N62661.AR.002667
NS NEWPORT
5090.3a

LETTER REGARDING REGULATORY COMMENTS ON DRAFT PROPOSED PLAN FOR SITE 8 NETC NEWPORT RI
6/7/2012
RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
235 Promenade Street, Providence, RI 02908-5767 TDD 401-222-4462

7 June 2012

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

RE: Draft Proposed Plan
NUSC Disposal Area (Site 08)
NSN, Newport, Rhode Island

Dear Ms. Montegross:

The Office of Waste Management at the Rhode Island Department of Environmental Management has revised our comments on the *Draft Proposed Plan* for Site 08 – NUSC Disposal Area based on further internal discussions and correspondence with the USEPA. As a result of these discussions, please see the attached revised comments on the *Draft Proposed Plan*.

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, RIDEM
Richard Gottlieb, RIDEM
Gary Jablonski, RIDEM
Ginny Lombardo, USEPA Region I
Ken Munney, USF&W
Deb Moore, NETC, Newport, RI
Jim Ropp, Tetra Tech

RIDEM's Revised Comments (6/7/12) on the Draft Proposed Plan (4/30/12) for Site 08 – NUSC Disposal Area NSN, Newport, RI

General Comments:

1. Viability of Bioremediation

Based on our review of the available data, it appears that geochemical conditions are not immediately favorable to anaerobic bioremediation in the North Meadow Area where TCE impacts to groundwater are greatest. For example, in March 2011, the three wells with the highest TCE detections (MW-128B, MW-118B, and MW-03B) were non-detect for vinyl chloride and had either non-detections or low-level detections of cis-1,2-dichloroethene. In addition, the ORP values measured at the time of sampling were above +150 mV at all three wells, consistent with the observation in the March 2011 groundwater sampling event report that "wells in the North Meadow tended to have higher DO and positive ORP readings." Based on the above lines of evidence, it seems as though a considerable effort would be required to manipulate the redox state and completely engineer the bioremediation chemistry. For example, sufficient electron donor would be required to deplete all terminal electron acceptors preceding carbon dioxide to create the methanogenic conditions favorable to dechlorinators. In addition, the absence of vinyl chloride detections at these wells suggests that dechlorinating populations may not be established, meaning that bioaugmentation may also be required. In these areas, replacement of bioremediation with in-situ chemical oxidation (ISCO) should be considered.

In contrast to the above analysis, the current geochemistry in the Building 179 Source Area (MW-07B) and the Building 185/South Meadow Area (where 1,1,1-TCA is the predominant CVOC) appears better suited to the selected remedy. Reducing conditions are more widespread in these areas, consistent with higher levels of chlorinated ethane daughter products such as 1,1-DCA, and the higher levels of chloride. Enhancing the intrinsic bioremediation processes occurring in these areas is a more viable option than engineering reductive dechlorination in the aerobic North Meadow Area.

2. ISCO Alternative GW4

The primary ISCO technology evaluated in the FS and referenced in the Draft April 2012 Proposed Plan is Fenton's Reagent (hydrogen peroxide and iron catalyst). However, page 3-26 of the May 2012 Draft Final FS states:

"Pilot tests to select a reagent might also be required, although because of the relatively low TCE concentrations, potassium permanganate would likely be used."

It is not immediately clear why Fenton's Reagent was selected over potassium or sodium permanganate for ISCO Alternative GW4. The ability of permanganate to oxidize chlorinated ethenes has been widely demonstrated in the field, including at comparable, operational sites in Rhode Island. In addition, the stability and persistence of permanganate in the subsurface make it a better choice for fractured rock applications with uncertain fracture/matrix interactions and migration pathways. It is noted that chlorinated ethanes are recalcitrant to permanganate; however, activated persulfate is an alternative, proven ISCO reagent that provides trichloroethane (TCA) coverage while offering more stability than Fenton's Reagent. Additional consideration should be given to permanganate and/or activated persulfate for source area remediation at the Site. This is particularly salient as the safety of site workers was cited as key differentiator between ISCO and bioremediation. In general, permanganate and activated persulfate do not result in unsafe gas and heat evolution, which is correctly noted as a safety hazard for unstabilized Fenton's Reagent. It is recommended that these reagents be strongly considered at the site in lieu of Fenton's Reagent and a more detailed explanation be added to the Final FS regarding the selection process of the ISCO reagent.

3. Segregation of Remediation Areas & ROD Flexibility

As described in General Comment #4 mentioned above, the North Meadow Area and the collective Building 179/Building 185/South Meadow Area have different CVOC profiles and geochemical conditions. In addition, these areas appear hydrogeologically separated by the Unnamed Stream, and are likely to have varying hydrogeological responses to injected amendments. As a result, we believe it prudent to separate the source remedy selection so that different technologies may be used in the two areas. Pre-Design studies for each area may be used to determine whether ISCO or bioremediation is the preferred alternative. In this manner, the selected remedy for each area could better match the current geochemistry, and reasonable performance and cost expectations for the source remediation can be developed.

As discussed during the RPM meeting on May 16, 2012, one potential way to accommodate this comment is to build flexibility into the ROD such that alternative GW3 and/or GW4 may be used depending on the outcome of Pre-Design studies. The Final FS can potentially incorporate the consideration of other ISCO reagents (permanganate or persulfate, see General Comment #5 mentioned above) by simply listing them as options in addition to Fenton's Reagent for alternative GW4. It is noted that switching to ISCO after performing pilot or full-scale vegetable oil injections is not a preferred sequence because of the resulting increase in oxidant demand. Up-front, Pre-Design comparison of the two technologies through bench-scale treatability testing is a better strategy.

4. MNA Parameter Analysis

Regarding the 2012 work plan for supplemental MNA sampling, RIDEM feels the Navy should classify groundwater redox processes in groundwater using the USGS spreadsheet program available at http://pubs.usgs.gov/of/2009/1004/. This program classifies the overall redox category (i.e., aerobic or anoxic) and the specific redox process (i.e., nitrate-

reducing or sulfate-reducing) based on electron acceptor concentrations. It appears as though all required analytes for the USGS analysis are on the monitoring list with the potential exception of dissolved manganese. If not included on the TAL metals list, please add dissolved manganese to the sampling list so that the USGS spreadsheet can be used in future MNA analyses. Also, please analyze for dissolved organic carbon at some of the locations to compare with the total values.

5. Spatial Extent of Remedy

Figure 2-7 of the FS outlines areas with groundwater concentrations exceeding PRGs. Figure 5-1 of the FS highlights wells that were selected for treatment. Several wells located in the areas exceeding PRGs were not selected for treatment (e.g., MW127B, MW108B, MW102B, MW130B, MW124B, and MW129B). Please include these wells for treatment or justify their exclusion. The natural attenuation modeling for CVOCs in groundwater included in Appendix D in the FS will be sufficient to estimate how long it will take for these wells to reach remedial goals.

6. Protectiveness of Groundwater PRGs – Exposure Pathways

Section 2.2 of the FS indicates that groundwater PRGs reflect ingestion of groundwater and are based on either a risk-based value or, if available, a Maximum Contaminant Level (MCL). We understand that vapor intrusion was not considered in development of PRGs, because this pathway did not pose an unacceptable risk in the human health risk assessment (p. 1-33 of FS), and that there are no currently occupied buildings at the Site. However, this pathway is a viable future exposure pathway and may contribute to cumulative cancer risk, should Site buildings be routinely occupied. Please add to the LUCs appropriate measures to eliminate this pathway (e.g., reevaluation of vapor intrusion risk, post-remediation and prior to occupancy, and/or use of vapor barriers, sub-slab depressurization systems, etc.) or require vapor intrusion evaluation for any future development.

7. Pre-Design Investigation

Please include in this Proposed Plan a discussion of the Pre-Design Investigation which will include the following: sampling for metals to conduct SPLP tests to confirm that metals are not leaching into groundwater, pilot/bench studies to be conducted to determine the best groundwater treatment alternative for each area of the site, a microcosm study for all areas proposed for in-situ bioremediation, and investigation of the source of TCE and PCE in the North Meadow.

Specific Comments on the Proposed Plan:

1. p. 1, *"The Proposed Cleanup"* box, Groundwater.

Please revise the groundwater remedy according to RIDEM's comments above.

2. p. 8, Soil Alternative SO3.

Please include a more detailed description of Soil Alternative SO3 (i.e., include Figures 4-2 and 4-3 from the FS, include a statement regarding the 2 feet of armor stone cover along the sloped areas). Also, please revise the last sentence to *"Soil exceeding leachability standards in selected areas would be excavated and disposed offsite."*

3. p. 8, Groundwater Alternative GW4.

Please revise GW4 to include the possible use of potassium or sodium permanganate or activated persulfate as possible chemical oxidants for In-Situ Chemical Oxidation based on RIDEM's comments above.

4. p. 9, Common Elements, 1st bullet.

Please revise the last sentence to state *"The Navy will collect additional samples during the Pre-Design Investigation to verify that metals in soil are not exceeding leachability standards."*

5. p. 9, Common Elements, 3rd bullet.

"Under Alternative SD4, the pond would not require a LUC because COCs would be removed." Land use controls should still be placed on the pond due to possible recontamination due to groundwater migration from upgradient areas.

6. p. 10, Preferred Action Alternatives, Groundwater.

Please update this section to include flexibility for the groundwater remedy as stated in RIDEM's comments above.

7. p. 11, After the Record of Decision.

Please include a statement regarding the Pre-Design Investigation which will be required prior to the Remedial Design for this Site.