UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

OSWER Directive
9283.1-33

MEMORANDUM

SUBJECT: Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration

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TO: Superfund National Policy Managers, Regions 1 - 10

Purpose

The mission of the Superfund program is to protect human health and the environment, consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA),[1] as implemented by the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), in part by restoring contaminated groundwaters to beneficial use. The purpose of this memorandum is to provide a compilation of some key existing EPA groundwater policies to assist EPA Regions in making groundwater restoration decisions pursuant to CERCLA and the NCP. In addition, by providing this information in a single document, it may serve to enhance the transparency and understanding, by the public, state regulators and others, of EPA's clean up decisions related to groundwater.[2]

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[1] This document provides guidance to Regional staff regarding how the Agency intends to interpret and implement the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) which provides the blueprint for CERCLA implementation. However, this document does not substitute for those provisions or regulations, nor is it a regulation itself. Thus it cannot impose legally binding requirements on EPA, states, or the regulated community, and may not apply to a particular situation based upon the circumstances. Any decisions regarding a particular situation will be made based on the statute and the regulations, and EPA decision-makers retain the discretion to adopt approaches on a case-by-case basis that differ from the guidance where appropriate.

[2] *See* 74 FR 4685-4686 (January 26, 2009) Memoranda from President Obama to the Heads of Executive Departments and Agencies "Transparency and Open Government" (signed January 21, 2009). For example: *Government should be transparent. Transparency promotes accountability and provides information for citizens*

This memorandum brings together and highlights some of the basic principles related to groundwater restoration that are articulated in multiple existing Agency guidance documents, including those related more generally to cleanup actions. It does not create any new guidance to the EPA regions; rather this memorandum addresses some of the key overall principles for groundwater remedial actions, as well as important concepts related to the following:

- Whether CERCLA remedial action is warranted
- Appropriate role of institutional controls (ICs)
- Groundwater classification and beneficial use policy
- Remedial action cleanup levels
- Groundwater point of compliance

In working with other Federal agencies to make groundwater clean up decisions at sites where the other Federal agency is lead for cleanup, EPA Regions should use the principles highlighted in this document to the same extent as at non-federal facility sites.[3] Section 120(a)(2) of CERCLA provides that all guidelines, rules, regulations, and criteria for preliminary assessments, site investigations, National Priorities List (NPL)[4] listing, and remedial actions are applicable to Federal facilities to the same extent as they are applicable to other facilities. It states the following: "No department, agency, or instrumentality of the United States may adopt or utilize any such guidelines, rules, regulations, or criteria which are inconsistent with the guidelines, rules, regulations, and criteria established by the Administrator under this Act."

Background

Groundwater response actions under CERCLA are governed in part by the following mandate established by Congress in CERCLA 121(d)(2)(A):

> …Such remedial action shall require a level or standard of control which at least attains Maximum Contaminant Level Goals established under the Safe Drinking Water Act and water quality criteria established under section 304 or 303 of the Clean Water Act, where such goals or criteria are relevant and appropriate under the circumstances of the release or potential release.

This requirement is reflected in the NCP as follows: "Maximum contaminant level goals (MCLGs), established under the Safe Drinking Water Act, that are set at levels above zero, …" or "maximum contaminant level (MCL) shall be attained where relevant and appropriate to the circumstances of the release…"[5]

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about what their Government is doing. Information maintained by the Federal Government is a national asset. My Administration will take appropriate action, consistent with law and policy, to disclose information rapidly in forms that the public can readily find and use. See also memorandum from EPA Administrator Lisa Jackson to EPA Employees (April 23, 2009).

[3] CERCLA Section 120(e)(4))A) provides a role for EPA in the selection of remedies at Federal facilities on the National Priorities List.

[4] *See* 55 FR 8666-8865 (March 8, 1990).

[5] 40 CFR §300.430(3)(B) and (C).

Consistent with CERCLA and the NCP, Superfund response actions protect human health and the environment in a number of ways, such as by remediating contaminated soils, restoring contaminated groundwaters to their beneficial uses, preventing migration of contaminant plumes, and protecting groundwater and other environmental resources. To ensure protective remedies, CERCLA response actions that clean up contaminated groundwater generally address all pathways of exposures that pose an actual or potential risk to human health and the environment. For example, groundwater response actions should generally address the actual or potential direct contact risk posed by contaminated groundwater (e.g., human consumption, dermal contact, or inhalation), and also should consider the potential for the contaminated groundwater to serve as a source of contamination into other media (e.g., for vapor intrusion into buildings; sediment; surface water; or wetlands).

The NCP establishes general expectations for purposes of groundwater restoration as follows:

> EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site. When restoration of ground water to beneficial uses is not practicable, EPA expects to prevent further migration of the plume, prevent exposure to the contaminated ground water, and evaluate further risk reduction.[6]

Recognizing that groundwaters of the United States are valued natural resources, the Agency carries out CERCLA response actions in a manner that ensures Superfund remedies are protective by, among other things, restoring contaminated groundwater to beneficial uses. Generally, these response actions attain MCLs (and non-zero MCLGs, where appropriate) for current or potential drinking water aquifers.

Principles for Groundwater Remediation

As discussed in the NCP and in various associated guidance, there are in general, five key principles that stem from the overarching expectations for groundwater restoration. These are as follows:

1) If groundwater that is a current or potential source of drinking water is contaminated above protective levels (e.g., for drinking water aquifers, contamination exceeds Federal or State MCLs or non-zero MCLGs), a remedial action under CERCLA should seek to restore that aquifer to beneficial use (e.g., drinking water standards) wherever practicable.
2) Groundwater contamination should not be allowed to migrate and further contaminate the aquifer or other media (e.g., vapor intrusion into buildings; sediment; surface water; or wetland).
3) Technical impracticability waivers and other waivers may be considered, and under appropriate circumstances granted if the statutory criteria are met, when groundwater clean up is impracticable; the waiver decision should be scientifically supported and clearly documented.

[6] 40 CFR §300.430(a)(1)(iii)(F).

4) Early actions[7] (such as source removal, plume containment, or provision of an alternative water supply[8]) should be considered as soon as possible. ICs related to groundwater use or even surface use, may be useful to protect the public in the short-term, as well as in the long-term.
5) ICs should not be relied upon as the only response to contaminated groundwater or as a justification for not taking action under CERCLA.[9] To ensure protective remedies, CERCLA response action cleanup levels for contaminated groundwater should generally address all pathways of exposure that pose an actual or potential risk to human health and the environment.

In addition, the state or tribe with jurisdiction over the groundwater often can have an important role in framing EPA's approach to groundwater characterization and remediation under Superfund. For example, states and tribes may have antidegradation or similar regulations or requirements that may be potential applicable, or relevant and appropriate requirements (ARARs). How state and tribal groundwater policies potentially impact remediation decisions is discussed later in this guidance.

Whether CERCLA Remedial Action is Warranted

The NCP preamble states, "The results of the baseline risk assessment are used to determine whether remediation is necessary, to help provide justification for performing remedial action, and to assist in determining what exposure pathways need to be remediated."[10] In the "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions" (OSWER Directive 9355.0-30, April 22, 1991) (see http://www.epa.gov/oswer/riskassessment/pdf/baseline.pdf), the Agency further clarified this policy:

> Chemical-specific standards that define acceptable risk levels (e.g., non-zero MCLGs, MCLs) also may be used to determine whether an exposure is associated with an unacceptable risk to human health or the environment and whether remedial action under Section 104 or 106 is warranted. For ground water action, MCLs and non-zero MCLGs will generally be used to gauge whether remedial action is warranted.

In addition, the NCP preamble notes that regulations that help define protectiveness (e.g., MCLs) also may help ascertain whether a remedial action taken at a site remains protective for CERCLA purposes.[11]

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[7] See "Considerations in Ground-Water Remediation at Superfund Sites and RCRA Facilities –Update" (Directive Number 9283.1-06, May 27, 1992) for a more complete discussion of early actions. (See pages 6-8.)
[8] *See* 55 FR 8865 (March 8, 1990) for a list of potential ways of providing an alternative water supply (Appendix D).
[9] *See* 40 CFR § 300.430(a)(iii)(D) ("The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy.") Also see 40 CFR § 300.430(a)(iii) (A) related to the expectation for treatment.
[10] *See* 55 FR 8709 (March 8, 1990).
[11] In the context of post-ROD changes, the NCP preamble notes: "... a remedy must be modified if necessary to protect human health and the environment; newly promulgated or modified requirements contribute to that

A CERCLA remedial action generally is appropriate[12] in various circumstances, including: a regulatory standard that helps define protectiveness (e.g., a federal or state MCL or nonzero MCLG for current or potential drinking water aquifers) is exceeded; when the estimated risk calculated in a risk assessment exceeds a noncarcinogenic level for an adverse health effect or the upper end of the NCP risk range for "cumulative carcinogenic site risk to an individual based on reasonable maximum exposure for both current and future land use[13]"; the non-carcinogenic hazard index is greater than one (using reasonable maximum exposure assumptions for either the current or reasonably anticipated future land use); or the site contaminants cause adverse environmental impacts.[14] It is important to note that all conditions do not need to be present for action and the conditions may be independent of each other.

Under existing Agency policy, groundwaters that are current or potential sources of drinking water that exceed risk-based standards (e.g., MCLs) or pose an unacceptable risk generally warrant a remedial action under CERCLA. Other routes of exposure, such as vapor intrusion, or current or potential threat to sediment quality, surface water quality, wetlands or critical habitats for protected species, also may be the basis for remedial action under CERCLA.

Appropriate Role of ICs

While ICs related to groundwater or surface use may be used as part of a response action, the NCP preamble indicates that ICs generally are not to be included when evaluating whether a CERCLA remedial action is appropriate in the first place.[15] In addition, the NCP preamble[16] states that "[t]he baseline assessment is essentially an evaluation of the no-action alternative. Institutional controls, while not actively cleaning up the contamination at the site, can control exposure and, therefore, are considered to be limited action alternatives."[17] Therefore, the baseline assessment should not include the impact of potential or existing ICs.

Furthermore, an IC by itself generally should not substitute for active remediation[18] of groundwater. The NCP preamble states: "Institutional controls will usually be used as supplementary protective measures during implementation of ground-water remedies."[19]

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evaluation of protectiveness." *See* 55 FR 8758 (March 8, 1990).

[12] *See* "Rules of Thumb for Superfund Remedy Selection" OSWER Directive 9355.0-69 (August 1997)

[13] *See* "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions" OSWER Directive 9355.0-03 (April 22, 1991).

[14] *See* "Rules of Thumb for Superfund Remedy Selection" OSWER Directive 9355.0-69 (August 1997)

[15] *See* 55 FR 8710- 8711, (March 8, 1990).

[16] *See* 55 FR 8711 (March 8, 1990).

[17] Some Regions have incorrectly identified remedies requiring only institutional controls as "no action" remedies. For further information and guidance regarding ICs, see http://www.epa.gov/superfund/policy/ic/guide/index.htm

[18] *See* 40 CFR § 300.430(a)(iii)(D) ("The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy.")

[19] *See* 55 FR 8732 (March 8, 1990).

While there may be limited circumstances where an IC-only final remedy[20] is appropriate, generally an IC-only ROD would follow selection of other remedial action elements in previous decision documents. For example, previous decision documents may have selected active remediation that included removal of sources contributing to groundwater contamination, may have addressed groundwaters to the extent practicable, and may have invoked a TI waiver of ARARs for specific contaminants in one part of an aquifer. Where the cleanup under previous decision documents has not ensured protection of human health for that part of the groundwater that will not achieve MCLs, a separate decision document would generally be issued to select one or more ICs to prevent current or future exposure to contaminated groundwater.

Where a Region is considering an IC-only ROD that is also an IC-only remedy for all or a portion of a site for groundwater, the Region should consult early with the appropriate Regional Coordinator from Office of Superfund Remediation and Technology Innovation (OSRTI) or Federal Facilities Restoration and Reuse Office (FFRRO). This consultation is intended to ensure that the decision making process appropriately evaluates and properly documents key aspects that may be associated with the remedy selection process leading to an IC-only remedy. This evaluation may include consideration of source removal, active remediation, granting a Technical Impracticability (TI) waiver [21] for applicable and relevant and appropriate requirements (ARARs), or adopting monitored natural attenuation[22] (MNA)).

Groundwater Classification and Beneficial Use Policy

The NCP states that "EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a timeframe that is reasonable given the particular circumstances of the site."[23] This policy often hinges on the determination of the current or potential use of the groundwater aquifer. The NCP preamble states:

> ...to the degree that the state or local governments have classified their ground water, EPA will consider these classifications and their applicability to the selection of an appropriate remedy... If a state classification would lead to a less stringent solution than the EPA classification scheme, then the remediation goals will generally be based on EPA classification. Superfund remedies must be protective. If the use of state classification would result in the selection of a nonprotective remedy, EPA would not follow the state scheme.[24]

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[20] An IC-only ROD is a decision document that is only selecting an institutional control to achieve protectiveness for the current or reasonably anticipated land, ground water or surface water use. It normally does not mean a decision document that selects ICs together with other actions, such as monitored natural attenuation or ground water pump and treat.

[21] *See* "Consistent Implementation of the FY 1993 Guidance on Technical Impracticability of Ground-Water Restoration at Superfund Site" (Directive Number 9200.4-14, Jan. 19, 1995) and "Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration" (Directive Number 9234.2-25, Sept. 1993). For further information see http://www.epa.gov/superfund/health/conmedia/gwdocs/arars.htm

[22] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites" (OSWER Directive 9200.4-17P, April 21, 1999) clarifies EPA policy regarding the use of MNA for soils and groundwater. For further information see http://www.epa.gov/superfund/health/conmedia/gwdocs/monit.htm

[23] 40 CFR § 300.430(a)(1)(iii)(F).

[24] *See* 55 FR 8733 (March 8, 1990).

The NCP preamble also states that if such groundwater classification, as discussed above, is not available, then "[a] determination is made as to whether the contaminated ground water falls within Class I, II, or III. Guidance for making this determination is available in "EPA Guidelines for Ground-Water Classification" (1986 Federal Guidelines) (Final Draft, December, 1986).[25]

The NCP preamble guides almost all EPA groundwater classification and beneficial use decisions for CERCLA response actions. In States that have an EPA-endorsed Comprehensive State Ground Water Protection Program (CSGWPP), however, EPA's guidance entitled: "The Role of CSGWPP in EPA Remediation Programs" (April 4, 1997, OSWER Directive 9283.1-09) builds on the NCP preamble with respect to the State role. The guidance[26] states:

Superfund and other EPA remediation programs should generally defer to a State's determination of current and future groundwater uses, when based on criteria or methodology that 1) are specified in an EPA-endorsed Core CSGWPP, and 2) can be applied at specific sites or facilities.

It further clarifies:

> For States that do not have an EPA-endorsed CSGWPP, or for CSGWPPs that do not have provisions for making site-specific determinations of ground water use (or resource value, priority or vulnerability), the Superfund program will continue to follow guidance provided in the NCP Preamble.

Land use is not identified as a consideration in making groundwater classifications. The CSGWPP Guidance and the 1986 Federal Guidance, as well as other EPA guidance related to groundwater cleanups under CERCLA authority, are available on the "Key OSWER Ground Water Guidances and Reports" on EPA's web page http://www.epa.gov/superfund/health/conmedia/gwdocs/.

In summary, groundwaters should be restored to their beneficial use. While a State's designation of groundwater use will be considered for establishing remediation goals, EPA's classification scheme (*EPA Guidelines for Ground-Water Classification* (Final Draft, December 1986)) will generally be used if a state's classification would lead to a less stringent solution. In 1997, EPA initiated a policy of deferring to a State's determination of current and future groundwater uses, when based on criteria or methodology that are specified in an EPA endorsed CSGWPP, and can be applied at specific sites or facilities.

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[25] *See* 55 FR 8732 (March 8, 1990). Class I and II are considered to be current and potential drinking water aquifers.

[26] "The Role of CSGWPPS in EPA Remediation Programs," (OSWER Directive 9283.1-09) April 4, 1997..

Remedial Action Cleanup Levels

Pursuant to CERCLA section 121, all Superfund remedial actions must be protective of human health and the environment and must comply with ARARs.[27] As noted previously, CERCLA 121(d) specifically identifies Safe Drinking Water Act MCLs and nonzero MCLGs, as well as Clean Water Act Water Quality Criteria as potentially relevant and appropriate standards to be attained by the remedial action. In addition, the NCP states:

Maximum contaminant level goals (MCLGs), established under the Safe Drinking Water Act, that are set at levels above zero, shall be attained by remedial actions for ground or surface waters that are current or potential sources of drinking water, where the MCLGs are relevant and appropriate under the circumstances of the release based on the factors in 300.400(g)(2). If an MCLG is determined not to be relevant and appropriate, the corresponding maximum contaminant level (MCL) shall be attained where relevant and appropriate to the circumstances of the release.[28]

The NCP preamble further clarifies that:

> EPA's policy is that MCLs or MCLGs above zero should generally be the relevant and appropriate requirement for ground water that is or may be used for drinking, and that a waiver is generally needed in situations where a relevant and appropriate MCL or non-zero MCLG cannot be attained."[29]

Where groundwaters may impact surface water quality, "water quality criteria established under section 304 or 303 of the Clean Water Act," may be relevant and appropriate standards consistent with CERCLA §121(d)(2)(A)(ii).

Cleanup levels for remedial actions under CERCLA generally are developed based on site-specific risk assessments, ARARs[30], and/or to-be-considered materials (TBCs).[31] Where

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[27] Under CERCLA section 121(d)(4), an ARAR may be waived under certain circumstances. See 40 CFR 300.430(f)(1)(i)(A) and See 40 CFR 300.430(f)(1)(1)(ii)(B). The NCP further states "On-site remedial action selected in a ROD must attain those ARARs that are identified at the time of the ROD signature or provide grounds for a waiver.."

[28] *See* 40 CFR 300.430(e)(2)(i)(B).

[29] *See* 55 FR 8754 (March 8, 1990).

[30] In situations where two or more regulations are found to constitute ARARs for the CERCLA response, the cleanup level should be established as the more stringent of the levels. For example, the "Use of Uranium Drinking Water Standards under 40 CFR 141 and 40 CFR 192 as Remediation Goals for Groundwater at CERCLA Sites" (Directive No. 9283.1-14, Nov. 6, 2001, page 6), states: "...the CERCLA approach for complying with the MCL throughout the plume is more stringent than the UMTRCA approach of complying with the groundwater standard only in the uppermost aquifer. Thus if an MCL is attained through the plume, the groundwater standard will also be attained in the uppermost aquifer." The same is true for any state ARAR that is more stringent than the Federal ARARs and the remedy would need to meet the more stringent cleanup levels.

[31] "To-be-considered material (TBCs) typically are non-promulgated advisories or guidance issued by Federal or State governments that are not legally binding and do not have the status of potential ARARs. However, TBCs will be considered along with ARARs as part of the site risk assessment and may be used in determining the necessary level of cleanup for protection of health and the environment" "Establishment of Cleanup Levels for CERCLA sites with Radioactive Contamination" (OSWER Directive No. 9200.4-18, Aug. 22, 1997, page 2), See also 40 CFR §

ARARs are not available or are not sufficiently protective, EPA generally sets site-specific remediation levels for: 1) carcinogens at a level that represents an excess upper bound lifetime cancer risk to an individual of between 10^{-4} to 10^{-6}; and for 2) non-carcinogens such that the cumulative risks from exposure will not result in adverse effects to human populations (including sensitive sub-populations) that may be exposed during a lifetime or part of a lifetime, incorporating an adequate margin of safety.[32] As noted in that guidance, Regions should consult with Headquarters before making a site-specific determination that a specific ARAR is not protective of human health and the environment.

CERCLA cleanup levels are designed to address all reasonably anticipated routes of exposure that may pose an actual or potential risk to human health or the environment. For example, Regions should ensure that cleanup levels established to restore groundwater to beneficial use, consistent with the NCP (e.g., restoration to MCLs for current or potential drinking water aquifers), also adequately address other routes of exposure associated with the groundwater, including groundwaters as a source of contamination to other media (e.g., for vapor intrusion into buildings; sediment; surface water; wetlands).

As discussed above, groundwater cleanup levels are established based on promulgated standards (e.g., Federal or State MCLs or non-zero MCLGs, or other standards found to be ARARs), or risk-based levels (e.g., for contaminants when there are no standards that define protectiveness).

Groundwater Area of Attainment or Point of Compliance

The NCP preamble[33] uses both "area of attainment" and "point of compliance"[34] in discussing where groundwater cleanup levels are to be achieved. The area of attainment/point of compliance is important in the overall framework of developing and implementing cleanup of a contaminated aquifer. The NCP preamble sets forth the Agency's policy that for groundwater,

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300.400(g)(3) and CERCLA Compliance with Other Laws Manual: Interim Final (EPA/540/6-89/006, Aug. 1988), at 1-76.

[32]*See* 40 CFR §300.430(e)(2)(i)(A)(1) and (2). Also see "Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals under CERCLA" (OSWER 9200.4-23, Aug. 22, 1997).). "It remains EPA's policy that ARARs will generally be considered protective absent multiple contaminants or pathways of concern....in rare situations, EPA Regional offices should establish PRGs [preliminary remediation goals] at levels more protective than required by a given ARAR, even absent multiple pathways or contaminants, where application of the ARAR would not be protective of human health or the environment. This judgment should be made based on a review of the level of risk associated with application of the ARAR; the soundness of the technical basis for the ARAR; and other factors relating to the ARAR or to its application at an individual site."

[33]."See "Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites" (OSWER Directive 9283.1-2, December 1988, p. xv) where the area of attainment is defined as "[t]he area of the plume outside the boundary of any waste to be managed in place as part of the final remedy and inside the boundaries of the contaminant plume."

[34]See 55 FR 8753-8754, March 8, 1990. These terms complement one another and generally mean that everything down gradient from the point of compliance or area of attainment should achieve the cleanup level. If the point of compliance is throughout the plume, the area of attainment is the entire plume. If the point of compliance is the unit boundary, then the area of attainment is throughout the plume down gradient of the unit.

"remediation levels generally should be attained throughout the contaminated plume, or at and beyond the edge of the waste management area[35] when waste is left in place."[36]

The NCP preamble also indicates that in certain situations it may be appropriate to address the contamination as one waste management area for purposes of the groundwater point of compliance; for example, this may be protective of public health and the environment at certain sites where there are multiple sources from closely spaced waste management areas.[37]

The preamble states:

> In such cases, the most feasible and effective ground-water cleanup strategy may be to address the problem as a whole, rather than source-by-source, and to draw the point of compliance to encompass the sources of release. In determining where to draw the point of compliance in such situations, the lead agency will consider factors such as the proximity of the sources, the technical practicability of ground-water remediation at that specific site, the vulnerability of the ground water and its possible uses, exposure and likelihood of exposure and similar considerations.[38]

In summary, the area of attainment/point of compliance for achieving groundwater cleanup levels is generally expected to be throughout the plume or, where there is a waste management area, at the edge of the waste management area. Regions are strongly encouraged to contact OSRTI groundwater experts listed at the end of the memorandum concerning questions regarding the area of attainment/point of compliance.

Implementation

When addressing groundwater contamination at CERCLA sites, Regions should carefully consider the five principles discussed herein, as well as the NCP and other Superfund guidance documents, in evaluating CERCLA remedial actions. Regions are requested to consult with OSRTI or, when a Federal facility is involved, FFRRO, in cases of IC-only groundwater decision documents or if there are questions related to area of attainment/point of compliance.

This memorandum compiles some key aspects of important groundwater policies regarding CERCLA remedy selection. For further information on the basis for actions and ARARs, please contact Robin M. Anderson at Anderson.RobinM@epa.gov (703) 603-8747. For information related to groundwater response policies, please contact Matt Charsky at Charsky.Matthew@epa.gov (703-603-8777) or David Bartenfelder at Bartenfelder.David@epa.gov (703-603-9047). For questions related to Federal facilities please

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[35] "DNAPLs are typically not located in a waste management area, as envisioned in the NCP." "Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Ground Water at CERCLA Sites" (Directive 9283.1-12, October 1996 at page 18.

[36] *See* 55 FR 8753 (March 8, 1990). Similarly, the preamble to the proposed-NCP states: "For ground water, remediation levels should generally be attained throughout the contaminated plume, or at and beyond the edge of the waste management area when waste is left in place. For surface waters, the selected levels should be attained at the point or points where the release enters the surface waters." *See* 53 FR 51246, December 21, 1988.

[37] *Id.*

[38] See 55 FR 8754, March 8, 1990.

contact Tim Mott at Mott.Timothy@epa.gov (703-603-8807). Consultations should be coordinated through the appropriate Regional Coordinator from OSRTI or, if Federal facilities are involved, FFRRO.

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