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LETTER REGARDING U S EPA REGION IV COMMENTS ON THE REMEDIAL
INVESTIGATION REPORT FOR SITE 5 FORMER PAINT SHOP DISPOSAL AREA MCRD
PARRIS ISLAND SC
5/16/2012
U S EPA REGION IV



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

May 16, 2012

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Naval Air Station, JAX
Navy Facilities Engineering SE
Installation Restoration, SC IPT
Attn: Mr. Charles Cook
PO Box 30
North Ajax Street, Bldg 135
Jacksonville, FL 32212-0030

AND

Commanding General
Marine Corps Recruit Depot
Natural Resources & Environmental Affairs Office
Attn: Ms. Lisa Donohoe
PO Box 5028
Parris Island, SC 29905-9001

Dear Mr. Cook and Ms. Donohoe:

The U.S. Environmental Protection Agency (EPA) has completed its review of the Site 5 – Former Paint Shop Disposal Area, Remedial Investigation Report (RI Report), Marine Corps Recruit Depot (MCRD), Parris Island, South Carolina (February 2012). The resulting comments are attached. EPA expects to discuss Navy responses to the attached comments before the document is revised. EPA is available for consultation during this process. Please feel free to call with any questions you may have regarding these comments. I can be reached at 404-562-9969.

Sincerely,

A handwritten signature in cursive script that reads "Lila Llamas".

Lila Llamas
Senior RPM
Federal Facilities Branch
Superfund Division

Attachment

cc: Meredith Amick, SCDHEC
Peggy Churchill, TtNus

**EPA COMMENTS ON THE
DRAFT REMEDIAL INVESTIGATION REPORT
SITE 5 FORMER PAINT SHOP DISPOSAL AREA
MARCH 2012
MARINE CORPS RECRUIT DEPOT
PARRIS ISLAND, SOUTH CAROLINA**

SPECIFIC COMMENTS:

1. Section 1.3, Scope of Remedial Investigation, Page 1-2

According to Section 1.3 of the Draft Remedial Investigation Report for Site 5 – Former Paint Shop Disposal Area dated March 2012 (Draft RI Report), sediment data collected in support of the remedial investigation (RI) were screened against ecological risk based criteria. However, Section 1.3 does not include a bulleted RI objective that addresses the assessment of ecological risks. To be complete, a bulleted RI objective should be added to Section 1.3 that addresses the assessment of ecological risks associated with sediment data. Note this comment also applies to Section 7.1, Conclusions.

2. Executive Summary and Section 1.3, Scope of Remedial Investigation, Page 1-3

The last sentence of the 4th paragraph on page ES-2 and the last sentence of Section 1.3 states that ecological risks were not evaluated for soil or groundwater in the RI because of the industrial nature of Site 5 and the lack of ecological habitat. However, information has not been provided in the RI in the form of a screening-level ecological risk assessment (SLERA) to support this statement. The fact that the site is of an industrial nature does not preclude wildlife from using the site. Mammalian receptors (e.g., rats, mice) and avian wildlife can still use the site albeit to limited areas of exposed soil. In addition, information has not been provided in a SLERA that explains why groundwater would not be expected to impact the downgradient Beaufort River. To promote clarity in the administrative record and to substantiate that ecological risks associated with soil and groundwater are not significant, it is recommended that the Draft RI Report include a SLERA.

3. Section 1.3, Scope of Remedial Investigation, Page 1-3

The last sentence of Section 1.3 states that sediment data were screen against ecological risk based criteria. However, a SLERA was not included in the RI to verify that this evaluation has been performed. According to Section 4.2.4, Sediment, sediment data associated with Site 5 were collected from Process Area Outfall 358 as well as from an upgradient location, the Non-Process Area Outfall 349BN. These data should be evaluated for estimating ecological risks for this environmental medium. In order to support risk management decisions for this site, revise the Draft RI Report to include a SLERA that provides an evaluation of the sediment data.

4. **Section 1.4.2, Site 5 Background and History, Page 1-3**

The text in Section 1.4.2 indicates that Site 5 is defined as the 0.7 acres of land surrounding the former paint shop (Building 177) and the bank of the Beaufort River. However, the boundary of Site 5 defined as encompassing 0.7 acres surrounding Building 177 has not been illustrated on Figure 1-3 as referenced, although it appears to exist on the inset of Figure 1-2. Currently, the location of the historic Site 5 boundary relative to the characterization sampling locations is not easily visible on the inset. To support that site characterization sampling locations were adequate relative to the historic Site 5 boundary, revise the Draft RI Report to include the boundary on all relevant figures.

5. **Section 3.1, Investigation Background – Site 5, Page 3-1**

The RI objectives presented in Section 3.1 slightly differ from the RI objectives presented in the Executive Summary; Section 1.3, Scope of Remedial Investigation; and Section 7.1, Conclusions. For example, the first RI objective bulleted in Section 3.1 combines the soil and groundwater media of concern and differs by not developing separate objectives for the soil medium and groundwater medium. For consistency, revise the RI objectives in Section 3.1 to correspond with the RI objectives presented throughout the Draft RI Report, as well as adding the objective of assessing ecological risk (see comment 1).

6. **Section 3.2.3, Permanent Monitoring Well Installation, Page 3-4**

The text in the first paragraph of Section 3.2.3 indicates four shallow wells were installed such that the well screens straddle the water table, which during low tide was encountered at 5.71 to 8.75 feet below ground surface. Figure 3-3, Cross-Section A-A', depicts the groundwater levels in profile for each monitoring well located along Cross-Section A-A'. It is assumed that the water levels depicted in the figure represent the measurements collected at low tide during the September 2011 event. The figure depicts that the water levels in wells PAI-05MW03 and PAI-05MW02 are very near the top of the screened interval. It is assumed that during high tide the water levels in these wells and possibly the other two wells are above the screened interval. However, this has not been discussed in the text. Revise Section 3.2.3 to address this issue by providing a more clear understanding of the relationship of the water table levels relative to the screened intervals during low tide and high tide.

7. **Section 3.2.5, Groundwater Sampling, Page 3-6**

The text in Section 3.2.5 indicates that a peristaltic pump was used to collect groundwater samples. The text in the third paragraph states "Groundwater samples were collected directly from the pump discharge tubing after disconnecting the in-line flow through cell." However, the Site 5 RI Work Plan Standard Operating Procedure (SOP) for groundwater sampling SA-1.1 requires a submersible pump (e.g., centrifugal, bladder made of stainless steel or Teflon) for low flow sampling. Additionally, EPA SESD groundwater sampling SOP (dated October 28, 2011) states that peristaltic pumps should not be used to collect groundwater volatile organic compound (VOC) samples. The SOP states a stainless steel or Teflon bailer or other approved

methods (i.e., soda straw) can be used to collect groundwater samples for VOC analysis. The Site 5 groundwater sampling using a peristaltic pump is not consistent with the RI Work Plan SOP SA-1.1 or the EPA SESD SOP for groundwater sampling. Currently, there is uncertainty in the VOC groundwater results based on the use of a peristaltic pump that could impact the definition of the nature and extent of potential groundwater contamination. Revise the Draft RI Report to address this issue.

8. **Section 3.2.8, Sediment and Storm Water Sampling, Page 3-8**

The text in Section 3.2.8 appears to include a typo regarding sample numbers resulting in inconsistencies between the first and second paragraphs. Please correct the apparent typo.

9. **Section 3.6, Site-Specific Hydrogeology, Page 3-13**

Section 3.6 indicates the shallow groundwater beneath Site 5 flows north/northeast towards the Beaufort River. Figure 3-4 presents the potentiometric surface of the shallow groundwater and depicts flow towards the Beaufort River based on water level measurements collected at low tide during the September 2011 event. The text further discusses that groundwater levels measured during high tide indicated a 0.9-foot to 3.81-foot of change as compared to low tide. However, it is not known whether the groundwater flow direction remains to the north/northeast towards the Beaufort River during high tide, or flows in some other direction. To support that site characterization sampling locations were adequate relative to shallow groundwater flow direction, revise the Draft RI Report to address this issue.

10. **Section 3.6, Site-Specific Hydrogeology, Page 3-13**

The last paragraph in Section 3.6 states that an assumed effective porosity of 0.30 for the silty sand was used in the calculation of the estimated groundwater flow velocity for the site. The text in Section 3.5, Site-Specific Geology, and the data presented in Table 3-6, Summary of Sieve Analysis Results, indicates that the grain size analysis demonstrates the subsurface consists primarily of poorly graded sand (SP) of Unified Soil Classification System. Table 3-6 indicates only one of six samples submitted for grain size analysis was silty clayey sand (SC/SM). It is not clear why a porosity value was assumed for silty sand (SM) for the calculation of the site specific estimated flow velocity when the subsurface soil consists primarily of SP. It is likely that a higher groundwater flow velocity would be calculated using an assumed effective porosity value for the SP. Revise the Draft RI Report to address this issue.

11. **Figure 3-2, Cross-Section Location**

There are two building structures located northeast of Building 177 and southeast of the estimated 1995 shoreline that are not identified in Figure 3-2. In addition, Figure 3-2 also depicts Building 577. However, there is no discussion that explains what type of activities occurred historically or currently within this Building 577. For completeness, revise all appropriate figures clearly identifying the two building structures that are located in the Site 5 area and describe the past and current uses of these buildings as well as Building 577.

12. **Section 4.1.1, USEPA Soil and Groundwater Screening Levels for Human Health, Page 4-1**

Section 4.1.1 states that the United States Environmental Protection Agency (EPA) has developed a set of screening levels for soil and groundwater based on dermal and ingestion routes of exposure. However, a reference to the source of the screening levels is not provided. Upon review of the legend in the nature and extent figures and Section 6.1.2.2, Derivation of Screening Criteria, it appears that EPA's Regional Screening Levels (RSLs) from November 2011 were used (RSLs are based on ingestion, dermal contact, and inhalation routes of exposures). Section 4.1.1 should be revised to specify the source of the screening levels used for soil and groundwater and also clarify that if RSLs were used they are based not only on reference doses and cancer slope factors but they also take into account inhalation toxicity criteria to include reference concentrations and inhalation unit risk factors.

13. **Section 4.1.4, Background Data Evaluation, Page 4-2**

At the most recent MCRD Parris Island partnering team meeting it was decided that for all future comparisons, the MCAS data set (without any PI numbers) would be used. Consider if it would benefit the investigation and findings to reconduct the data evaluation using only the MCAS background data set. If it is determined to be beneficial, revise the document throughout as needed. Otherwise, ensure all future documents utilize only the MCAS background data for screening.

14. **Section 4.2.1, Surface Soil, Page 4-3**

The Navy/MCRD should reconsider why the highest concentrations of VOCs in surface soil would be located nearest to the bank of the river. The explanation provided (historical disposal of paint thinners) seems odd for a *surface* soil sample given the area is covered with fill. Please clarify in the report.

15. **Section 4.2.1, Surface Soil, Page 4-4**

The last sentence in the first paragraph on Page 4-4 indicates the polycyclic aromatic hydrocarbon (PAH) contamination detected in surface soil may be due to the fill which was observed to contain coal and road material used to build up the shoreline. The text indicates the highest PAH concentrations were measured northeast and southeast of Building 177. It was reported in Section 1.4.2, Site 5 Background and History, that the area north and northeast of Building 177 is covered with a damaged asphalt road that parallels the Beaufort River. However, the text in Section 4.2.1 does not indicate that the damaged asphalt road on Site 5 may also be a source of PAH contamination detected in surface soil at Site 5. Revise the text in Section 4.2.1 to address this issue.

16. **Section 4.2.2, Subsurface Soil, Page 4-5**

The text indicates that in addition to the surface soil sample of highest concentration nearest to the bank of the river, subsurface soil samples tend towards the same. Please provide any insight as to why this distribution pattern might be seen, contrary to the typical pattern of highest

concentrations closer to the original source.

17. **Section 4.2.2, Subsurface Soil, Samples Containing Native Soil, Page 4-7**

Consider whether inclusion of a tabular representation of some sort for a comparison of results from fill versus native soil might be helpful. This section text is somewhat long and onerous, but includes potentially significant information which might be more clearly understood visually.

18. **Section 4.2.4, Sediment, Page 4-8**

The text in Section 4.2.4 indicates that detection limits for acetone and carbon disulfide were greater than their respective screening values and references Table 4-3, Summary of RI Sediment Results. However, Table 4-3 does not present detection limits or screening criteria. Revise the table and or text as appropriate so the elevated detection limits and relative screening value exceedances are clearly presented and understood.

19. **Section 6.0, Human Health Risk Assessment, Page 6-1**

Section 6.0 lists the risk assessment guidance documents used to develop the framework of the baseline human health risk assessment (HHRA). Among the risk assessment guidance documents is the 1997 EPA Exposure Factors Handbook (EFH). However, the Exposure Factors Handbook: 2011 Edition is the latest edition and may be accessed here:
<http://www.epa.gov/ncea/efh/pdfs/efh-complete.pdf>.

20. **Section 6.1, Data Evaluation, Page 6-2**

Section 6.1 states that while sediment and storm water data were compared to risk-based screening criteria in Section 4.0, Nature and Extent of Contamination, these media were not evaluated during the HHRA because the sampling program for sediment and storm water data were not designed for risk assessment. It is unclear why sediment data would not be evaluated in the HHRA as rationale for its exclusion from the HHRA was not provided. Further, the sediment concentrations were compared to ecological screening criteria suggesting that these data are useable for risk assessment evaluations. Since the Draft RI Report will be included in the administrative record, it is important to explain that while disposal activities occurred at this site and along the waterfront of this site, why exposure to sediment is not considered in the HHRA. Alternatively, consider including sediment as an exposure medium in the HHRA or revise the HHRA to fully justify the exclusion of sediment data.

21. **Section 6.1.1, Data Availability, Page 6-3**

Section 6.1.1 states that the samples used in the HHRA were collected during a field investigation in fall 2011. However, it is unclear why historical data collected during the site inspection/confirmatory sampling (SI/CS) effort of 1999 were not included. It is likely that due to historical filling of the area post-1999, the SI/CS data are no longer representative of current site conditions. However, this is not explained in the HHRA. To promote clarity in Section 6.1.1, provide the rationale for excluding historical data and incorporating only the data collected in fall

2011.

In addition, Section 6.1.1 does not summarize how many sample points were available for each exposure medium to provide a general overview of the data sufficiency to support the risk assessment of the 0.7 acre area. Further, the HHRA does not provide an explanation on what depth intervals constitute a surface versus a subsurface soil sample. To promote clarity in the HHRA, it is recommended that Section 6.1.1 provide a brief summary of how many sample locations were available for the HHRA for each exposure medium and also explain the depth intervals that were used to differentiate surface soil from subsurface soil.

22. Section 6.1.2.2, Derivation of Screening Criteria, Page 6-4

The text on Page 6-4 indicates that COPC screening levels for groundwater are based on EPA RSLs for tap water and the federal maximum contaminant levels (MCLs). The text should clarify if the lower of these two screening criteria were selected as the screening level. Further, the text indicates that groundwater screening levels (GSLs) were derived to evaluate groundwater data for the vapor intrusion pathway. For completeness, Section 6.1.2.2 should be revised to reference where the GSL derivations are presented.

23. Section 6.1.3.1, Surface Soil, Page 6-6

The second paragraph of Section 6.1.3.1 states "The maximum detected concentrations of cobalt, iron, and vanadium exceeded the non-carcinogenic COPC screening levels (set at an HI of 0.1); however they do not exceed the RSLs." This statement is somewhat misleading since screening levels utilized for those chemicals of potential concern (COPCs) assessed, based on their non-cancer endpoint, is actually the adjusted RSL (the RSL adjusted downward by a factor of 10 to account for additive effects). It is recommended that this sentence be revised to remove the statement that suggests the maximum concentration does not exceed the applicable RSL.

24. Section 6.1.3.3, Groundwater, Page 6-8

Section 6.1.3.3 and associated COPC screening tables indicate that only one VOC was detected (carbon disulfide). Revise the Draft RI Report to clarify if sample quantitation limits (SQLs) were low enough to meet all relevant risk-based screening criteria (e.g., RSLs, vapor intrusion GSLs) and reference applicable comparison tables and discuss in the uncertainty analysis the impacts to the overall risk conclusions. Given the historical site use as a former paint shop disposal area and the various VOC detections in both soil and subsurface soil, there are lingering questions as to why groundwater is not also more impacted by VOCs (i.e., beyond only one VOC detected in groundwater). For example, in addition to uncertainties regarding laboratory SQLs being sufficiently low to meet risk-based screening criteria, there is also concern with regard to the use of a peristaltic pump in the collection of groundwater samples. Peristaltic pumps use a vacuum to transport the samples. This vacuum may cause some degassing and loss of VOCs from the sample. Peristaltic pumps should primarily be used when precise quantitative data for VOCs and dissolved gases are not required (<http://www.astm.org/Standards/D7353.htm>). Revise the Draft RI Report (including Sections 3, 6, and 7, at a minimum) to address this

uncertainty and resolve any data gaps. As presented, the groundwater data collection approach described in Section 3.2.5, Groundwater Sampling, was not appropriate for the HHRA.

25. Section 6.2.2, Exposure Point Concentrations, Page 6-13

The first bulleted item on Page 6-13 states “The sample quantitation limit was used as an input for non-detects to USEPA’s ProUCL software to calculate the 95-percent UCL, in accordance with ProUCL guidance (USEPA, May 2010)...” Note that ProUCL was updated in July 2011 (ProUCL Version 4.1.01) and may be accessed here:

<http://www.epa.gov/osp/hst/tsc/software.htm>. If ProUCL Version 4.1.01 was not utilized to calculate the upper 95 percent confidence limit (UCL) on the mean, update Section 6.5, Uncertainty Analysis, to discuss any associated impacts with not using the latest version of the software.

26. Section 6.2.3.5, Dermal Contact with Groundwater, Page 6-18

Section 6.2.3.5 indicates that construction workers are assumed to be exposed to groundwater for four hours per day for 30 days a year. Provide the complete decision rationale for this anticipated exposure. Alternatively, an exposure time of least eight hours per day should be used to assess dermal contact with groundwater for a construction worker.

27. Section 6.4.3.1, Non-Carcinogenic Risks, Page 6-28

The second paragraph on Page 6-28 states that the hazard index (HI) for hypothetical child residents using the groundwater as a domestic water source is 61. However, Figure 6-3, Summary of Media-Specific Hazard Indices, and Table 7.5, RME, Calculation of Chemical Cancer Risks and Non-Cancer Hazards, Reasonable Maximum Exposure, in Appendix D, Supporting Information for Health Risk Assessment, indicate that the HI is 47 not 61 for exposure to groundwater. For consistency, revise the text to correct this discrepancy.

28. Section 6.4.3.2, Carcinogenic Risks, Page 6-28

The second paragraph of Section 6.4.3.2 states that the cumulative and medium-specific incremental lifetime cancer risks for hypothetical lifelong residents exposed to surface soil and groundwater were equal to the upper end of the EPA’s target risk range. Although the media-specific risks are equal to or less than the upper end of EPA’s target risk range, according to Figure 6-4, Summary of Cumulative Cancer Risks from All Media, the cumulative risk for lifelong residents exposed to surface soil and groundwater exceeds the upper end of the EPA target risk range (2E-04). Revise Section 6.4.3.2 to be consistent with the risk results presented in Figure 6-4.

