

EPA Comments on the
600 Area Proposed Plan, February 2010
Picatinny Arsenal, NJ
April 22, 2010

General Comments

1. EPA does not agree with the Army's preferred Alternative GW-2, Long Term Monitoring and land use controls. The presumed source area for TCE in groundwater has not been investigated due to rock placed over the area. It is EPA's policy that potential sources to groundwater contamination must be fully investigated and addressed. In addition, 60 years is an excessive period of time to operate a passive remediation system (see General Comment 5). Therefore, EPA requests that the Army revise its preferred alternative from GW-2, Long-Term Monitoring with ICs to GW-6, Source Removal and MNA with ICs.
2. The document briefly discusses the detection of RDX and MTBE in 600 Area groundwater. It is EPA's opinion that these contaminants detected in 600 Area groundwater should be addressed as one operable unit rather than discrete units. Therefore, EPA requests that RDX and MTBE be fully addressed by the 600 Area Proposed Plan. This may require a revision or addendum to the 600 Area Feasibility Study.
3. Alternatives GW-4 and GW-5 are described as in-situ injection remedies into the 'source area' for TCE. This is confusing as the time-frame listed for these remedies is 60 years, the same as the monitoring remedies that do not involve any active remedial action. This, apparently, is due to the fact that a 'hypothetical source area' of TCE in soil will continue to leach TCE after the 'source area' in groundwater is treated by the injection remedies. These two apparent source areas for TCE should be fully differentiated in the proposed plan to remove any doubt about what source area is being discussed. In addition, if the implementation of GW-4 and GW-5 require the removal of the rock staged at the site, then it should be explained why soil acting as a source area to groundwater can not be treated contemporaneously with groundwater. At any rate, Alternatives GW-4 and GW-5 should be described as treating the source area for TCE in groundwater that will continue to be impacted by the hypothetical source area in soil located directly above it.
4. Alternatives GW-4 and GW-5 involve injections of a substrate into the "source area" of the TCE plume and Alternative GW-6 involves source material removal. However, these alternatives do not mention whether or not the rock pile located over the presumed source area will have to be removed. It is requested that for each of the active remedies referenced above, whether the rock pile will need to be removed or not.
5. The Preferred Alternative, GW-2 (ICs and MNA), potentially includes the discharge of TCE and other COCs into local surface waters, currently above the level of concern (LOC), for an estimated period of 60 years. The Draft Final 600 Area Data Report and

Feasibility Study February 2009, acknowledges that: “Natural attenuation (NA) indicators suggest that NA has not currently nor is expected to significantly impact degradation of observed contamination. Modeling results indicate that approximately 60 years will be required for TCE source area soil concentrations to decline to levels below EPA groundwater criteria.” This is an excessive period of time for the operation of a passive remediation system.

6. It was mentioned at the April 15, 2010 RAB that monitoring well 13MW-1 was drilled through the rock pile which is located over the presumed source area. This should be clearly documented in the Proposed Plan.

Specific Comments

1. 600 Area Site Background, fourth paragraph, page 2 – Revise the fifth sentence to state: “As such, Sites 11 and 13 are not eligible for funding under the IRP.”
2. Figure 3, Site and Building Location Map – The figure uses red lines and font to locate site and building locations against a backdrop of green. This makes it virtually impossible to see the site and building locations for someone who is color blind (overall, 7 – 10% of the population have red-green color blindness). Therefore, it is requested that the lines and font that are currently in red be changed to white.
3. 600 Area Site Background, fifth paragraph, page 6 – It is requested that the last sentence of the paragraph be revised to read: “Exceedances of an explosive, RDX, were detected in groundwater and surface water.”
4. 600 Area Site Background, sixth paragraph, page 6 –
 - a. For AOC 1 – 4, delete “RI” located in front of the site number.
 - b. For AOC 4, add “, Site 11” after “Bldg. 647”.
5. 600 Area Site Background, eighth paragraph, page 6 –
 - a. The disposal of the source materials in AOC-1 (the Munitions Waste Pit) occurred in the 1970s. The area continues to operate as a source for groundwater contamination after 30+ years, further supporting the conclusion that natural attenuation is operating inefficiently at this site.
 - b. Revise the first sentence to state: “The probable source of TCE in groundwater is the leaching of TCE from impacted soils/fill associated with the 1970s debris disposal activity on AOC 1.”
 - c. In the second sentence, insert “as shown in Figure 5” between “plume” and “indicates”.
6. 600 Area Site Background, ninth paragraph, page 6 – Please refer to General Comment 2.
7. 600 Area Site Background, tenth paragraph, page 6 – This paragraph should be deleted as it is also stated in Scope and Role of the Remedial Action.

8. Scope and Role of the Remedial Action, third paragraph, page 7 –
 - a. In the first sentence delete the second “groundwater”.
 - b. In the second sentence change “ARARs” to “ARAR”.
 - c. In the fourth sentence, delete “and institutional controls” as they are a component of land use controls.
9. Identification of Environmental Contamination, first paragraph, page 7 – Delete “baseline” from the second sentence.
10. Identification of Environmental Contamination, second paragraph, page 7 –
 - a. Revise the first sentence to state: “Based on data collected during previous investigations and the 2009 Groundwater Investigation, an area of VOC contamination in groundwater at the 600 Area has been identified.”
 - b. Revise the second sentence to state: “The source area of the plume has been tentatively identified.....”
11. Identification of Environmental Contamination, Groundwater, third paragraph, page 7 – In the second sentence revise “Dichlorethane” to lower case.
12. Identification of Environmental Contamination, Groundwater, third paragraph, page 10 – In the third sentence revise “Dichlorethane” to lower case.
13. Identification of Environmental Contamination, Groundwater, fifth paragraph, page 10 –
 - a. In the fifth sentence, according to the scale on Figure 5, the distance from 13MW-1 to the southwest 1.0 ug/L contour is approximately 1,100 ft.
 - b. Eighth sentence -
 - i. According to the scale on Figure 5, the distance from 13MW-1 to the southeast edge of the plume is approximately 800 ft.
 - ii. MW-5 is incorrectly listed as bounding the southeast edge of the plume. MW-5 is located to the northeast of the plume. Instead of MW-5, MW-7 (0.49 ug/L) could be referenced as a boundary well.
14. Identification of Environmental Contamination, Groundwater, fifth paragraph, page 10 – The second sentence says that, “Multiple rounds of sampling have shown the [TCE] plume to be in a steady state.” The observation is made (Page 10, 4th full paragraph) that recent decreasing concentrations in well 13MW-1, near to suspected source area, may indicate a decrease in the source area. Further, it is noted that although the downgradient plume concentrations are fluctuating and do not show any clear trends, this is not unexpected due to the recent onset of lower TCE concentrations at well 13MW-1. This hypothesis requires a number of assumptions based on currently unclear data trends.
15. Identification of Environmental Contamination, Groundwater, sixth paragraph, page 10 –

- a. The first sentence states: “The plotted TCE plume is very wide, and may have been laterally dispersed by the higher topography well 13MW-1.....” This is a conjecture and arcane point that is not necessary to state in the proposed plan. That being the case, it is requested that it be deleted.
 - b. In the third sentence, change “southeastern” to “northeastern”.
16. Identification of Environmental Contamination, Groundwater, seventh paragraph, page 10 – The third sentence states: “Source area (AOC1) well 13MW-1 shows fluctuating TCE concentrations during the sampling period.....” Referring to monitoring well 13MW-1 as the source area well creates considerable confusion in this document. First of all, it is presumed to be the source area well because the groundwater plume up gradient of the well has not been delineated due to the rock pile. In addition, the document refers to a potential source area in soil which is may be continuing source of TCE to groundwater. Therefore, contaminated groundwater located under the presumed source area should not also be referred to as a source area. At other Picatinny groundwater OUs such as Site 78 and Group 3, no source area in soil was found for groundwater contamination and higher levels of groundwater contamination were not referred to as a source area. Therefore, higher levels of TCE groundwater contamination in the 600 Area groundwater plume should not be referred to as a source area. Please refer to General Comments 3 and 6.
17. Identification of Environmental Contamination, Soils, third paragraph, page 11 – Revise the third sentence to state: “Low concentrations of TCE were.....”
18. Identification of Environmental Contamination, Surface Waters, first paragraph, page 11 – In the last sentence of the paragraph, replace “rather” with “other”.
19. Identification of Environmental Contamination, Surface Waters, third paragraph, page 11 –
- a. Insert “(see Figure 7)”after the end of the third sentence.
 - b. Revise the last sentence in the paragraph to read: “Consequently, TCE detections in surface water will be addressed by the remedy put in place for groundwater.”
20. Identification of Environmental Contamination, Sediment, third paragraph, page 11 – Insert “(see Figure 7)”after the end of the last sentence in the paragraph
21. Summary of Site Risks, Human Health Risk Assessment, fifth paragraph, page 12 – Add “index of 1” to the end of the last sentence in the paragraph to form “...below USEPA’s target noncancer hazard index of 1.”
22. Summary of Site Risks, Human Health Risk Assessment, seventh paragraph, page 12 – When VOC concentrations are above 100 µg/L, as occurs beneath Building 660 (Figure 5), Region 2 requires that soil gas and subslab data be collected to address potential vapor intrusion issues, rather than relying on modeling, e.g., the Johnson and Ettinger Vapor Intrusion Model.

23. Summary of Site Risks, Ecological Risk Assessment, second paragraph, page 13 – Break the fourth sentence into two sentences as follows: “These screening levels are intended to be conservative estimates of potential effects. That is, although the presence of concentrations above screening values does not imply that effects are present, all concentrations.....”
24. Identification of Chemicals of Concern, second paragraph, page 13 – Revise the fifth sentence to state: “If the maximum concentration of the COPC exceeds the chemical-specific ARAR level, the COPC.....”
25. Identification of Chemicals of Concern, Groundwater, page 13 – At the end of the sentence add “(Shaw 2010)”.
26. Identification of Chemicals of Concern, Surface Water, page 13 – Delete the third sentence as the following sentences fully explain how TCE detections in surface water will be addressed by the groundwater remedy.
27. Remedial Action Objectives page 25 – Revise the first bullet to state: “To prevent human exposure to contaminated groundwater until the SCL for TCE is achieved.”
28. Area of Attainment and Remedial Cleanup Levels, second paragraph, page 25 –
 - a. Revise the first sentence to state: “The NJGWQS ARAR for TCE of 1 ug/L will be used as a site cleanup level (SCL) within the AA.”
 - b. In the second sentence, revise “RAO” to “RAOs”.
 - c. Delete the last sentence of the paragraph.
29. Threshold Criteria, Overall Protection of Human Health and the Environment, page 25 – Revise the last sentence of the paragraph to state: “This criterion will be met if the risks associated with exposure to contaminated groundwater are eliminated or reduced through treatment and/or LUCs and if the remedial alternative is protective of environment.”
30. Threshold Criteria, Compliance with ARARs, page 25 –
 - a. In the first sentence, replace “contaminant” with “chemical”.
 - b. In the second sentence, place a parenthesis before “USEPA”.
31. Primary Balancing Criteria, Cost, page 27 – The last sentence states: “Costs were then compared on a common, present-worth basis in term of 2001 dollars.” Since 2001 is relatively distant in the past, an explanatory note should be added such as that was the date the FS was completed.
32. Modifying Criteria, State Acceptance, page 27 – Change “alternatives” to “the selected alternative”.

33. Modifying Criteria, Community Acceptance, first paragraph, page 27 - Change “alternatives” to “the preferred alternative”.
34. Alternative GW-1: No Action, Protection of human health and the environment, page 28 – Capitalize “human health” and “environment” to be consistent with other criteria headings. Note: this comment also applies to Alternative GW-2 through Alternative GW-6.
35. Alternative GW-2: Long-Term Monitoring, second paragraph, page 29 – In the fifth sentence change “....and once every five years to year 60.” to “.....and less often after that with agreement from USEPA and NJDEP.” Note: this comment also applies to Alternative GW-3 through GW-5.
36. Alternative GW-2: Long-Term Monitoring, second paragraph, page 29 –
- a. In the second sentence change “....of the current treatment system and monitoring wells.” to “....of the current treatment system on the AWDF potable well and monitoring system.”
 - b. Break the third sentence into two and revise as follows: “No active treatment system would be implemented to remove TCE from the 600 Area TCE plume. Rather, LTM of groundwater and surface water will be implemented.”
37. Alternative GW-2: Long-Term Monitoring, Institutional Controls, page 29 –
- a. Revise the second sentence to state: “ICs would achieve this objective by restricting exposure to contaminated groundwater that exceeds the NJGWQS.”
 - b. Land use controls (LUCs) include institutional controls (ICs) and engineering controls. Therefore, revise the third sentence to state: “As long as Picatinny is under military control, LUCs would be in place.”
38. Alternative GW-2: Long-Term Monitoring, Groundwater Use Restrictions, page 29 –
- a. Revise the first sentence to state: “Groundwater use restrictions would involve prohibitions of well installation/operation without well head protection and prevent exposure to impacted groundwater until remedial goals are achieved.”
 - b. In the last sentence of the paragraph replace “affected” with “effected”.
39. Alternative GW-2: Long-Term Monitoring, LTM, first paragraph, page 29 –
- a. The Preferred Alternative includes Long-Term Monitoring (LTM), partially for the purpose of determining the need for a contingent remedy. There is a discussion of an exit strategy should the VOCs in groundwater decrease below ARARS (Page 30, 2nd full paragraph), but no clear plan if the concentrations increase or the plume expands. There should be a statement of how any concentration increases or plume expansion would be addressed, e.g., through active remediation.
 - b. In the last sentence of the paragraph, delete “potential”.

40. Alternative GW-2: Long-Term Monitoring, Compliance with ARARs, page 30 – In the second sentence change “has” to “have”.
41. Alternative GW-2: Long-Term Monitoring, Short-Term Effectiveness, page 30 - The Preferred Alternative would not be effective in the short-term. The response appears to be addressing a different issue.
42. Alternative GW-3: MNA with ICs, first paragraph, page 30 - 31 –
 - a. In the fifth sentence change “ARAR” to “SCL”.
 - b. In the last sentence of the paragraph change “five year study” to “five-year review”.
43. Alternative GW-3: MNA with ICs, third paragraph, page 31 – In the next to last sentence in the paragraph, insert “naturally” before “attenuated”.
44. Alternative GW-3: MNA with ICs, Institutional Controls, page 31 – Revise the third sentence to state: “As long as Picatinny is under military control, LUCs would be in place.”
45. Alternative GW-3: MNA with ICs, Groundwater Use Restrictions, page 31 –
 - a. Revise the first sentence to state: “Groundwater use restrictions would involve prohibitions of well installation/operation without well head protection and prevent exposure to impacted groundwater until remedial goals are achieved.”
 - b. In the last sentence of the paragraph, change “affected” to “effected”.
46. Alternative GW-3: MNA with ICs, MNA, first paragraph, page 31 – Change “GW-2” to GW-3”.
47. Alternative GW-3: MNA with ICs, MNA, third paragraph , page 31 – 32 – Revise the fourth sentence as follows: “Surface water samples would also be collected contemporaneously.....”
48. Alternative GW-3: MNA with ICs, Protection of Human Health and the Environment, page 31 – In the first sentence change “GW-2” to “GW-3”.
49. Alternative GW-4: In Situ Chemical Oxidation (ISCO) with MNA Polishing, first paragraph, page 32 –
 - a. The first sentence refers to “three periodic injections of a chemical oxidizer in the source area of the plume”. It should be explained why a vapor extraction system to remove TCE from the hypothetical source area in soils could not be used in conjunction with the injection remedy for groundwater. Please refer to General Comment 1 and revise the discussion throughout the section as necessary.
 - b. Revise the latter part of the first sentence as follows: “...thereby decreasing contaminant discharge into the downgradient potable well and surface water.”

- c. Revise the third sentence as follows: “Successful treatment will result in TCE concentrations dropping below the chemical-specific ARAR in an approximate four year period.”
50. Alternative GW-4: In Situ Chemical Oxidation (ISCO) with MNA Polishing, second paragraph, page 32 –
- Revise the last part of the first sentence as follows: “.....followed by MNA polishing for the remaining TCE in groundwater within the AA.”
 - The second sentence refers to a likely rebound after active treatment in the source area. Please refer to General Comment 3.
 - The fourth sentence states: “A 60 year monitoring period is assumed based upon the hypothetical leaching rate of TCE from source soils.” Please refer to General Comment 3.
51. Alternative GW-4: In Situ Chemical Oxidation (ISCO) with MNA Polishing, third paragraph, page 33 – In the second sentence delete “if it is required” as it is redundant.
52. Alternative GW-4: In Situ Chemical Oxidation (ISCO) with MNA Polishing, fourth paragraph, page 33 –
- The second sentence refers to a treatment zone for the injection remedy to treat the source area. Please refer to General Comment 3.
 - Revise the last part of the last sentence as follows: “...which would prevent TCE discharge into the downgradient production well and surface water above applicable standards.
53. Alternative GW-4: In Situ Chemical Oxidation (ISCO) with MNA Polishing, fifth paragraph, page 33 –
- Revise the third sentence as follows: “Selection of one well to use as the pilot injection well would be made based on observations made during installation such as well yield and the number and distribution of producing fractures determined from borehole geophysics.”
 - Revise the fourth sentence as follows: “Additional components of this alternative include groundwater monitoring, ICs, planning, permitting and reporting as presented under Alternatives GW-2 and GW-3.”
54. Alternative GW-4: In Situ Chemical Oxidation (ISCO) with MNA Polishing, Protection of Human Health and the Environment, page 33 – The first sentence refers to “source area”. Please refer to General Comments 3 and 6.
55. Alternative GW-5: In Situ Enhanced Anaerobic Bioremediation and MNA with ICs, page 34 – “Source area” is repeatedly referred to in this section apparently relevant to higher concentrations of TCE in the groundwater plume. Please refer to General Comment 3.
56. Alternative GW-5: In Situ Enhanced Anaerobic Bioremediation and MNA with ICs, first paragraph, page 34 –

- a. Revise the last part of the first sentence as follows: "...thereby decreasing contaminant discharge into the downgradient production well and surface water."
 - b. In the second sentence, place "Biochlor" before "model".
57. Alternative GW-5: In Situ Enhanced Anaerobic Bioremediation and MNA with ICs, fifth paragraph, page 35 – Revise the fifth sentence as follows: "Selection of one well to use as the pilot injection well would be made based on observations made during installation such as well yield and the number and distribution of producing fractures determined from borehole geophysics."
58. Alternative GW-5: In Situ Enhanced Anaerobic Bioremediation and MNA with ICs, fifth paragraph, Short-Term Effectiveness, page 36 – Revise the next to last sentence as follows: "Bioaugmentation has been demonstrated to be effective where the indigenous microbial population is incapable of vinyl chloride degradation."
59. Alternative GW-6: Source Material Removal and MNA with ICs, second paragraph, page 36 – It is requested that it be mentioned in this paragraph or other appropriate location that the existing rock pile would have to be moved to effect this remedy.
60. Alternative GW-6: Source Material Removal and MNA with ICs, fifth paragraph, page 36 – In the second sentence, replace "remediation" with "removal".
61. Alternative GW-6: Source Material Removal and MNA with ICs, Contaminated Soil Excavation and Confirmatory Sampling, first paragraph page 38 – The last sentence of the paragraph states: "Visual observations and confirmatory sampling will be used to determine the limits of the excavation."
62. Comparative Analyses of Remedial Alternatives, Overall Protection of Human Health and the Environment, page 39 – In the first sentence, insert "non-potable" before "use" at the end of the sentence.
63. Comparative Analyses of Remedial Alternatives, Short-Term Effectiveness, page 39 – Revise the first sentence of the paragraph as follows: "Alternative GW-1 offers unchanged risk to the community and thus the RAOs would not be achieved."
64. Community Participation, Army's Review of Public Comment, page 41 – Revise the third sentence as follows: "A Responsiveness Summary, which summarizes the Army's responses to comments received during the public comment period, will be issued with the ROD."