



Groundwater Cleanup Issues

**US Army Environmental Command
Oversight South/Hawaii Branch**

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Agenda

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Cleanup Drivers

- CERCLA §104(a)(1) - authorizes the President (and through EO 12580, the Army) to take response measures consistent with the national contingency plan that are deemed necessary to protect the public health or welfare or the environment.
- RCRA Corrective Action (EPA, 2004) focuses on:
 - ✓ Controlling short-term threats;
 - ✓ prioritizing actions to address the greatest risks first; and
 - ✓ making progress toward returning contaminated groundwater to its maximum beneficial use.
- DERP Guidance (Sep 2001) – Reduce risk to human health and the environment through implementation of effective, legally compliant, and cost-effective response actions.



Land Use Considerations

- Risk assessments should continue to evaluate the risk to receptors based on current and reasonably anticipated land use.
- When an unacceptable risk is identified, evaluate a range of remedial alternatives that achieve “risk-based” cleanup levels with varying cleanup timeframes.
- When contaminated groundwater is not currently used and there is no planned use of the resource (e.g., alternate water supply or LUCs can prevent groundwater exposure), it is appropriate to consider alternatives achieving “restoration” cleanup levels over an extended timeframe.
- Where extended timeframes are appropriate, passive remedies (e.g., MNA) should be considered.
- Select CERCLA remedies using criteria provided in §300.430(e)(9)(iii) (i.e., NCP 9-criteria).



CERCLA Programmatic Expectations

- Use treatment to address the principal threats posed by a site, wherever practicable.
- Use engineering controls, such as containment, for waste that poses a relatively low long-term threat or where treatment is impracticable.
- Use a combination of methods, as appropriate, to achieve protection of human health and the environment.
- *Use institutional controls such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants, or contaminants.*
- Consider using innovative technology when such technology offers the potential benefits.
- *Return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site.*

(Reference §300.430(a)(1)(iii))



RCRA Remedial Expectations

- Use treatment to address the principal threats posed by a site, wherever practicable.
- Use engineering controls, such as containment, for waste that poses a relatively low long-term threat or where treatment is impracticable.
- Use a combination of methods, as appropriate, to achieve protection of human health and the environment.
- Use institutional controls such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous wastes and substances.
- Consider using innovative technology when such technology offers the potential benefits.
- Return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site.
- *Remediate contaminated soils as necessary to prevent direct contact and transfer of contaminants to other media.*

(Reference 1996 Advanced Notice of Proposed Rulemaking FR Page 19448)



Regulatory Programs & Policy

- EPA Policy for Remediation Programs:
 - ✓ Prevent unacceptable exposures of human and ecological receptors to contaminated groundwater;
 - ✓ Remediate contaminated aquifers to beneficial uses where practical.
- Under the Comprehensive State Ground Water Protection Program (CSGWPP), States with approved programs determine the current and reasonable future groundwater use. With limited exceptions, most groundwater is considered to be a potential drinking water source.
- Source of Disagreement: Is it always “reasonable” to expect groundwater to be a future source of drinking water? Need to consider:
 - ✓ Expected time frame of future use
 - ✓ Likelihood of use within a certain time period (e.g., 30 years).



Regulatory Perspective

- Example #1 The aquifer is clearly a drinking water aquifer, and as such should be protected. The Federal Owner of the property does not make the call as to whether the aquifer is a drinking water aquifer, and we can not treat groundwater differently just because it is below property owned by the Army.
- Example #2 It appears that the intent for restoration of the ground water to Maximum Contaminant Levels (MCLs) was present but not explicitly stated in the Final Record of Decision (ROD). To align the intention of restoration of ground water to MCLs in the appropriate CERCLA decision documents and clarify the Remedial Action Objectives (RAOs) for future protectiveness determinations, the Army should proceed to include an RAO for restoration of ground water to MCLs by following appropriate EPA Guidance concerning documenting post-ROD changes (e.g., Explanation of Significant Differences (ESD) or ROD Amendment).



Remedial Action Objectives

- Each objective should have a metric, that can be measured at the particular site in order to evaluate achievement of the objective.
- How can you determine if you have met your objective if you cannot measure it?
- Army-EPA-States have disagreed over language for remedial action objectives at several installations.
- Recent disagreements focus on:
 - ✓ Programmatic Expectations
 - ✓ Controlling Plume Migration



Approach for Developing RAOs

- RAOs should address unacceptable risks and recognize the NCP's programmatic expectation to restore groundwater to beneficial use.
- Risk-Based Remedial Action Objective
 - ✓ Address risks associated with current and reasonably anticipated land use.
 - ✓ Requires evaluation of active/passive remedies to reduce the toxicity or mobility of contaminants;
 - ✓ Limit exposure to contaminated groundwater (e.g., LUCs)
- Restoration Remedial Action Objective
 - ✓ Reduce COC to levels that allow for beneficial use within a timeframe that is reasonable given site circumstances.



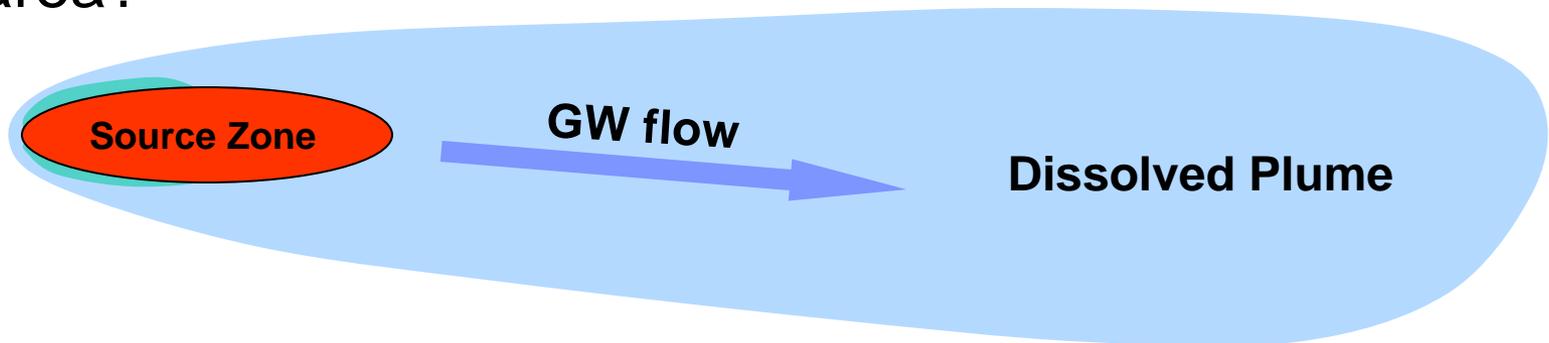
Approach for Addressing Migration

- For areas where exposure cannot be controlled (e.g., off-post areas), consider both active and passive remedies depending on site-specific factors.
- For on-post areas, evaluate a range of alternatives using LUCs and a combination of source zone treatment, containment technologies, and/or passive remedies.
- Select CERCLA remedies using criteria provided in §300.430(e)(9)(iii) (i.e., NCP 9-criteria).



Source Zone Treatment to Address Risk, Restoration and Plume Migration

- How much source zone treatment is required to:
 - ✓ Restore dissolved plume or reduce migration?
 - ✓ Significantly reduce risk down gradient of the source area?



- Army supports mass removal if:
 - ✓ Risks will be reduced to acceptable levels within an acceptable time frame, or
 - ✓ Life-cycle management costs are optimized



Questions



END OF BRIEF

INSTALLATION MANAGEMENT COMMAND



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