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LETTER AND RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
COMMENTS TO DRAFT FEASIBILITY STUDY REPORT SITE 17 FORMER BUILDING 32
GOULD ISLAND NS NEWPORT RI
1/13/2012
RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT



RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

235 Promenade Street, Providence, RI 02908-5767

TDD 401-222-4462

13 January 2012

Ms. Maritza Montegross
NAVFAC MIDLANT (Code OPTE3)
Environmental Restoration
Building Z-144, Room 109
9742 Maryland Avenue
Norfolk, VA 23511-3095

Re: Draft Feasibility Study
Site 17, Former Building 32 - Gould Island, NETC

Dear Ms. Montegross,

The Office of Waste Management at the Rhode Island Department of Environmental Management has conducted a review of the *Draft Feasibility Study*, dated September 2011 for Former Building 32 – Gould Island (Site 17), Naval Station Newport, located in Newport, RI. As a result of this review, this Office has generated the attached comments on the *Draft Feasibility Study*.

Please be advised that any conclusions presented in this document or areas identified for remediation will have no bearing on areas addressed under the State Program.

If you have any questions in regards to this letter, please contact me at (401) 222-2797, extension 7020 or by e-mail at pamela.crump@dem.ri.gov.

Sincerely,

Pamela E. Crump, Sanitary Engineer
Office of Waste Management

cc: Matthew DeStefano, DEM OWM
Gary Jablonski, DEM OWM
Richard Gottlieb, DEM OWM
Deb Moore, NSN
Kymberlee Keckler, EPA Region I
Steve Parker, Tetra Tech

**RIDEM Comments on the
Draft Feasibility Study for
Site 17 – Former Building 32, Gould Island
Naval Station Newport, Newport, RI**

1. Page ES-1, Executive Summary; 1st paragraph, 2nd sentence.

Please replace “NUSC Disposal Area” with “Former Building 32 – Gould Island”.

2. Page ES-3, Executive Summary; 1st bullet.

“Prevent human health (recreational) and ecological exposure...”

Please be advised that under RIDEM’S Remediation Regulations, PRGs calculated for recreational exposure must comply with residential risk standards. Please revise this FS as necessary.

3. Page ES-3, Executive Summary; 4th paragraph.

“Based on the distribution of these COCs, 144 cubic yards of soil is estimated to be present exceeding the PRGs.”

This volume of soil only includes the “soil-debris hotspots”, which are not the only areas where concentrations were found to exceed regulatory criteria. Please revise this statement to include all locations on this Site exceeding RIDEM’s Direct Exposure and Leachability Criteria.

4. Page ES-3, Executive Summary; 4th paragraph.

“...7,200 cubic yards of sediment is estimated to be present in the Stillwater area that exceeds PRGs.”

Please include the volume of contaminated sediment along the Northeast Shoreline in this paragraph of this FS. Also, please refer to RIDEM’s comment #34 listed below.

5. Page 1-5, Section 1.3.2, Removal Actions Conducted; whole section.

Please describe in this section the removals in greater detail. Please include the standards employed and the results of any confirmatory samples. Also please describe in this section that at the PCB removal action at Transformer 54, PCBs were found in the groundwater and as part of that action, part of the area was backfilled with stone and a PVC pipe was installed to facilitate both monitoring and remedial actions for the PCBs in the groundwater and potential in soils upgradient of the removal action.

6. Page 1-15, Section 1.8.1, Soil; whole section.

This FS only focuses on the PAHs and metals found within the vaults and sumps in the foundation of former Building 32, which are considered “soil-debris hotspots” to be addressed in this FS. This led to the elimination of soil as a media of concern. However, there remain several areas of concern on this Site with concentrations exceeding RIDEM’s Direct Exposure and Leachability Criteria, which will need to be addressed in this FS. Therefore, please review the soil data obtained during both the Phase 1 and Phase 2 RIs and other studies and include in this section a discussion of other locations where exceedances of regulatory criteria occur. Please include soil as a media of concern in this FS and develop remedial alternatives to address these exceedances. Please submit these revised sections in the response to comments (the revised sections will be considered as draft), or alternatively submit a separate FS for site soil.

7. Page 1-15, Section 1.8.1, Soil; 3rd paragraph.

“...these soils are not expected to impact the adjacent marine sediments in the Stillwater Basin: the adjacent sediments already contain PCBs and PAHs above the concentrations measured in the soil.”

The surface/subsurface soils near the former riggers storage house (Former Building 41) that are above regulatory criteria for PAHs and/or PCBs will need to be addressed in this FS. Remedial alternatives for these areas should be designed to prevent recontamination of the sediments adjacent to this area following any remedial action. Please update this FS accordingly.

8. Page 1-15, Section 1.8.2, Groundwater; whole section.

“Overall, groundwater contaminant concentrations do not exceed the federal maximum contaminant levels (MCLs), with the exception of two contaminants, pentachlorophenol and tetrachloroethene, both found in the shallow overburden groundwater at low concentrations.”

Please include a statement in this paragraph comparing the groundwater contaminant concentrations with RIDEM’s groundwater criteria for all areas of this Site. If there are exceedances of any regulatory criteria, then groundwater should not be eliminated as a media of concern for this Site. Please submit these revised sections in the response to comments (the revised sections will be considered as draft), or alternatively submit a separate FS for site groundwater.

9. Page 1-15, Section 1.8.3, Sediment; whole section.

“High concentrations of PCBs and PAHs were noted in the sediment in the Stillwater Basin, particularly adjacent to the former rigging platform.”

Please include a section discussing other contaminants found at high concentrations in sediment, such as lead found along the Northeast Shoreline near the outfall pipe.

10. Page 1-17, Section 1.9, Fate and Transport; 2nd paragraph.

"The first is the storm drainage system and "trench drain" that gathered groundwater and runoff from the roadway and storage areas (acid storage shed and dust collection building) outside the southwestern corner of Building 32, and discharged that water to the shoreline near the southeast corner of Building 32 at station SD304F."

Please note in this FS that lead was found at a concentration of 21,200 ppm at SD304F in the Phase I RI, and at concentrations exceeding the ERL for lead at several locations (SD517, SD304, SD438 & SD531) within 60-170 ft from SD304F.

11. Page 1-19, Section 1.10.1, Non-carcinogenic Risks; 2nd paragraph.

"There are no non-carcinogenic risks present at the site with regard to surface or subsurface soil."

Please remove this statement from this FS. From p. 7-17 of the Draft Final Phase 2 RI/BERA, "...there is a potential for human health risk at Site 17 from: PCBs, PAHs, arsenic, cadmium and chromium in limited soil areas that pose risk to future industrial and construction workers." In addition, any exceedance of RIDEM's Residential Direct Exposure Criteria is considered a risk since these values are risk-based numbers.

12. Page 1-20, Section 1.10.2, Carcinogenic Risks; 2nd paragraph.

"There are no cancer risks associated with the receptors of concern in the surface or subsurface soils at the site."

Please remove this statement from this FS. From p. 7-17 of the Draft Final Phase 2 RI/BERA, "...there is a potential for human health risk at Site 17 from: PCBs, PAHs, arsenic, cadmium and chromium in limited soil areas that pose risk to future industrial and construction workers." In addition, any exceedance of RIDEM's Residential Direct Exposure Criteria is considered a risk since these values are risk-based numbers.

13. Page 1-21, Section 1.10.4, Human Health Risk Assessment Contaminants of Concern; whole section.

According to the "Recommendations" section of the Phase 2 RI (page 7-17), soil and sediment should be listed in this section of the FS as media of concern with the following COCs identified for soil: PCBs, PAHs, arsenic, cadmium and chromium; and chromium listed as a COC for sediment. In addition, please add PCBs as a COC for groundwater. Finally, according to the Phase 1 RI, gamma-BHC and heptachlor epoxide should be added as COCs for Trench Air.

As stated in the Navy's response to RIDEM's comment #56 for the Phase II RI/BERA, "it will be stated that direct exposure criteria established by RIDEM Remediation regulations are considered ARARs, and as such, COCs that exceed ARARs will be identified in Section 2 of the FS report for this site." Therefore, please update this list of COCs to include any contaminants, including TPH, which exceeded RIDEM's criteria for soil or groundwater at this Site during the Phase I and/or Phase II/BERA, and revise this FS accordingly.

14. Page 1-22, Section 1.10.5, Human Health Risk Summary; 2nd paragraph.

"...there are currently no groundwater drinking water supplies on the island, and no such future use is planned for groundwater at the site; therefore, there is no current or anticipated exposure via a potable water source."

Please be advised that there are onsite and offsite drinking water wells which were previously used as a source of potable water. Further, groundwater could potentially be used in the future as a potable water source. This Site could possibly be converted into a residential or recreational area; therefore, this FS must evaluate residential risk from groundwater and present remedial alternatives to address this risk. As stated in the Phase 1 RI (p. E-6):

"Tetrachloroethene and Pentachlorophenol are present in groundwater at concentrations exceeding the federal MCLs. While there is no drinking water exposure route present or expected at this location, the site is within a GA aquifer so these contaminants will need to be taken into consideration in a Feasibility Study for the site."

Regarding vapor issues, if the groundwater has sufficient contamination to pose a current vapor risk to construction workers, then future receptors could be at risk from vapor intrusion. The risk from vapor intrusion should be determined using values established by the RI Department of Health and RIDEM Office of Air Resources. Please remove the above language from this FS and modify this section accordingly to include groundwater and vapor intrusion as potential risks.

15. Page 1-25, Section 1.11.4, Ecological COCs; whole section.

Based on the multiple conference calls held to discuss the Phase 2 RI/BERA, RIDEM was under the impression that the Navy had agreed to evaluate individual PAHs rather than total PAHs for sediment in the FS. Please revise this FS to include the individual PAHs as ecological COCs, and develop PRGs for these contaminants.

16. Page 1-25, Section 1.11.4, Ecological COCs; whole section.

"While the metals noted above are each identified as COCs, they do not, individually, need to have PRGs calculated for them. Only taken collectively do they pose a risk as determined by the ERM-Q. Therefore the PRG should be calculated for the ERM-Q."

Please clarify the above statement. In addition, please be advised that PRGs can be developed based upon the ERL-Q or 0.1, 0.5 or 0.6 of an ERM-Q. Please modify this FS to note the possible ranges of PRGs.

17. Page 2-3, Section 2.1.4, Identification of Applicable or Relevant and Appropriate Requirements; whole section.

Please ensure that all of the State ARARs listed on the attached table are included in the list of ARARs in Tables 2-1, 2-2 and 2-3 of this Feasibility Study.

18. Page 2-4, Section 2.1.4.1, Soil; 2nd paragraph.

“...soil as measured in the risk assessment is no longer considered a medium of concern at Site 17 and no COCs are identified.”

Please revise this FS to include soil as a medium of concern, based on the recommendations determined in the Phase 2 RI/BERA and to address exceedances of ARARs, including RIDEM's Remediation Regulations.

19. Page 2-4, Section 2.1.4.1; Groundwater; whole section.

“...water with the sump will be addressed with the soil-debris described above, and groundwater is not considered a media of concern in this FS.”

Please revise this FS to include groundwater as a medium of concern, based on the recommendations determined in the Phase 2 RI/BERA and to address exceedances of MCLs and ARARs, including RIDEM's Remediation Regulations, unless it can be proven that the groundwater on this Site is non-potable.

20. Page 2-5, Section 2.2, Development of Preliminary Remediation Goals; 2nd paragraph.

“PRGs are established for the COCs identified in Section 1.10 and Table 1-2 (site-specific constituents that pose unacceptable risks to human health) and Section 1.11 and Table 1-3 (site-specific constituents that pose unacceptable risks to ecological receptors.)

Please update this section accordingly based on the revisions necessary as stated in the previous comments.

21. Page 2-6, Section 2.2, Development of Preliminary Remediation Goals; 3rd paragraph.

“For Site 17, PRGs were developed for identified COCs for the existing and planned site use (industrial/commercial).”

Please update this FS to include residential PRGs as this property could potentially be used for future residential and/or recreational use.

22. Page 2-6, Section 2.2.1, Identification of Media of Concern; 1st bullet/soil.

"The COCs for soil were not retained because risks associated with site soil did not exceed a cancer risk of 1E-5 or an HI of 1."

Please be advised that RIDEM's cancer risk criterion is 1E-6, as well as 1E-5 for cumulative risk. Any contaminants exceeding RIDEM's risk thresholds must be retained in this FS. Please update this FS to include soil as a media of concern and include as COCs any contaminants exceeding RIDEM's Direct Exposure and Leachability Criteria.

23. Page 2-6, Section 2.2.1, Identification of Media of Concern; 2nd bullet/groundwater.

Please update this FS to include groundwater as a media of concern and include as COCs any contaminants exceeding RIDEM's GA Groundwater Standards or any federal standards.

24. Page 2-8, Section 2.2.2, Derivation of Preliminary Remediation Goals; 1st paragraph.

"Because the site is not currently used for residential purposes, risk was not calculated for residential receptors at the site. As such, and because there are no plans for residential use of the property in the future, PRGs for residential exposures have not been calculated."

Please update this FS to include human health PRGs for unrestricted residential exposure levels.

25. Page 2-8, Section 2.2.2, Human Health PRGs; whole section.

Please ensure that all areas which exceed RIDEM's residential direct exposure criteria and leachability standards, including TPH, are identified and remedial actions are proposed for these areas.

26. Page 2-8, Section 2.2.2, Human Health PRGs; 2nd paragraph.

"...a cumulative cancer risk of 1×10^{-5} was used as the threshold for calculating risk-based PRGs..."

Please ensure that PRG calculations also included RIDEM's more stringent risk criteria of 1×10^{-6} for individual contaminants. Please update this FS accordingly.

27. Page 2-9, Section 2.2.2, Ecological PRGs; whole section.

As noted in previous comments, RIDEM has concerns with respect to the sediment PRG process. These concerns include the interpretation of the toxicity results, the dose response curves in establishing both the NOEC/ LOEC, lack of consideration for multiple lines of evidence, interpretation of tissue residual values, etc. Further, RIDEM requested that the Navy evaluate the ERL-Q as was done at other Naval Station Newport sites in the past. In recognition of these concerns, RIDEM does not accept the current ecological PRGs. In light of the problems associated with both the ecological risk assessment and PRG development

process, RIDEM is willing to discuss alternative avenues for achieving acceptable PRGs, such as employing values equal to 0.5 of the ERM-Q.

28. Page 2-11, Section 2.3, Development of Remedial Action Objectives; 1st bullet.

“The HHRA identified risks related to contact with sediment by the recreational user, from ingestion of shellfish in contact with sediment by the recreational and subsistence fisherman, and from contact with water trapped in sumps and subsequent inhalation of trench air (volatized from this water in excavations) by construction workers during on-shore excavation activities of the sumps.”

Please include in the statement above in this FS all risks identified by the HHRA, including contact with soil and exposure to shallow groundwater by future industrial and construction workers.

29. Page 2-11, Section 2.3.1, Remedial Action Objectives; bullets.

Please develop Remedial Action Objectives for groundwater and for future residential use at this Site, including the prevention of migration of contaminants from soil to sediments.

30. Page 2-12, Section 2.4, Estimation of Areas and Volumes; 2nd sentence.

“The identified risks to construction workers from exposure to “soil-debris” and associated water and trench air are understood to be limited to hot-spot soil-debris that remain in place within various concrete sumps in the former Building 32 foundation...”

The concrete sumps within the Building 32 foundation are not the only areas where concentrations were found to exceed criteria. Please remove this statement and revise this FS to address all areas exceeding regulatory criteria.

31. Page 2-12, Section 2.4, Soil/Sump Materials; 1st sentence.

“Although no risks were identified for site soils...”

Please remove this statement from this FS, as there were risks identified from site soils in the Phase 1 RI and Phase 2 RI/BERA. As stated on p. 7-17 in the Draft Final Phase 2 RI/BERA, *“...there is a potential for human health risk at Site 17 from PCBs, PAHs, arsenic, cadmium and chromium in limited soil areas that pose risk to future industrial and construction workers”*.

32. Page 2-12, Section 2.4, Soil/Sump Materials; whole section.

Please revise this entire section to include an estimation of the total area and volume of soil quantified for remedial action, including all areas exceeding RIDEM’s Residential Direct Exposure and Leachability Criteria, and revise this FS accordingly.

33. Page 2-12, Section 2.4, Estimation of Areas and Volumes; whole section.

Please revise this section to include an estimation of the total volume of contaminated groundwater exceeding federal standards and/or RIDEM's GA Groundwater Standards.

34. Page 2-13, Section 2.4, Sediment; 2nd paragraph.

"...no action other than monitoring is proposed from the Northeast Shoreline of Gould Island."

Although an eel grass bed is located in the vicinity of the contaminated sediment along the Northeast Shoreline, this area cannot be excluded from requiring a remedial action. Please include an estimation of the area and volume of contaminated sediment in this area which requires a remedial action, and develop remedial alternatives in this FS to address all locations of PRG exceedances.

35. Page 3-1, Section 3.0, Identification and Screening of Technologies; whole section.

"This section identifies, discusses, and screens potential technologies and process options for the assembly of remedial alternatives for the Site 17 media of concern (soil and debris, and sediment)."

Please revise this section to include technologies and process options to address all contaminated soil (not just the soil-debris hotspots) and groundwater at this Site.

36. Page 3-13, Section 3.4.2, Limited Action, Implementability; last sentence.

"...at Site 17 sources for sediment contamination no longer exist."

Please remove this statement from this FS. Sources of contamination in soil and groundwater still remain onsite. Please include in this FS an evaluation of all contaminants remaining onsite which exceed RIDEM's Residential Direct Exposure, Leachability, and Groundwater Criteria to determine potential migration from groundwater, leaching, erosion, etc. to the sediment.

37. Page 3-13, Section 3.4.2, Limited Action, Conclusion; 1st sentence.

"The sources for contaminated sediment in the Stillwater Basin area have been removed, and no longer exist."

As stated on p. 1-15 of this FS, soils impacted with PAHs and PCBs remain onshore adjacent to the contaminated sediment in the Stillwater Basin, which could potentially migrate to the adjacent sediment. Therefore, please remove this statement from this FS.

38. Page 3-14, Section 3.4.3, Containment; whole section.

The installation of a one-foot cover is questionable as an effective cover system (i.e., it would not prevent burrowing marine life from exposure to the contaminated sediment). Further, this cover system would be difficult to maintain and would require frequent monitoring and inspection. Please reconsider whether this cover system should be carried forward as a remedial alternative in this FS.

39. Page 3-16, Section 3.4.4, Removal; whole section.

“Approximately 7,186 cy of sediment are estimated for removal.”

Please update this section of this FS to include an evaluation of the removal of contaminated sediment along the Northeast Shoreline as well as the Stillwater Basin.

40. Page 3-22, Section 3.4.5, Disposal; whole section.

Please update this section of this FS to include an evaluation of the disposal of contaminated sediment along the Northeast Shoreline as well as the Stillwater Basin.

41. Page 4-1, Section 4.0, Description and Analysis of On-Shore Alternatives; whole section.

Please revise this entire section to include remedial alternatives for soil and groundwater at this Site for all locations exceeding regulatory criteria.

42. Page 4-2, Section 4.1.3, Alternative OS3 – Removal and Offsite Disposal of Soil and Debris, LUCs; whole section.

Please include a discussion of how the contaminated water within the sumps and trenches will be collected, treated, disposed, etc. in this section of this FS.

43. Page 4-5, Section 4.2.1, Alternative OS1: No Action, Cost; table.

Please include a 5-year review cost for OS1 of \$27,500 every 5 years.

44. Page 4-7, Section 4.2.3, Alternative OS3, Long-Term Effectiveness and Permanence; 2nd paragraph.

“Five-year reviews would not be required since COC concentrations in excess of the PRGs and HHRA soil maximums would be removed from the Site and no excess risks would remain for the identified media/receptors of concern.”

This statement is incorrect since exceedances of residential criteria would remain onsite. Therefore, please remove this sentence and state that five-year reviews would be required for this alternative.

45. Page 4-8, Section 4.2.3, Alternative OS3, Cost; table.

As stated in the following comments for Appendix D, RIDEM has a number of concerns with the cost estimates for Alternative OS3 and therefore does not accept the estimated costs presented in this table. Please review these estimates and revise this table as necessary.

46. Page 4-9, Section 4.3, Compliance with ARARs.

“Only alternative OS3 meets chemical-specific, location-specific, and action-specific ARARs and is therefore the only alternative that could be implemented in accordance with regulations.”

This FS is incomplete with only one onshore alternative presented that would meet all ARARs. Therefore, please develop another alternative in this section of this FS.

47. Page 4-10, Section 4.3, Cost; table.

Please include a 5-year review cost for Alternative 1. Please adjust the O&M/long-term monitoring costs for either OS2 or OS3, since the monitoring costs for OS2 would be expected to be higher than OS3, due to the amount of contamination that would remain within the sumps and trenches which could potentially migrate to other locations onsite. Also, please refer to RIDEM’s comment #45 listed above.

48. Page 5-1, Section 5.0, Description and Analysis of Offshore Alternatives for Sediment; whole section.

Please revise this entire section to include remedial alternatives for the contaminated sediment located along the Northeast Shoreline and eelgrass areas.

49. Page 5-3, Section 5.1.3, Alternative SD3, Subaqueous Cover; whole section.

Please be advised that the upper layer of the cap must support the current conditions and be designed to promote colonization in the area. Please state in this section if the proposed cap will meet these requirements.

50. Page 5-6, Section 5.2.1, SD1, Cost; table.

Please include a 5-year review cost for SD1 of \$23,500 every 5 years.

51. Page 5-7, Section 5.2.2, Compliance with ARARs.

This alternative does not meet ARARs unless it can be shown that MNR is taking place in the areas of concern at a rate in which cleanup goals will be met within a reasonable period of time. Please revise this section accordingly.

52. Page 5-9, Section 5.2.3, Alternative SD3, Compliance with ARARs.

The installation of a one-foot cover is questionable as an effective cover system (i.e., it would not prevent burrowing marine life from exposure to the contaminated sediment). Also, it is unknown whether MNR is taking place along the Northeast Shoreline within a reasonable period of time. Therefore, this alternative does not meet all ARARs. Please revise this section accordingly.

53. Page 5-9, Section 5.2.3, Alternative SD3, Long-Term Effectiveness and Permanence.

“Although the results of the sediment transport model did not ascertain that deposition is occurring, it increased(?) that the sediments are stable and there is little potential for erosion and exposure of buried contaminated sediments.”

As noted in previous correspondence, RIDEM has questioned statements concerning the deposit of sediments in the Stillwater Area. Further, as noted in this FS, the portion of Gould Island adjacent to this area which was filled in by the military to construct useable land is eroding away. As this area erodes away, the characteristics of the Stillwater Area will also change which will increase migration of contaminants out of the area. Therefore, please develop another remedial alternative for sediment which would comply with all ARARs.

54. Page 5-13, Section 5.2.4, Alternative SD4; Cost; table.

The cost estimate shown here for dredging at this Site is substantially higher than the cost for dredging at Site 01 – McAllister Point Landfill, which was a larger area/volume. Please review and revise the cost estimates for this alternative and include more appropriate cost estimates in this table of this FS. Also, refer to RIDEM’s comments on Appendix E listed below.

55. Table 1-1, Third and Fourth Tier Conceptual Site Model – Contaminants in Surface Soil.

Please correct the name of this table as it addresses all media, not just surface soil. Please revise this entire table as necessary based on the previous comments, and include all risks to residential/recreational receptors.

56. Table 1-2, Fourth Tier Conceptual Site Model – Human Health Risks.

Please revise this entire table as necessary based on the previous comments, and include all risks to residential/recreational receptors. In the footnote which states *“Yellow shading indicates exceedance of RIDEM acceptable risk (Cancer risk $\geq 1E-5$)”*, please revise to read, *“Yellow shading indicates exceedance of RIDEM acceptable risk (Cancer risk $\geq 1E-6$ for individual contaminants and $\geq 1E-5$ for cumulative risk),”* and adjust the yellow shading on this table as necessary.

57. Tables 2-1, 2-2 and 2-3, Summary of ARARs and TBCs.

Please ensure that all of the State ARARs listed on the attached table are included in the list of ARARs in Tables 2-1, 2-2 and 2-3 of this Feasibility Study.

58. Table 2-4, Summary of Human Health Risk-Based PRGs.

Please revise this entire table as necessary based on the previous comments, including the development of PRGs for all contaminants in surface/subsurface soil and groundwater exceeding RIDEM's Residential Direct Exposure and Leachability Criteria, as these are risk-based values. All of the PRGs selected in this FS as based on a cancer risk of 1×10^{-5} , which is not acceptable by RIDEM. RIDEM's cancer risk threshold for individual contaminants is 1×10^{-6} . Please select PRGs to meet RIDEM's more stringent risk criteria, and edit bullet 3 to state this.

59. Table 2-6, Summary of Ecological PRGs, NOECs and LOECs for Sediment Invertebrates.

Please revise this table to include PRGs for all individual PAHs. Also, as discussed in comment #27, RIDEM does not accept the current ecological PRGs, and proposes to discuss alternative avenues for achieving acceptable PRGs, such as employing values equal to 0.5 of the ERM-Q.

60. Table 2-8, Selection of Final PRGs.

Please revise this table based on comments 58 and 59 above.

61. Figures.

To ensure compliance with ARARs, please include the following figures in this FS, and in the response to comments:

- a figure depicting all exceedances of RIDEM's Residential Direct Exposure criteria for surface soil, including TPH;
- a figure depicting all exceedances of RIDEM's Residential Direct Exposure criteria for subsurface soil, including TPH;
- a figure depicting all exceedances of RIDEM's Leachability criteria, including TPH;
- a figure depicting all exceedances of RIDEM's GA Groundwater criteria; and,
- a figure highlighting all onshore areas of concern based on the above exceedances.

62. Appendix D, Alternative OS3: Excavation, Off-Site Disposal; Lines 1.1, 1.2.

Please explain why 500 man hours have been budgeted for the creation of plans and obtaining permits for the removal of 144 yards of soil from a series of concrete sumps. Please revise this estimate to be inline with the proposed task.

63. Appendix D, Alternative OS3: Excavation, Off-Site Disposal; Line 1.3.

The plan includes 200 man hours for the creation of a groundwater monitoring plan. The proposal entails removal of soils from sumps; as such, groundwater monitoring will not be required. This appears to be a standardized cost estimate and is not reflective of the proposed removal action. Please remove this cost element and adjust the proposal accordingly.

64. Appendix D, Alternative OS3: Excavation, Off-Site Disposal; Lines 2.1, 3.1, 3.2, 3.3.

These line items entail the use of an onsite trailer, onsite storage shed, etc. It is not clear why a removal action of only 144 yards of soil requires all of these support provisions, especially in light of the fact that there is a building at the end of the firing pier which can be used for storage or as an temporary office (if these items were needed). Please remove this provision from the cost estimate.

65. Appendix D, Alternative OS3: Excavation, Off-Site Disposal; Line 3.7.

This is a line item of \$10,525 dollars for underground utility clearance. The proposed action entails the removal of soils which were placed in the sumps which had previously undergone removal of any material; or for the sumps which contained machinery, removal of machinery which was in the sumps. As such, any utilities would have been addressed during this action. As such, it is not clear why there is a \$10,525 fee for underground utilities. This appears to be a standardized cost estimate and is not reflective of site conditions. Please modify this estimate to reflect known conditions at this Site.

66. Appendix D, Alternative OS3: Excavation, Off-Site Disposal; Lines 3.8 & 3.9.

Please provide the vendor documentation that the use of a barge and daily boat transport will cost approximately \$5,400 per day.

67. Appendix D, Alternative OS3: Excavation, Off-Site Disposal; Lines 4.1-4.6.

Please explain if the decon cost is for decon of the sumps or decon of the trucks and equipment on the island on a daily basis. Please be advised that decon of trucks can be minimized by limiting the areas where the trucks are allowed so that they do not drive over contaminated areas.

68. Appendix D, Alternative OS3: Excavation, Off-Site Disposal; Line 5.3.

Please explain why it will take 3 laborers 6 days for site preparation when the site is a concrete pad with small amounts of vegetation in the sumps.

69. Appendix D, Alternative OS3: Excavation, Off-Site Disposal; Line 6.3.

Please explain why it will take 6 laborers 12 days to remove 144 cubic yards of soil from concrete sumps. This translates into 6 laborers removing approximately 12 cubic yards of soil (half of a truck load) per day. Please employ a higher production rate (assume 2 days) and adjust this cost line accordingly.

70. Appendix D, Alternative OS3: Excavation, Off-Site Disposal; Lines 7.1 & 7.2.

Please explain why it will take 177 cubic yards of backfill and soil to backfill 144 cubic yards of soil removed from the sumps.

71. Appendix D, Alternative OS3: Excavation, Off-Site Disposal; Line 7.9.

Please explain why it will take 3 laborers 3 days to backfill the sumps with 144 yards of soil. This is a low production rate. Please revise and adjust the cost estimate.

72. Appendix D, Alternative OS3: Excavation, Off-Site Disposal; Lines 9.1 & 9.2.

Please explain why it will take 350 hours to complete a contractor close out report and a remedial action report for a removal action of 144 cubic yards of material from concrete sumps.

73. Appendix E, Alternative SD1: No Action.

Please include the cost of 5-year reviews for SD1.

74. Appendix E, Alternative SD2: LUCs and Monitoring; spreadsheet (p. 2 of 3).

Please review and revise the cost for sediment sampling, analysis and report. Alternative SD2 does not include a cover installed in the Stillwater Basin as stated here. Please include, at a minimum, additional sampling for all locations exceeding PRGs in sediment.

75. Appendix E, Alternative SD3: Subaqueous Cover (Cap), Monitoring and LUCs; calculation sheet (p. 4 of 9).

This sheet states "*line Stillwater Basin Area with geotextile: 48,505 sf*". Alternative SD3 does not include geotextile but does include a 6-inch granular layer (coarse sands and gravel) which is not included on this sheet. Please correct this page in this FS.

76. Appendix E, Alternative SD3: Subaqueous Cover (Cap), Monitoring and LUCs; calculation sheet (p. 5 of 9).

The annual cost estimate only includes 3 sediment samples plus 1 QC and 3 shellfish samples plus 1 QC. Annual monitoring will be required for both the Stillwater Basin and Northeast

Shoreline areas. Please revise the annual cost for Alternative SD3 to include a much more robust sampling regimen.

77. Appendix E, Alternative SD3: Subaqueous Cover (Cap), Monitoring and LUCs; calculation sheet (p. 5 of 9).

The annual cost for Alternative SD3 must include inspection and maintenance of the pier and bulkhead at the northern part of the island to ensure that erosion is not occurring. If so, the water current in the area could change and affect the stability of the cap. Please include these additional inspection and maintenance costs on this sheet in this FS.

78. Appendix E, Alternative SD4: Sediment Removal and Off-Site Disposal (Dredging); capital cost detail sheet.

RIDEM strongly recommends employing the evaporation procedure used during dredging of McAllister Point Landfill (Site 01) which dramatically reduced the amount of water that needed to be processed thereby reducing costs. Please revise this sheet accordingly.

79. Appendix E, Alternative SD4: Sediment Removal and Off-Site Disposal (Dredging); capital cost detail sheet.

Please include in this cost detail sheet the use of a long-reach excavator for all areas of sediment that could be dredged using this type of excavator where a barge would not be needed.

RIDEM ARAR Table

Media	Requirements	Requirements Synopsis	Specific Applicability	Legal Citation
Air Quality	Air Pollution Control Regulations, RI Dept. of Health, Division of Air Pollution Control, effective 8/2/67, amended 7/19/07 - regulation No. 1 - Visible Emissions.	No contaminant emissions will be allowed for periods of more than three minutes in any one hour which is greater or equal to 20% opacity.	Action Specific	RIGL Section 23-23, as amended 1992
Air Quality	Rhode Island Air Pollution Control Regulation 5 – Fugitive Dust, RIDEM, 7/19/07	Reflects that reasonable precautions be taken to prevent particulate matter from becoming airborne.	Action Specific	RIGL Section 23-23, as amended 1992
Air Quality	Rhode Island Air Pollution Control Regulation 7 – Emissions Detrimental to Persons or Property, RIDEM, 7/19/07	Prohibits emissions of contaminants which may be injurious to human, plant, or animal life or cause damage to property or which unreasonably interferes with the enjoyment of life and property.	Action and Chemical Specific	RIGL Section 23-23, as amended 1992
Air Quality	Rhode Island Air Pollution Control Regulation 15 – Control of Organic Solvent Emissions, RIDEM, 7/19/07	Limits the amount of organic solvents emitted to the atmosphere	Action and Chemical Specific	RIGL Section 23-23, as amended 1992
Air Quality	Rhode Island Air Toxics Guidelines, RIDEM, 4/04.	Companion to Air Pollution Control Regulation No. 22	Action and Chemical Specific	RIGL Section 23-23, as amended 1992
Air Quality	Rhode Island Guidelines for Air Quality Modeling for Air Toxics Substances, RIDEM, 9/04	Companion to Air Pollution Control Regulations Nos. 9 and 22	Action and Chemical Specific	RIGL Section 23-23, as amended 1992
Air Quality	Rhode Island Air Pollution Control Regulation 17 - Odors. 7/19/07	Prohibits the release of objectionable odors across property lines.	Action and Location Specific	RIGL Section 23-23, as amended 1992
Air Quality	Rhode Island Air Pollution Control Regulation 22 – Air Toxics, RIDEM, 7/19/07	This regulation prohibits the emissions of specified contaminants at rates which would result in ground level concentrations greater than acceptable ambient levels in the regulation.	Action and Chemical Specific	RIGL Section 23-23, as amended 1992
Drinking Water	Public Drinking Water Laws, Protection of Public Drinking Water	Applicable to remedial alternatives that affect public drinking water supplies.	Chemical and Location Specific	RIGL 46-14

Media	Requirements	Requirements Synopsis	Specific Applicability	Legal Citation
Groundwater	Rules and Regulations for Groundwater Quality, RIDEM, 5/15/06	<p>Incorporated RI Groundwater Standards. Intends to protect and restore quality of groundwater resources for use as drinking water and other beneficial uses, to assure protect of public health and welfare and the environment</p> <p>These rules set numerical criteria for contaminants in certain aquifers classified as potential drinking water sources (such as the aquifer at the Site), and require that such groundwater be maintained at a quality that does not have any reasonable potential to cause a violation of surface water quality standards.</p>	Action, Chemical and Location Specific	RIGL 46-12, 46-13.1, 23-18.9, 23-19.1, 42-17.6, and 42-17.1, 1956 as amended
Groundwater	Rules and Regulations for Groundwater Quality, RIDEM, 5/15/06	These rules prescribe design requirements for construction of monitoring wells, how monitoring shall be undertaken, and how wells shall be abandoned once monitoring is complete.	Action Specific	RIGL 46-12, 46-13.1, 23-18.9, 23-19.1, 42-17.6, and 42-17.1, 1956 as amended
Groundwater	Underground Injection Control Program Rules and Regulations, RIDEM, 6/10/84	Applicable for any remedial or removal action where subsurface discharge or underground injection of treated or untreated groundwater may occur.	Action and Location Specific	RIGL 46-12, 42-35, 42-17.3, 23-19.1, as of August 1983
Hazardous Waste	Rhode Island Rules and regulations for Hazardous Waste Management Sections 1 through 5, RIDEM 3/4/07	<p>These rules apply to generators, transporters and treatment/storage facilities dealing with hazardous wastes. The statutes require disposal of solid waste and hazardous waste at licensed facilities.</p> <p>Outlines requirement for general waste analyses, security procedures, inspections, safety, etc.. Sets design, construction, and operational requirements for hazardous waste containers and tanks, and closure requirements for hazardous waste facilities.</p>	Action, Chemical and Location Specific	RIGL 23-19.1-10, 23-19.14-18, 42-17.1-2, 42-35, RIDEM 1956 as amended
Hazardous Waste	Rhode Island Rules and Regulations for Hazardous Waste Management, Section 8, RIDEM 3/4/07.	Outlines operational requirements for all hazardous waste treatment, storage, and disposal facilities	Action and Location Specific	RIGL 23-19.1-10, 23-19.14-18, 42-17.1-2, 42-35, RIDEM 1956 as amended

Media	Requirements	Requirements Synopsis	Specific Applicability	Legal Citation
Hazardous Waste	Rhode Island Rules and Regulations for Hazardous Waste Management, Section 9, RIDEM 3/4/07.	Outlines requirement for general waste analyses, security procedures, inspections, safety, etc.. Sets design, construction, and operational requirements for hazardous waste containers and tanks, and closure requirements for hazardous waste facilities.	Action and Location Specific	RIGL 23-19.1-10, 23-19.14-18, 42-17.1-2, 42-35, RIDEM 1956 as amended
Hazardous Waste	Rhode Island Rules and Regulations for Hazardous Waste Management, Section 10, RIDEM 3/4/07.	Outlines design, operational, and closure requirements for new hazardous waste landfills.	Action and Location Specific	RIGL 23-19.1-10, 23-19.14-18, 42-17.1-2, 42-35, RIDEM 1956 as amended
Hazardous Waste	Rhode Island Rules and Regulations for Hazardous Waste Management, Section 11, RIDEM 3/4/07.	Outlines design, operational, and closure requirements for incineration facilities	Action and Location Specific	RIGL 23-19.1, 23-19.14, 42-17.1-2, 46-12, 46-13.1, RIDEM 1956 as amended
Hazardous Waste	Rhode Island Rules and Regulations for Hazardous Waste Management, RIDEM 3/4/07, Sections 12 and 13.	Requires minimal standards for solid waste landfill capping. Specifies type and depth of cap barrier layers and engineering standards. Includes measures to protect against odors and dust.	Action and Location Specific	RIGL 2-1, 2-22, 2-23, 5-51, 23-18.8, 23-19, 23-19.1, 23-23, 23-63, RIDEM 1956 as amended
Hazardous Materials, Soil, Groundwater, Surface water, Sediments	RIDEM Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (<u>Remediation Regulations</u>), as amended November 2011.	Applicable for removal actions involving reporting, investigation, and remediation of contaminated sites. These rules establish criteria for cleanup of contamination caused by a release of hazardous material.	Action, Chemical and Location Specific	RIGL 23-19.1-11.1, 23-19.14-18, 42-17.1-2, 42-35, 46-12-3 and 46-12-5, as amended
Solid Waste	Rhode Island Rules and Regulations for Solid Waste Management, RIDEM Solid Waste Regulation No. 1, 10/25/05	Applicable for the minimization of environmental hazards associated with operation of solid waste facilities, including management and disposal of dredged material	Action, Chemical and Location Specific	RIGL 23-19.1-11.1, 23-19.14-18, 42-17.1-2, 42-35, 46-12-3 and 46-12-5, as amended
Solid Waste	Rhode Island Rules and Regulations for Solid Waste Management, RIDEM Solid Waste Regulation No. 2, 10/25/05.	Applicable for the construction of final covers and leachate collection systems; and Applicable for all monitoring plans that result from on-site remedial actions.	Action, Chemical and Location Specific	RIGL 2-1, 2-22, 2-23, 5-51, 23-18.8, 23-19, 23-19.1, 23-23, 23-63, RIDEM 1956 as amended

Media	Requirements	Requirements Synopsis	Specific Applicability	Legal Citation
Solid Waste	Rhode Island Rules and Regulations for Solid Waste Management, RIDEM Solid Waste Regulation No. 4, 10/25/05.	Outlines requirements for on-site waste incineration.	Action, Chemical and Location Specific	RIGL 2-1, 2-22, 2-23, 5-51, 23-18.8, 23-19, 23-19.1, 23-23, 23-63, RIDEM 1956 as amended
Surface Water	Rhode Island Water Quality Regulations, RIDEM, 7/11/06.	<p>Incorporated RI Ambient Water Quality Standards. Classifies water use and defines water quality goals to protect public health and welfare, enhance the quality of state water, and serve the purpose of the CWA.</p> <p>These rules set ambient water quality criteria (AWQCs) applicable to surface waters in Rhode Island. These AWQCs may include numeric limits for chronic exposures to aquatic life, acute exposures to aquatic life, human consumption of water and aquatic organisms, and human consumption of aquatic organisms only. They also forbid activities or discharges that would cause a violation of these criteria.</p>	Action, Chemical and Location Specific	RIGL 46-13.1, May 1992
Surface Water	Regulations for Rhode Island Pollutant Discharge elimination System (RIPDES), RIDEM, 2/25/03.	Applicable for discharges to surface waters and to protect waters from discharges of pollutants	Action, Chemical and Location Specific	RIGL 46-13.1, May 1992
Surface Water and Groundwater	Oil Pollution Control Regulations, RIDEM, 1/3/91	Establishes guidelines for the prevention of discharge, escape or release of oil into the waters of the State and to preserve and protect the quality of the waters of the State, consistent with the purposes of the Clean Water Act	Action and Location Specific	RIGL 46-12, 42-17.1 and 42-35, 1956 as amended
Waste Water	Rhode Island Pretreatment Regulations, RIDEM, 7/16/84	Applicable for any remedial or removal action where treated or untreated liquids are discharged to a Publicly Owned Treatment Works (POTW) facility	Action, Chemical and Location Specific	RIGL 46-13.1, May 1992

Media	Requirements	Requirements Synopsis	Specific Applicability	Legal Citation
Wetlands	Rules and Regulations governing the enforcement of the Freshwater Wetlands Act, RIDEM, 4/23/98; and amendments thereto 9/19/01.	<p>Applicable to actions required to prevent the undesirable drainage, excavation, filling, alteration, encroachment, or any other form of disturbance or destruction to a wetland.</p> <p>These rules require that all wetlands and wetland functions be protected to the maximum extent possible, including by preventing pollutants, sediment, direct discharges of stormwater runoff, or any material foreign to a wetland or hazardous to life from entering any wetland. The rules also require that hazardous material remediations fully protect, replace, restore and/or mitigate harm to any affected wetlands</p>	Action and Location Specific	RIGL 2-1-18 et seq., as amended 1994
Wetlands	Regulations Adopted by the Department of Natural Resources Governing the Enforcement of Chapter 197 of the Public Laws of 1974	These rules should be considered should remedial activities impact any freshwater wetlands or associated buffer zones	Action Specific and Location	RIGL 2-1-20.1, 42-35-1, 2-1-18, September 1974 et seq., as amended 1994
Wetlands	Regulations Adopted by the Department of Natural Resources Governing the Enforcement of Chapter 213 of the Public Laws of 1974	These rules should be considered should remedial activities impact any freshwater wetlands or associated buffer zones	Action Specific and Location	RIGL 2-1-20.1, 42-35-1, 2-1-18, September 1974 et seq., as amended 1994
Wetlands	Coastal Resources Management Council Regulations	Sets standards for management and protection of coastal resources.	Action and Location Specific	RIGL 46-23-1 <i>et seq</i>
Other	Rhode Island Hazardous Substance Community Right-to-Know Act, RIGL 23-24.4	Establishes rules for public right to know concerning hazardous waste storage, discharge, emissions and transportation. Applicable if remedial action involves the off-site disposal or on-site treatment of hazardous substances.	Action, Chemical and Location Specific	RIGL, Title 23, Chapter 24.4 Public Right to Know Requirements as amended in 1989.
Other	Rhode Island Endangered and Threatened Species Act	To be considered if remedial alternative affects any plants or animals of special concern	Location Specific	RIGL 20-37