available.*

6. **Surface Weighted Average Concentration (SWAC):** Once the site characterization issue has been resolved, the Navy may want to use SWAC to justify elimination some of the wetlands from further consideration. EPA has used the SWAC approach for some sites.

This will be discussed during the March 27 and 28, 2012 technical meeting.

7. **Assessment of Monitored Natural Attenuation at Certain Sites:** Due to the length of time needed to arrive at the feasibility stage of the document, the data used to complete the feasibility study is quite old. The remedy selected is natural attenuation. It would prove beneficial to collect additional samples at this time to determine whether the proposed remedy is likely to be effective.

This will be discussed during the March 27 and 28, 2012 technical meeting.