

N91571.AR.002088
NIROP ABL ROCKET CENTER
5090.3a

U S NAVY RESPONSES TO U S EPA REGION III AND WEST VIRGINIA DEPARTMENT OF
ENVIRONMENTAL PROTECTION COMMENTS ON REVISED DRAFT FEASIBILITY STUDY
FOR OPERABLE UNIT 4 (OU 4) SITE 1 NIROP ROCKET CENTER WV
10/1/2013
CH2M HILL

EPA and WVDEP Comments and Navy Responses to the
Revised Draft Site1 (OU-4) Soil Feasibility Study
Allegany Ballistics Laboratory, Rocket Center, West Virginia

Comments on the *Revised Draft Site 1 (OU-4) Soil Feasibility Study* are included in the text below. Each comment is followed by the Navy's reply shown in **bold text**.

Comments submitted by Sarah Kloss, EPA RPM

General Comments

1. **Remedial Action Objectives:** The proposed land use restrictions should be tied to an RAO. For the residential receptor, there should be an RAO to restrict land use to industrial use. Also, for the construction worker, it is not clear why industrial use would prevent construction worker exposure. For the OABG and areas of the ABG where excavation of contamination is not feasible (i.e., under a RCRA burn pad), the remedy should include land use controls to either prohibit digging or minimize construction worker exposure during ground intrusive activities. The protection of construction workers should also be tied to an RAO.

Navy Response: Land-use restrictions will be addressed as part of the LUCs within each remedial alternative and therefore, are not tied to a specific RAO. The LUCs will restrict the site from residential land use and details of the controls will be documented in the Proposed Plan and ROD.

Under industrial site use construction workers are receptors and should not have been lumped in with residential receptors. The first RAO has been revised to state, "Prevent or minimize direct contact with soil constituents of concern (COCs) at concentrations above background that pose unacceptable risks to potential industrial workers, trespasser/visitor adolescents, construction workers, residents, and ecological receptors." This revision has been made in the Executive Summary and Section 3.2. Furthermore, the text regarding the anticipated land use immediately after the RAOs has been revised to state, "The potential future scenarios for hypothetical residential receptors were evaluated in the Remedial Investigation but are not included in the remedial alternatives because the reasonably anticipated future land use is anticipated to be industrial, an active RCRA unit in the ABG, and the presence of a floodplain and extensive subsurface debris in the OABG." This revision has been made in the Executive Summary, Section 2.6.3, and Section 3.2.

2. The phrase "Partnering team" may be confusing for readers of the document not familiar with the technical meeting structure. Please change this to either "Navy and the regulatory agencies", or "Navy, U.S. EPA and WVDEP" throughout the document.

Navy Response: The term "partnering team" has been revised to "Navy and regulatory agencies" throughout the document.

3. The term "primary COC driver" should be replaced with "primary risk driver" or some other phrase that explains that these contaminants are driving risk at the site. Please make this change throughout the document.

Navy Response: The term "COC driver" has been revised to "risk driver" throughout the document. This also includes revision to Tables 3-2, 3-3, and 4-1.

4. **Long-term management:** Section 4.1 defines long-term management as the following: "... phase is required at sites where contaminants remain in place above levels that

allow for unlimited use. This response action includes a 5-year review cycle to ensure the remedial alternative components continue to meet the site-specific RAOs. It may also include, as needed, more frequent site inspections, repairs or maintenance, or LUC inspections.”

The proposed plan and ROD will need more specific details about the long-term management components that specifically apply to both the ABG and OABG.

Navy Response: Noted. The primary goal of LTMgt is to ensure that protectiveness of human health and the environment is maintained. Furthermore, the LTMgt phase ensures protectiveness by continually optimizing the LTM and LUC tracking as conditions change. The components of LTMgt are long-term monitoring, LUC tracking, operations and maintenance of engineering controls, and five-year reviews/stakeholder involvement. Once the remedy has been selected, the details regarding LTMgt will be developed and documented in the proposed plan and ROD accordingly.

5. **Sustainable Bank Restoration:** EPA appreciates the Navy’s willingness to incorporate sustainable shoreline stabilization/restoration measures as part of the final remedy for OABG. While the information provided is sufficient for the FS, we will not be providing specific comments or approval of the restoration plan as part of the FS. We will coordinate with BTAG members and provide comments as appropriate on the Remedial Design.

Navy Response: Noted. The sustainable shoreline stabilization/restoration measures documented in the FS are part of a conceptual and generalized approach. The concepts and design will be refined within the Remedial Design, and this will be the most opportune time for technical reviews from the BTAG.

6. **Asbestos Containing Material:** The FS discusses the possibility of buried asbestos containing material (ACM) as part of the debris in the OABG. Except for the mention of rocket casings, it is not clear what types of ACM are expected to be present. This is particularly important since the FS discusses screening the soil to separate out the debris. If the ACM is considered friable, additional chemical/ and or action-specific ARARs may be identified for the final remedy.

Navy Response: The debris characterization indicated that asbestos-contaminated material was present in the surface and subsurface. The surface and subsurface material in reference were the rocket casings and potential asbestos-containing construction materials, respectively. The debris characterization test pitting unearthed what may have been some asbestos-containing material in test pit TP-46 at approximately 4 feet bgs and the test pit was terminated. Section 2.4.13 has been revised to include this clarifying information.

Asbestos abatement requirements typically fall under worker safety and are not covered under the ARARs. If any ACM is encountered it will be handled to prevent it from becoming friable. The soil screening bullet of Section 5.2.2 has been revised to include the following, “If any ACM is encountered it will be handled to prevent it from becoming friable.”

With the potential for ACM to exist both in the surface and subsurface in the OABG, the FS assumed that 5 percent of the subsurface debris in the AOCs where construction debris was identified (OABG AOCs 3 and 7) will be deemed hazardous and require special handling and disposal. In addition, disturbance of these areas will also require the support of a certified asbestos abatement contractor to assess and address the presence of asbestos-containing material. The cost estimate provided in Appendix C includes an asbestos abatement subcontractor for work in OABG AOCs 3 and 7.

7. **Ex-Situ Treatment:** The FS narrows ex-situ treatment to thermal treatment without a narrative explanation on why this treatment method was chosen over the other alternatives that were screened. Table 4-1 discusses ZVI and SVE as viable options, but eliminates them from further consideration because thermal is found to be better. Please include a separate narrative outside of Table 4-1 to justify thermal treatment as the only method for ex-situ treatment. This is particularly important because thermal is energy intensive, and thus, has a large environmental footprint.

Navy Response: The following narrative has been added to the *ex situ* thermal desorption bullet in Section 4.2, "A qualitative screening of three *ex situ* remedial technologies was conducted to evaluate treatment of excavated soils contaminated with TCE and to determine the most appropriate *ex situ* technology to carry forward in this feasibility study. The three technologies considered were treatment with zero-valent iron, soil vapor extraction, and thermal treatment. The technologies were qualitatively compared on the basis of relative effectiveness, relative capital costs and relative implementability. Given sufficient time, all of the evaluated technologies would likely be effective. Consequently, the evaluation focused on implementability and relative capital costs.

Because all the proposed *ex situ* technologies include mechanical soil removal and handling after treatment, those costs are expected to be similar for each technology and therefore were not considered in the screening. Similarly, costs for components like engineering design, permitting, procurement and subcontract management, services during implementation and project management were not included. The technical approaches for the options were developed on a conceptual basis. The approach and requirements for the selected remedy will be considered in more detail as part the remedial design process.

As indicated in Table 4-1, *ex situ* thermal treatment is expected to be the most cost effective technology for addressing TCE in the excavated soil. It is also the most easily implemented and requires the least site space to implement. Additionally thermal treatment has the highest potential to achieve site remedial goals, possibly making the treated soil suitable for re-use, thereby lowering overall remediation costs."

Specific Comments

1. Section 2.4.13, OABG Debris Characterization: For clarity, please change the last sentence of this section to more actively state that TCE was detected in all the test pits in the Eastern OABG.

Navy Response: The last sentence of Section 2.4.13 has been revised to state, "TCE was detected in all test pits within the East OABG."

2. Section 2.4.15, Engineering and Cost Analysis and Action Memorandum: The last sentence on Page 2-8 basically repeats a sentence from the previous paragraph.

Navy Response: The last sentence of the first and second paragraphs in Section 2.5.15 have been combined into a 3rd paragraph that states, "The NTCRA is intended to supplement the final remedy for Site 1 soil and augment the existing groundwater treatment system by reducing potential contaminant source mass to prevent future leaching to groundwater."

3. Section 2.4.16, Investigation of Formal Disposal Pit 1: The title of the SAP should be capitalized/italicized as appropriate. Also, the Phase II analysis is mentioned, but the results are not included or referenced. Further, since this section is a discussion of OU 3, it's not clear why it's included in the FS for OU 4.

Navy Response: The fourth sentence has been revised to state, "The results of Phase I are presented in the *Final Sampling and Analysis Plan for Site 1 Former Disposal Pit 1 Investigation* (AGVIQ-CH2M HILL, 2012) and were used as the basis for data collection efforts conducted in Phase II. In addition, the following text was added to reference the results of Phase II, "The results of Phase II are presented in the *Draft Final Technical memorandum for Site 1 - Former Disposal Pit Investigation Results Summary* (AGVIQ-CH2M HILL, 2013b)."

Although this investigation is funded under OU-3, a portion of the investigation involves the subsurface soil beneath the FDPs. In addition, it is expected that the soil and groundwater investigations will merge under the site optimization plan and it would be beneficial to have the investigative history complete.

4. Section 2.5.2, Ecological Risk Assessment: The last sentence states that the former open burn area and former inert burn area had locations where the mean survival rate was less than 25%. These are both broad areas. Please include a figure referencing the locations where the mean survival rate was less than 25%. Also, do the established remediation areas cover these locations?

Navy Response: According to Section 7.3.5.1 in the 2006 *Focused RI for Site 1 Soil*, "Seven samples had mean survival of less than 25 percent (and four of these showed no signs of reproduction) and can be considered the most impacted samples." These samples were Reference 2/AS01-SS55-(0-1), AS01-SS46-(0-1), AS01-SS47-(0-1), AS01-SS48-(0-1), AS01-SS51-(0-1), AS01-SS53-(0-1), and AS01-SS54-(0-1). Refer to attached Figure 3-3 from the *Site 1 Focused RI for Soil* report. With the exception of the reference 2 sample AS01-SS55, all other samples were included in the 95% UCL evaluation data set and thus fall within the area considered for remediation. Of the seven samples, three were located in the vicinity of the Western Drainage Ditch (AS01-SS46, AS01-SS47, and AS01-SS48), three were located in the Former Inert Burn Area now known as the East OABG

(AS01-SS51, AS01-SS53, and AS01-SS54), and one was located to the west of Site 1 outside the site boundary (AS01-SS55). Aside from those located in the vicinity of the Western Drainage Ditch, none of the most impacted samples were located in the Former Open Burn Area now known as the West OABG. AS01-SS46, AS01-SS51, AS01-SS54, and AS01-SS55 are not associated with an AOC. AS01-SS47, AS01-SS48, and AS01-SS53 are associated with AOCs 11, 1, and 7, respectively.

The last paragraph of Section 2.5.2 has been revised to state, "The results of the soil toxicity test were generally consistent with the results from the surface soil screening. The most impacted samples, which had a mean survival of less than 25 percent and little if any signs of reproduction, were associated with three locations in or near the Western Drainage Ditch, three locations within the Former Inert Burn Area, and one reference location collected west of Site 1 outside the site boundary."

5. Section 3.4, Areas of Concern: Please add the word "dioxin" in front of toxicity equivalents.

Navy Response: The word "dioxin" has been added to the text as suggested.

6. Section 4.1, Identification and Screening: The description of excavation mentions off-site excavation. Please correct.

Navy Response: The mention of off-site excavation was in error. The description of excavation has been revised to state, "...For the soil COCs at Site 1, this category includes excavation and both onsite and offsite disposal." This is also consistent with what is presented in Table 4-1.

7. Table 4-1: Under a few technologies, the table discusses an evaluation that was performed for adding an amendment to the FDP excavation. Where can this evaluation be found? Also, the statement that adding an amendment to an open excavation is not viable because contact with water is needed to spur the reaction is questionable. Rain water will eventually infiltrate from the surface through the unsaturated zone into the saturated zone. The SSL model used in this FS predicts how much of the various contaminants will leach from the soil during this process. If the contaminants can be transported this way, there is a possibility that the amendment can be transported with the contaminated water. While I agree it's not a viable way to treat unsaturated soil to some standard, I don't agree it's not viable for reducing migration of contaminants to GW.

Navy Response: An evaluation regarding the potential addition of different amendments to the unsaturated zone after excavation occurred during the technology screening for the FDP EE/CA and soil feasibility study, and were discussed with the Partnering Team during various meetings. It is agreed that infiltration will affect amendments placed in the unsaturated zone and can be transported into the saturated zone. However, the chemical amendments examined require significant amounts of water to start the reaction and these

amendments lose their ability to degrade contaminants shortly after the reaction is started. Therefore, it was determined that this concept is best suited for further examination as part of the site-wide optimization effort and not be included as part of this action. The reference to the amendment evaluation has been removed from the excavation technology rows and clarified in the *in situ* technology rows.

The evaluation regarding addition of amendment to the saturated alluvial zone of the FDPs can be found in Appendix C of the *Draft-Final Site 1 - Former Disposal Pit Investigation Results Summary Technical Memorandum*. Four ISCO reagents were bench-scale tested. The results of the bench-scale tests are summarized in Sections 4.4.1 through 4.4.4 of that report.

8. Table 4-1: Since several of the treatment options are expressed as dollar amount per cubic yard, it would be helpful to include a rough estimate of the cost of excavation in terms of cubic yards.

Navy Response: The general estimated cost for the treatment options included in Table 4-1 are based on industry averages and are not based on site-specific information. The cost of excavation can range substantially depending on the size of the excavation, excavation methods, shoring required, etc. In addition, the cost for transport and disposal can range substantially depending on the distance of the landfill, tipping fees, classification of waste, etc. Typically, cost per cubic yard ranges from \$45-\$250. The quotes received for the NTCRA at FDP 1 and 3 were approximately \$115/CY for non-hazardous soil and \$285/CY for hazardous soil. Table 4-1 has been revised to include the range of \$45-\$300 for the excavation alternative.

9. Table 4-1: Under the excavation alternative, for the on-site disposal of soil, emerging contaminants are mentioned as a potential concern. It is not clear why this issue is unique to just this alternative. Excavation and off-site disposal as well as any of the treatment alternatives also will not address emerging contaminants.

Navy Response: Agreed. The issue regarding emerging contaminants could be included in multiple alternatives given the unpredictability of future science. However, it was especially noteworthy in the reuse of treated soil onsite because an excavation alternative is typically chosen as one to be highly effective, complete, and permanent. The reuse of treated soil onsite may negate some of the benefits of an excavation alternative given the potential to revisit the material in the future with such emerging contaminants. No change has been made to the document.

10. Section 5.1.2, Alternative 2: The long-term management component mentions repairs. Since this alternative does not involve capping or covering the soil, it's not clear what the repairs would include. Long-term management in this area would involve LUC inspections.

Navy Response: The LTMgt bullet in Section 5.1.2 has been revised to, "It is assumed that the LTMgt component for the soils includes LUC inspections. Any vegetation or erosion repairs are expected to be minimal and can be covered under the OABG LTMgt."

11. Section 5.1.2, Alternative 2: The description of AOC 2 notes that the excavation will not extend under the burn pad. If waste is left in place above cleanup levels, there will need to be an institutional control to address this soil should the pad be removed.

Navy Response: Land-use restrictions will be addressed as part of the LUCs within each remedial alternative. The land-use controls and institutional controls will control digging at the site, prevent future residential use of the site, and minimize exposure during industrial use of the site even if the pad is removed.

12. Section 5.2.2, Alternative 2: Sentence 2 of this section mentions incorporating the floodplain. For clarify please add the word "natural" or some other adjective to denote that the plan is to restore it to its pre-disposal activity flood pattern.

Navy Response: The third sentence in Section 5.2.2 has been revised to state, "In addition, a bank restoration approach has been developed incorporating sustainable practices such as incorporating a natural floodplain and reducing resource consumption."

13. Section 5.2.2, Alternative 2: This section references a NOSSA instruction. Please provide the instruction for EPA review.

Navy Response: The reference to NOSSA instruction is referring to the removal of rocket casings and MPPEH, which will be documented under and ESS. The NOSSA instruction applies to munitions response actions and establishes procedures for managing the response under NOSSA. The NOSSA instruction 8020.15D is included with this RTC package for EPA review.

14. Section 5.2.2, Alternative 2: The long-term management for the OABG should include the removal of debris that surfaces. For example, if erosion occurs, buried debris might be unearthed and would need to be removed to protect the river.

Navy Response: The text in the long-term management bullet has been revised to state, "Assumes one yearly inspection to ensure the RD components, primarily for erosion control repairs and removal/handling of any debris that surfaces, continue to meet the site-specific RAOs."

15. Section 5.2.3, Alternative 3: The discussion of ex-situ treatment includes the phrase "Treatment would include that the off-gas." Is this supposed to say that the off-gas would need treatment?

Navy Response: Yes. The text in Section 5.2.3 has been revised to state, "This alternative would also include the treatment of off gas (beyond particulate/dust control) and would likely include a scrubber for the chlorinated compounds."

16. Section 5.4.2.2, Alternative 2: The short-term effectiveness paragraph notes that the increased truck traffic would impact community productivity. It is more important to note that the increased emissions from extra truck traffic are not good for the community rather than decrease in productivity.

Navy Response: The last sentence of the first paragraph in the short-term effectiveness portion of Section 5.4.2.2 has been revised to state, "In addition, transportation of the excavated material to the offsite landfills and transportation of clean fill from an offsite source may provide temporary traffic disturbances that may decrease the productivity of the facility and would increase the risk of traffic accidents and emissions in the local community." Similar changes were made to Sections 5.4.1.2, 5.4.2.3, 5.5.1.5, and 5.5.2.5.

17. Section 5.4.2.2, Alternative 2: The implementability paragraph mentions long-term management is already being addressed under the current OU-3 LTM program. Since long-term management in this alternative would include soil-specific components, it is not clear what is meant by that explanation. Please remove the reference to the OU 3 LTMgt.

Navy Response: The following text has been deleted from the technical feasibility bullet in Section 5.4.2.2, "(being addressed under the current groundwater LTM under OU-3)." The text now states, "Alternative 2 includes removal of surface debris, excavation, and offsite disposal, all of which are technically feasible because the technologies use standard practices. There are no issues concerning the technical feasibility of implementing LUCs and LTMgt."

18. Section 5.4.2.2, Alternative 3: The short-term effectiveness paragraph mentioned Alternative 2 in the first sentence. Please correct to reflect that this section is discussing alternative 3.

Navy Response: The reference to Alternative 2 has been revised to Alternative 3 in the short-term effectiveness paragraph in Section 5.4.2.3.

19. Section 5.5.2.2, Compliance with ARARs: The last two sentences are not relevant for the compliance with ARARs criterion.

Navy Response: The following text has been deleted from Section 5.5.2.2, "Both alternatives 2 and 3 require that LUCs are implemented to limit the site to industrial use and ensuring appropriate industrial land use is maintained to minimize the potential for human exposure to contamination. In addition, both alternatives require the implementation of an LTMgt plan to ensure the remedy components are maintained and continue to meet the RAOs."

20. Table 5-1: This table is difficult to read since the footnotes are very small and important to understanding the contents. A narrative explanation may be better.

Navy Response: Table 5-1 has been reformatted and is now on an 11x17 size paper.

21. Table 6-2: Since Alternative 2 does not include treatment, it poorly satisfies the criteria that requires treatment. Please adjust the table accordingly.

Navy Response: The reduction of toxicity, mobility or volume through treatment for Alternative 2 has been revised to poorly satisfies criterion as suggested. This is also consistent with the text in Section 5.

Comments submitted by Catherine Guynn, WVDEP RPM

Ms. Catherin Guynn does not have any comments on this document.