

**Comments and Responses on the Draft Remedial Design
for U.S. Army Garrison Picatinny Arsenal, New Jersey
Groundwater and Surface Water at Group 3, Sites 1, 2 and 4 (PICA 008)
Picatinny Arsenal, Morris County, New Jersey
March 2010**

**Commenter: Dennis Powers, Chief, Remedial Investigation and Design Section, USACE,
Comments Dated: 12 April 2010**

Item No.	Report Reference	Comment	Response
1.	General	This document's recommended action for Group 3 Sites is acceptable.	<i>Comment noted.</i>
2.	Section 3.4.2 -- Barrier Thickness, Radius of Influence and Injection Volume -- page 15, fourth paragraph, third sentence	The referenced paragraph states that there will be 13 injection wells and that 1600 gallons of 2.5 percent Emulsified Vegetable Oil (EVO) will be injected into each well and comes up with a total EVO volume of 19,200 gallons. However, 13 wells multiplied by 1600 gal/well gives 20,800 gallons. Please correct the referenced sentence.	<i>Agreed. The third sentence of the fourth paragraph has been updated to read as follows: "The total volume of injection solution for one injection event is approximately 20,800 gallons."</i>
3.	Section 4.3 -- Pore Flushing Model and MNA Timeframe -- page 18, second paragraph, thirteenth sentence	The referenced sentence states, "The overall timeframe for MNA is taken as the single longest time to achieve the SCLs within the three plume areas, which in this case occurs for CT in the southern overburden plume." However, Table 4, Post-Treatment Pore-Flushing MNA Timeframe Based on Carbon Tetrachloride, shows that the longest "Year to Cleanup" (last row), is 22 years, for the bedrock plume. There are supporting calculations for Table 4. Please correct the referenced sentence to say something similar to, "The overall timeframe for MNA is taken as the single longest time to achieve the SCLs within the three plume areas, which in this case occurs for CT in the bedrock plume."	<i>Agreed. The thirteenth sentence within the second paragraph of Section 4.1 – Pore Flushing Model and MNA Timeframe has been updated to read as follows: "The overall timeframe for MNA is taken as the single longest time to achieve the SCLs within the three plume areas, which in this case occurs for CT in the bedrock plume." In addition, Table 5 has been updated to correct the total number of years to achieve SCLs because the document was inaccurately reporting 15 years, as opposed to the calculated 12 years.</i>

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**Commenter: Dennis Powers, Chief, Remedial Investigation and Design Section, USACE,
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4.	Section 6.4.4 -- New Jersey Code Compliance -- page 27 fifth paragraph, second sentence	The referenced sentence states, "The NJDEP has reviewed all technical information pertaining to the site at each stage of the CERCLA process and has formally concurred on the remedy specified in the site ROD signed by the US Army in XXX 2009 and expected to be signed by the United States Environmental Protection Agency (USEPA) in XXX 2009." Please fill in the dates in the referenced sentence.	<i>Comment noted. Currently the Draft Final ROD for Groundwater and Surface Water at Group 3 Sites (PICA 008) is being reviewed by the referenced agencies. The dates referenced in the second sentence of the fifth paragraph will be updated once the Final ROD has been signed.</i>
5.	Table 6 -- Focused In-Situ Bioremediation Performance Monitoring and MNA Program, Group 3, Sites 1, 2 and 4 (PICA 008)	There is a superscript "(3)" for the last five samples in the "Monitoring Wells" column (next-to-right-most column) of Table 6. The sample I.D.s are 2SW-16, 2SW-20, 2SW-29, 2SW-36 and 2SW-39, and they are surface water samples. The superscript "(3)" refers to notes below the table. Notes 1 and 2 are listed but note 3 is missing. Please write what note "(3)" means. (The contractor probably meant the third note to say that the samples are surface water samples even though they're in the "Monitoring Wells" column.) Please correct.	<i>The following text has been added to Table 6 – Focused In-Situ Bioremediation Performance Monitoring and MNA Program as Note 3: "Surface water samples will be collected annually from the approximate locations shown in Figure 10."</i>

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**Commenter: Emily Schiffmacher, U.S. Army Corps of Engineers
Comments Dated: April 12, 2010**

Item No.	Report Reference	Comment	Response
1.	General Comment	Please provide references for all material provided in the written document, i.e. literature review on chlorinated solvent degradation, etc.	<i>Technical references have been added to the "Reference" Section and cited in Section 3 as appropriate.</i>
2.	Page 8, Section 3.1.1	<p>(a) Reductive dechlorination includes both hydrogenolysis and dichloroelimination. Hydrogenolysis is the sequential removal of chlorines from the parent compound. Each chlorine atom removed is replaced with a hydrogen atom. Dichloroelimination is the removal of 2 chlorine atoms through the conversion of an alkane to an alkene (i.e., 1,1,2,2 – tetrachloroethane converted to cis-1,2-dichloroethene).</p> <p>(b) The dechlorination pathway shown for TCE does not match up with what was discussed in the first paragraph of Section 1.3.3, which states that the Site 2 GW samples included PCE, TCE, and 1,1-DCE. If you are going to discuss PCE and 1,1-DCE, the whole reductive pathway needs to be shown here. PCE → TCE → 1,1-DCE, cDCE, tDCE → VC → Ethene, Ethane, CO₂...</p> <p>(c) The most strongly reducing environment is CO₂ → CH₄. This is not included in the list of electron acceptors.</p>	<p><i>a. Comment noted. The intent of Section 3.1.1 is to provide a brief overview of the predominant degradation pathways associated with the enhanced reductive dechlorination (ERD) technology.</i></p> <p><i>b. A brief discussion of the 1,1-DCE degradation pathway was added to Section 3.1.1.</i></p> <p><i>c. Carbon dioxide was accidentally omitted from this section and had been added to the list of electron acceptors.</i></p>