

Reference

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*Picking Up the Pieces: State
authority over munitions cleanup*

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The Basics

- Absent legislation waiving federal sovereign immunity, states may not regulate the activities of the federal government
- Major federal environmental laws contain waivers of immunity
 - CAA, CWA, RCRA, SDWA, CERCLA
- Federal courts read these waivers narrowly
- State regulation may be authorized under more than one waiver

RCRA Waiver

- Federal agencies “having jurisdiction over any solid waste management facility or disposal site” or “engaged in any activity resulting, or which may result, in the disposal or management of solid waste or hazardous waste”
- “Shall be subject to, and comply with, all ... State ... requirements, both substantive and procedural ... respecting control and abatement of solid waste or hazardous waste disposal and management

RCRA Waiver -- key issues

- Application to former federal sites/activities?
 - yes: Charter International Oil Co. v. United States, 925 F. Supp. 104 (D.R.I. 1996) (sole case to date)
- What is a “requirement”?
 - Some cases define as “objective standards capable of uniform application”
 - RCRA closure regulations are “requirements”

RCRA waiver -- are munitions a “solid waste”?

- Distinction between statutory and regulatory definitions
 - statutory: broad, applies to waiver, citizen suit, EPA § 7003 orders, corrective action
 - regulatory: narrower, defines scope of subtitle C regulations
- Romero-Barcelo v. Brown, 478 F. Supp. 646 (D. P.R.) (military munitions not statutory solid wastes)

RCRA waiver -- are munitions a solid waste? Yes, they can be.

- 1992 Federal Facility Compliance Act:
 - overturns Romero-Barcelo decision, requires EPA to promulgate rules defining when military munitions become solid waste for purposes of subtitle C of RCRA
 - so, must be a *statutory* solid waste (if discarded)
 - Conference committee rejected Senate provision that would have allowed DOD to be “self-regulating” under RCRA for munitions

EPA munitions rule

- Draft rule:
 - munitions used for intended purposes are *not* solid wastes for purposes of Subtitle C (includes training, testing, range clearance)
 - used/fired munitions on closed, transferred, transferring ranges are *statutory* solid wastes, unless DOD promulgates “range rule;” when that happens, DOD rules “supersede all RCRA authority” over munitions at CTT ranges

EPA munitions rule

- Draft rule:
 - Munitions landing off-range & not rendered safe/retrieved are *statutory* solid wastes
 - Many commenters argued EPA could not allow DOD to “preempt” RCRA

Current status

- Final munitions rule
 - deferred promulgation of rule defining munitions on CTT ranges as *statutory* solid waste
 - munitions that landed off-range are *statutory* solid wastes
 - defines limited circumstances where unused munitions are *regulatory* solid wastes
- DOD range rule never promulgated

Current status cont'd.

- Military munitions are a statutory solid waste outside scope of munitions rule, if they are discarded:
 - implicit in RCRA § 3004(y) (directing EPA to promulgate rule defining when munitions become *regulatory* solid waste)
 - upheld in court case challenging munitions rule
 - consistent with U.S. position in Connecticut Coastal Fishermen's Assoc. v. Remington Arms Co., Inc., 989 F.2d. 1305 (1993)

Ordnance that was left to accumulate ~~court agreed the~~
recent Viequez court are a solid waste

Current status cont'd.

- Discarded military munitions are a statutory solid waste outside scope of munitions rule:
 - U.S. position in Remington Arms: “The literal meaning of ‘discarded’ certainly can encompass shot and targets released into the environment and left to accumulate long after they have served their intended purpose. . . . the ammunition and target fragments, if left on the ground indefinitely, eventually become discarded materials within the statutory definition of “solid waste.””

Current status cont'd.

- Used/fired munitions on CTT ranges are statutory solid wastes
- Used/fired munitions on active and inactive ranges can be statutory solid wastes
- Constituents from used/fired munitions on active ranges contaminating environment are statutory solid wastes
 - EPA order in MMR case
 - otherwise, little or no current regulation of active ranges

CERCLA Waiver

- “State laws concerning removal and remedial action, including State laws regarding enforcement, shall apply to removal and remedial action at facilities owned or operated by a department, agency, or instrumentality of the United States or facilities that are the subject of a deferral under subsection (h)(3)(C) of this section when such facilities are not included on the National Priorities List.”

CERCLA § 120(a)(4)

CERCLA -- key issues

- Does it apply to former federal facilities?
 - 3 district courts have said no; one said yes
- What is a state law “concerning removal or remedial action”?
 - U.S. argues limited to “mini-CERCLAs” that require “specific, predetermined standards for cleanup”
 - rejected in sole case to date: U.S. v. Commonwealth of Pennsylvania, 778 F. Supp. 1328 (1991)

CERCLA -- key issues

- What is a state law “concerning removal or remedial action”?
 - Includes state laws providing for cost recovery and contribution: Crowley Marine Services v. Fednav Ltd., 915 F. Supp. 218 (1995)
- Does CERCLA § 120(a)(4) bar enforcement of state laws at NPL sites?
 - Not state hazardous waste laws authorized by EPA: U.S. v. Colorado, 990 F.2d 1565 (1993)

Summary of state authority over munitions cleanup

- It ain't over till . . ., but:
- UXO at FUDS is a statutory solid waste
- UXO at military facilities may be a statutory solid waste
- Munitions constituents in the environment at FUDS and military bases are statutory solid wastes

Summary of state authority over munitions cleanup

- States may bring RCRA § 7002 imminent and substantial endangerment suits to compel cleanup of UXO & munitions contamination at FUDS and government or contractor owned sites
- States may use state RCRA analogs to RCRA § 7003 to compel cleanup of UXO & munitions contamination at FUDS and government or contractor owned sites

Summary of state authority over munitions cleanup

- States may use state interim status corrective action authority to compel cleanup of UXO and munitions constituents at facilities that have, had or should have had interim status
- States may use state cleanup laws to compel cleanup of UXO and munitions constituents at FUDS and government or contractor owned sites

And by the way

- DOD does not have CERCLA authority over FUDS
 - DOD has only the CERCLA authorities delegated by the President in Exec. Order 12580
 - 12580 delegates CERCLA 104 authorities to DOD for facilities under its “jurisdiction, custody or control”
 - FUDS are not under DOD “jurisdiction, custody or control”

News update: DOE contractor challenges state authority over munitions

- New Mexico recently issued a corrective action order to Los Alamos National Laboratory covering munitions & explosives
- LANL contractor and DOE have filed suit; contractor objects that state has no authority over munitions; DOE complaint not served as of press time

EPA'S ROLE AND AUTHORITY REGARDING ORDNANCE AND EXPLOSIVES

William H. Frank

In speaking about EPA's role and authorities in the cleanup of sites containing munitions, ordnance and explosive waste, I would like to narrow my focus to an enforcement rather than a site management perspective.

EPA Regional Offices often encounter issues related to ordnance and explosives (OE) while overseeing or assisting in response actions at NPL sites, formerly used defense sites (FUDS), BRAC properties, closed ranges on active installations and other hazardous waste sites where OE may be encountered, such as scrap yards, disposal pits, ammunition plants, DoD ammunition depots, OB/OD units, and research and testing facilities. EPA's role varies, as the Agency may be in the lead at private NPL sites or play a concurrence or consultative role at other sites.

The unique nature of OE, including UXO and its residual contamination, however, leads me to focus my discussion on situations where EPA is interested in seeking the relief available against Federal Agencies available under our environmental laws' imminent hazard authorities. I have included as handouts the text of several sample EPA Administrative emergency orders.

In this presentation, I will discuss from an enforcement perspective EPA's statutory and regulatory authorities, as well as the Agency's current Draft OE Guidance.

DoD categorizes ranges as either "operational" or "non-operational." The term "operational" includes both active ranges and inactive ranges remaining under DoD control; the term "non-operational" includes CTT ranges. EPA's concern with OE is primarily with respect to responses at what DoD calls "munitions response areas," which includes non-operational (CTT) ranges and other sites at which munitions response may be appropriate.

As a matter of policy, EPA is not usually concerned with DoD's "operational" ranges. EPA has taken enforcement action directly affecting an active military range only at one site: Massachusetts Military Reservation (MMR). At one other operational site, EPA Region 2 is presently negotiating with the Navy on the terms of a RCRA order concerning the military's training range at Vieques, in Puerto Rico.

Findings of Fact in 7003 (Donovan) Order against MMR lays out the case for why explosives & OE are a threat.

EPA enforcement policy states that environmental problems with similar circumstances should elicit consistent and fair application of enforcement.¹ It is also enforcement policy that development of EPA's enforcement response strategies should include consideration of statutory authorities to decide whether a single or a multimedia approach might be most effective.

Indeed, multiple statutory and regulatory authorities may be applied to CTT ranges. EPA response actions at CTTR and similar sites generally include those actions conducted under the investigation and cleanup authorities of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the corrective action or imminent hazard authorities of the Resource Conservation and Recovery Act (RCRA). EPA or another regulatory entity may use other applicable authorities. Other applicable authorities include, but are not limited to, the following:

- Safe Drinking Water Act (SDWA, 1974, 42 U.S.C. §300f et seq., 40 CFR Parts 141-149);
- Resource Conservation and Recovery Act (RCRA, 1976, 42 U.S.C. §6901 et seq., 40 CFR Parts 240-282);
- Clean Water Act (CWA, 1972, 33 U.S.C. §1251, 40 CFR, Parts 100-136, 140, 230-233, 401-471, 501-503);
- Clean Air Act (CAA, 1970, 42 U.S.C. s/s 7401, §112(r) and §303.

After DoD's effort to promulgate its Range Rule ended, DoD adopted the position that all its range responses will be done under CERCLA. EPA supports range responses consistent with CERCLA and the National Contingency Plan (NCP). Before the two agencies' talks on DoD's proposed Range Rule, EPA reached an interim understanding with DoD on a number of issues. The final status of this interim understanding was made contingent on input from the States and other regulators to be solicited at a later time. The interim guidance was published as the "DoD/EPA Interim Final Management Principles for Implementing Response Actions at Closed, Transferred, and Transferring Ranges."²

EPA continues to take the position that where DoD is using CERCLA, their response actions must be consistent with the NCP and EPA policy and guidelines (per CERCLA Section 120, the Defense Environmental Restoration Program, or DERP, and Executive Order 12580). CERCLA Section 120 applies to sites currently owned by DoD and other Federal agencies and not to privately owned FUDS, which are regulated as other Superfund private-party sites. Consistency with the NCP and with EPA policy and guidelines means that actions taken will achieve the performance requirements outlined for the specific CERCLA phase as determined by EPA.

¹ Operating Principles for an Integrated Enforcement and Compliance Assurance Program, issued by OECA in 1996, <http://www.epa.gov/Compliance/resources/policies/planning/state/oprin-integ-mem.pdf>.

² The joint DoD/EPA *Interim Final UXO Management Principles for Implementing Response Actions at Closed, Transferred, and Transferring (CTTR) Ranges* signed in March 2000.

EPA Draft Guidelines on OE

EPA's Federal Facilities Restoration and Reuse Office currently is circulating for comment by FFEO and the Regions a "Guidance for Addressing Unexploded Ordnance at Munitions Response Areas and Other Sites." The purpose of the guidance document is to provide direction to EPA Regional offices overseeing response actions involving military munitions, including UXO. The guidance builds and elaborates on the joint DoD/EPA *Interim Final UXO Management Principles for Implementing Response Actions at Closed, Transferred, and Transferring (CTTR) Ranges* signed in March 2000. The guidance generally addresses situations where the U.S. Army Corps of Engineers (USACE) or a DoD service component will be conducting the response action. In addition, the guidance is also applicable when other Federal agencies have the lead in the investigation and cleanup of UXO.

The draft guidelines state that regulators' oversight and involvement in all phases of CTTR investigations is crucial to an effective response, both increasing the credibility of the response and promoting public acceptance. The draft guidelines define such involvement to include timely coordination between DoD components and EPA, State, or Tribal regulators, and, where appropriate, the negotiation and execution of enforceable site-specific agreements.

The draft guidance states that where range investigations and responses are occurring, DOD and the regulators should come together and attempt to reach a consensus on whether an enforceable agreement is needed. Examples provided in the draft guidance of situations where an enforceable agreement might be desirable include locations where there is a high level of public concern and/or where there is significant risk

Background: The EPA Munitions Rule

The background to this subject begins with Section 107 of the Federal Facility Compliance Act (FFCA) of 1992, which amended the Resource Conservation and Recovery Act (RCRA) by adding a new section 3004(y). This section required EPA to propose regulations, after consulting with the Department of Defense (DOD) and appropriate State officials, that identify when conventional and chemical military munitions become hazardous waste under RCRA, and that provide for the safe storage and transportation of such waste.

In response to this requirement, EPA promulgated the Munitions Rule (40 CFR Parts 260 through 265, and 270).³ The Rule clarified when conventional and chemical military munitions

³ Final Rule issued February 12, 1997 (62 Fed Reg 6621-6657).

become a hazardous waste under RCRA and amended regulations regarding emergency responses and RCRA manifest requirements.¹ The Munitions Rule deals with that part of the issue concerning the applicability of RCRA Subtitle C requirements -- the law's hazardous waste transportation and record keeping requirements -- rather than the law's cleanup or remediation provisions. The Rule provides conditional exemptions from RCRA Subtitle C regulation when munitions are managed under DoD control and supervision.

Munitions Rule Did Not Address Cleanup on Closed Ranges

As you know, using the authorities in Subtitle C of RCRA, EPA has developed a comprehensive program to ensure that hazardous waste is managed safely from the moment it is generated, while it is transported, treated, or stored, until the moment it is finally disposed. This is the "cradle to grave" management system and, under it, there are requirements for hazardous waste identification, hazardous waste generators, transporters, treatment, storage, and disposal facilities, hazardous waste recycling and universal wastes, land disposal restrictions, combustion, and permitting.

Although RCRA creates the framework for the proper management of hazardous and non-hazardous solid waste, it does not address the problems of hazardous waste found at inactive or abandoned waste sites or those resulting from spills that require emergency response.

The Munitions rule postponed final action on the statutory status of used or fired munitions at closed or transferred ranges, and the regulatory status of used or fired munitions that are recovered and then treated on-range at a closed or transferred range. The Rule states these used or fired materials are potentially subject to RCRA cleanup authorities.

For EPA and States to know how to respond at these closed ranges, a question asked often has been "when are munitions legally considered a waste?" The terms "solid waste" and "hazardous waste" have different meanings depending on the context in which the terms appear.

There are two definitions to keep in mind. These terms are defined in both the statute and in the regulations implementing RCRA Subtitle C. The key point to remember is that the statutory definition of solid waste⁴ is broader in scope than the regulatory⁵ definitions of the term.

⁴ RCRA statutorily defines "solid waste" in section 1004, 42 U.S.C. 6903(27), in pertinent part, as follows:

The term "solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining and agricultural operations, and from community activities . . .

42 U.S.C. 6903(27). The term "hazardous waste" is defined in the statute as those

Another question often asked is whether the munitions in question are used or unused. Unused military munitions meeting the regulatory definitions of "solid waste" could be regulated as hazardous waste and thus be subject to full Subtitle C requirements. Discharged or fired munitions, including UXO, would not meet the regulatory definition of "solid waste" and thus would not be regulated under Subtitle C.

Corrective Action and Imminent Hazard Authority Applies to Munitions

The key point that remains after considering the Munitions Rule, is that from an enforcement perspective discharged or fired munitions that meet the statutory definition of "solid waste" are still subject to RCRA's remedial statutory corrective action and imminent hazard authority.

Discharged or fired munitions can be "solid waste" as defined by the statute, and thus can be reached as hazardous waste under the imminent and substantial endangerment provisions of RCRA and other environmental laws if they "pose substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

There has been legal controversy over these definitions. At the time of the proposed Rule, there were substantial legal and policy arguments for EPA to exercise its authority pursuant to §3004(y) in a way that would not lead to RCRA jurisdiction over range cleanup at any stage.

In *Barcelo v. Brown*, 478 F. Supp. 646, 668-669 (D. Puerto Rico 1979), the District Court held that materials resulting from activities that do not resemble industrial, commercial, mining, or agricultural operations, or community activities fall outside the definition of "solid waste" in RCRA. Because "uniquely military" activities such as target practice at bombing ranges do not fall into any of these categories, the Court held that such activities were not regulated under RCRA.

solid wastes that may "(A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed." 42 U.S.C. 6903(5).

⁵ The terms "solid waste" and "hazardous waste" are defined for purposes of the regulatory program under Subtitle C of RCRA at 40 CFR 261.2 (solid waste) and 40 CFR 261.3 (hazardous waste). Materials meeting these definitions are a subset of the materials meeting the statutory definitions. EPA regulations at 40 CFR 261.1(b)(1) make clear that the regulatory definition of "solid waste" applies only to wastes that are also hazardous for purposes of the regulations implementing subtitle C of RCRA.

A citizens group challenged EPA's munitions rule and on June 30, 1998, the D.C. Circuit Court of Appeals upheld the rule in its entirety, *Military Toxics Project v. EPA*, 146 F.3d 948, specifically upholding EPA's interpretation that UXO is a RCRA statutory solid waste potentially subject to RCRA 7003 -- thus overturning the Barcelo decision.

The Range Rule and Its Aftermath

EPA expected DOD to propose cleanup standards and a cleanup process for closed and transferred ranges under its authorities in a rulemaking to be completed by October 31, 1996. The remedy selection and implementation process in the DoD rule was expected specifically to include a significant role for State regulatory agencies and the interested public. With the promulgation of such a rule, a "Range Rule," EPA believed that the proposed designation of munitions on closed or transferred ranges as a solid waste would be unnecessary.²

Both EPA and DoD had hoped that the DoD Range Rule would have been made final by 1998 and an effective process to address CTT ranges would then be in place. However, DoD's proposed Range Rule fell short of regulators', States', Tribes', and other stakeholders' expectations. Following the end of the effort to promulgate a DoD Range Rule, EPA began to draft a guidance document on OE to provide instruction for EPA personnel in applying existing authorities. Arriving at a final regulatory structure for OE and UXO at CTT ranges remains uncertain.

OE and Cleanup Authorities

EPA's OE guidance emphasizes that negotiated agreements under CERCLA and other authorities play a critical role both in setting priorities for range investigations and responses and in providing a means to balance interdependent roles and responsibilities. Enforceable agreements provide a good vehicle for setting priorities and establishing a productive framework to achieve common goals. The new EPA draft OE guidelines state that to achieve these goals, negotiated cleanup agreements should be developed in consideration of OE hazards, reasonably anticipated future land use, cost, and other factors. Where range investigations and responses are occurring, the guidelines state, "the Lead Agency and the regulator(s) should attempt to reach a consensus on whether an enforceable agreement is appropriate." Examples of situations in which an enforceable agreement might be desirable include sites where there is a high level of public concern or where there is potential for significant exposure.

EPA's position on enforcement regarding UXO has not varied. In the Principles and Range Rule discussions, and in the draft EPA OE guidelines, EPA has made clear that when necessary, the Agency will take enforcement actions against responsible parties, although EPA will attempt to negotiate agreements or orders to conduct the required work prior to unilaterally issuing an order. If EPA determines that a site poses an imminent and substantial endangerment and the responsible parties disagree with EPA's determination regarding the need for schedules or response action(s), an enforcement order based on the nature of the contamination and site-

specific situation would be appropriate. EPA may issue an enforcement order to compel cleanup by any or all responsible parties under an appropriate enforcement authority, including, but not limited to, CERCLA, RCRA, or SDWA. In appropriate situations, EPA may execute a response action as needed to abate imminent and substantial and other threats and proceed with cost recovery actions.

To complete the task of cleanup involving OE, EPA and other regulators should consider the use of the full range of statutory authorities and enforcement tools available to them under all our various pollution control statutes.

EPA and States may use the imminent and substantial endangerment provisions of certain anti-pollution laws to compel compliance and assess and collect penalties for violations of the requirements of the orders.

While CERCLA authorities may be appropriate in many instances where enforcement actions are required to compel investigation and/or cleanup at Federal Facilities, other authorities also are available to EPA in appropriate cases under a streamlined and efficient process. In choosing one or more enforcement authorities to use in a given case, the Agency's choice of authority is an exercise of EPA's inherent enforcement discretion. These other authorities may offer different means to effectively and expeditiously achieve cleanup goals or abate an imminent and substantial endangerment. For example, Section 7003 of RCRA, provides EPA with a "broad enforcement tool that can be used to address situations where the handling, storage, treatment, transportation, or disposal of any solid or hazardous waste may present an imminent and substantial endangerment to health or the environment."⁶

EPA may issue an administrative order to Federal agencies that have "contributed or are contributing to such activities to require the agency to refrain from those activities or take any other necessary action."⁷ Section 1431 of the SDWA⁸, provides EPA authority to issue administrative orders against a responsible party, including a Federal agency, when EPA receives "information that a contaminant which is present in or is likely to enter a public water system or an underground source of drinking water may present an imminent and substantial endangerment to the health of persons."⁹

"Broad, expansive terms" were used by Congress in drafting the imminent hazard provisions included in the environmental statutes "to give appropriate government officials the right to seek relief, or take other appropriate action to avert threats to the environment or public

⁶ 42 U.S.C. §6973. See October 1997 'Guidance on the Use of Section 7003 of RCRA.'

⁷ RCRA Section 7003 may be used to reach contaminants such as petroleum.

⁸ 42 U.S.C. §300i.

⁹ Section 1431(a) of the SDWA, 42 U.S.C. §300i(a).

health.”¹⁰ EPA guidance notes that courts have interpreted this standard as “more lenient than the traditional requirement of threatened irreparable harm.”¹¹

The imminent and substantial endangerment provisions under RCRA, CERCLA, SDWA, CAA, and the Oil Pollution Act,¹² according to Agency enforcement guidance, in some cases can be used advantageously in combination with one another. At a non-NPL FUDs, EPA may want to negotiate a cleanup order with a Federal agency. EPA may choose to pursue joint orders under more than one statutory authority, when possible, in order to maximize the Agency’s authority. Guidance on each statute contains advice on combining these authorities.¹³

RCRA § 7003

Section 7003 of RCRA,¹⁴ provides EPA with a “broad and powerful enforcement tool” that can be used to address situations where the handling, storage, treatment, transportation, or disposal of any solid or hazardous waste may present an imminent and substantial endangerment to health or the environment. In these situations, EPA may issue an administrative order to Federal agencies that have “contributed or are contributing to such handling, storage, treatment, transportation, or disposal to require the agency to refrain from those activities or to take any necessary action.” No concurrence by an outside agency is required on a §7003 order to a Federal agency.

Section 7003(a) of RCRA authorizes the EPA Administrator “to issue an order to a Federal agency whenever the Administrator receives evidence that the past or present handling, storage, treatment, transportation, or disposal of any solid waste or hazardous waste **may present** an imminent and substantial endangerment to health or the environment.”¹⁵ Section 7003(a) is very similar to the imminent and substantial endangerment provision contained in Section 106(a)

¹⁰ See note 6, *supra*.

¹¹ United States v. Price, 523 F. Supp. 1055, 1070 (D. N.J. 1981), *aff’d* 688 F.2d 194, 204 (3rd Cir. 1982).

¹² Enforced by orders under §311(c) and (e) of CWA, see Oil Pollution Act, below.

¹³ See, Final Enforcement Guidance on Implementation of the Federal Facility Compliance Act, <http://www.epa.gov/compliance/civil/federal/rcra.html>, Guidance of Federal Facility Penalty Order Authority Under the Safe Drinking Water Act, as amended in 1996, <http://www.epa.gov/compliance/civil/federal/sdwa.html> Memorandum on Implementation of EPA's Penalty/Compliance Order Authority Against Federal Agencies Under the CAA, <http://www.epa.gov/compliance/civil/federal/caa.html>.

¹⁴ 42 U.S.C. § 6973

¹⁵ *Ibid.*

of CERCLA,¹⁶ and somewhat similar to the corrective action provision set forth in Section 3008(h) of RCRA.¹⁷ However, RCRA § 7003 provides EPA with an effective enforcement tool by allowing EPA to address several types of situations that are beyond the scope of CERCLA § 106(a) and RCRA § 3008(h). For example, petroleum may be covered by a RCRA order, while it is excluded under CERCLA.

Under RCRA, Congress provides administrative order authority on the statute's face directly to the Administrator. This means that EPA can issue the order without the need for outside concurrence. This contrasts with CERCLA, which provides response authority and administrative order authority to the President. To determine who has been delegated the authority from the President for the particular responsibilities under CERCLA, it is necessary to consult Executive Order No. 12580. This authority has been delegated to EPA for use against Federal agencies with the concurrence of the Attorney General.

"Imminent and Substantial Endangerment" Under RCRA § 7003

Demonstrating that the management of a waste may present an "imminent and substantial endangerment to health or the environment" generally requires careful documentation, scientific evidence, and expert witnesses. However, courts have repeatedly recognized that the endangerment standard of RCRA §7003 is quite broad.¹⁸ The "imminent and substantial endangerment" language and standard are very similar to the language and standard contained in CERCLA §106(a) and RCRA § 7002,¹⁹ the RCRA citizen suit provision, which allows "any person to commence a civil action to seek abatement of an imminent and substantial endangerment to health or the environment."²⁰ Thus far, the courts have not distinguished between the endangerment standards of these three provisions. The following principles, listed in EPA enforcement guidance, as cited, have emerged from courts interpreting RCRA and CERCLA's imminent and substantial endangerment provisions²¹:

- **An "endangerment" is an actual, threatened, or potential harm to health or the environment.** As underscored by Congress' use of the words "may present" in the

¹⁶ 42 U.S.C. § 9606(a)

¹⁷ 42 U.S.C. § 6928(h)

¹⁸ United States v. Valentine, 856 F.Supp. 621, 626 (D. Wyo. 1994).

¹⁹ 42 U.S.C. § 6972

²⁰ 'Guidance on the Use of Section 7003 of RCRA'
<http://www.epa.gov/Compliance/resources/policies/cleanup/superfund/guide-7003-rpt.pdf>

²¹ *Ibid.*

endangerment standard of Section 7003, neither certainty nor proof of actual harm is required. Endangerment to the environment does not require a risk to living organisms. Thus, a risk to groundwater in a populated area is sufficient even if the conditions may not present an endangerment to humans or other life forms.²²

- **An endangerment can be "imminent" if the present conditions indicate that there may be a future risk to health or the environment, even though the harm may not be realized for years.**²³ It is not necessary for the harm to be immediate.
- **An endangerment can be "substantial" if there is reasonable cause for concern that health or the environment may be at risk.**²⁴ It is not necessary that the risk be quantified.

The 1997 Guidance on RCRA § 7003 contains a detailed discussion of appropriate factors to consider as well as specific examples where courts have found an endangerment. The guidance also contains a section on Federal agencies.²⁵

Corrective Action: RCRA §3008(h)

Another enforcement tool to speed cleanup by compelling action by responsible parties is found in the RCRA Corrective Action program, which is a result of the 1984 Hazardous and Solid Waste Amendments (HSWA) passed by Congress. These amendments required the cleanup of present contamination from past or present improper waste management practices. The statute requires responsible parties that are seeking a permit to treat, store or dispose of hazardous wastes to clean up environmental contaminants at their sites regardless of the time of release. EPA's Corrective Action authority was substantially expanded by HSWA, allowing the Agency to address any releases of hazardous waste or hazardous waste constituents to all environmental media at both RCRA permitted and non-permitted facilities.²⁶

²² *Ibid.*

²³ *Ibid.*

²⁴ *Ibid.*

²⁵ *Ibid.*

²⁶ See OECA Corrective Action at <http://www.epa.gov/Compliance/resources/policies/cleanup/rcra/guide-corr-rpt.pdf>

Corrective action authority applies to substances defined as hazardous waste and/or hazardous constituents under RCRA. Hazardous wastes are defined in RCRA part 1004(5) and 40 CFR section 261.3 and are listed in Subpart D of Part 261. Criteria for identifying the characteristics of and for listing hazardous wastes are provided in Subpart B of Part 261. Hazardous constituents are listed in Appendix VIII of 40 CFR part 261 and/or Appendix IX of 40 CFR part 264. Mixed radioactive and hazardous chemical waste are subject to corrective action authority.²⁷

Safe Drinking Water Act

Another strong enforcement tool is found in the Safe Drinking Water Act (SDWA). SDWA §1431 orders can be issued against Federal units or officials, owners or operators of a PWS or underground injection well (UIC), area or point source polluters, including individual wells, or to any other Federal agency whose action or inaction requires prompt regulation to protect public health.

The statutory standard under SDWA § 1431 and RCRA § 7003 is the same: "may present and imminent and substantial endangerment". This statutory threshold is reinforced by the legislative history of § 1431, and judicial case law regarding endangerment.²⁸

On August 6, 1996, the Safe Drinking Water Act Amendments of 1996, Pub. L. No. 104-182 (the Amendments), became law. Prominent among the Amendments, are several provisions uniquely applicable to federal entities. The new SDWA clarifies that Federal agencies could be subject to a penalty order for a violation of an administrative order.²⁹

EPA guidance on SDWA § 1431 states that EPA has enforcement authority:

"to issue administrative orders against a federal agency when EPA receives 'information that a contaminant which is present in or is likely to enter a [PWS] or an [USDW] may present an imminent and substantial endangerment to the health of persons.' Second, the

²⁷ *Ibid.*

²⁸ Fred Hansen, Responses to Issues Raised by National Guard Bureau Massachusetts Military Reservation, Docket No. SDWA I-97-1030/RCRA I-97-1031, May 15, 1997.

²⁹ See, Guidance on Federal Facility Penalty Order Authority Under the Safe Drinking Water Act, as amended in 1996, <http://www.epa.gov/compliance/resources/policies/civil/federal/ffsdwapenalty.pdf>: "Section 1447(b)(1) and (b)(2) gives EPA authority to assess a civil penalty against a federal entity . . . before the penalty order becomes final, [EPA is required] to provide the federal entity with notice, an opportunity for a hearing and a conference with the Administrator."

EPA must have received information that ‘appropriate State and local authorities have not acted to protect the health of such persons.’³⁰

The guidance states that Section 1401(6) of the SDWA:

“defines ‘contaminant’ very broadly to include ‘any physical, chemical, or radiological substance or matter in water.’ This applies even when the contaminant is not regulated by a National Primary Drinking Water Regulation. ‘Likely to enter’ expands SDWA imminent hazard coverage beyond existing contamination of a PWS or USDW in order to allow a §1431 Order to be issued early enough to prevent the potential hazard from materializing. Additionally, the EPA definition of USDW at 40 CFR §144.3 includes both aquifers that currently supply a PWS and those that simply have the potential to supply a PWS (according to the criteria in §144.3). This expansive application allows EPA to act where the groundwater source is only a potential supplier of a PWS and allows EPA to protect private wells that are at risk because of the contamination or threatened contamination of a USDW.”³¹

Assuming EPA can show a contaminant is present or likely to enter the drinking water supply, according to the SDWA guidance,

“EPA must next show that the contaminant ‘may present’ an ‘endangerment’ that is both ‘imminent’ and ‘substantial.’ An ‘endangerment’ is not actual harm, but a threatened or potential harm. Therefore, while the threat or risk of harm must be ‘imminent,’ the harm need not be. An endangerment is ‘imminent’ if conditions that give rise to it are present, even though the actual harm may not be realized for years. However, §1431 should not be used in cases where the risk of harm is remote in time or completely speculative in nature. ‘Substantial’ is not limited to extreme circumstances and is often viewed in the CERCLA context, which does not require quantification of the endangerment (e.g. proof that a certain number of persons would be exposed, that excess deaths would occur, that a water supply would be contaminated to a specific degree). Instead, ‘substantial’ is met if there is a reasonable cause for concern that someone may be exposed to a risk of harm. Of course, §1431's emergency authority should not be used in cases where the risk of harm is completely speculative in nature or is de minimis in degree.”³²

³⁰ SDWA § 1431(a), 42 USC 300(i)(a). See Guidance on EPA Penalty Order Authority Under the Safe Drinking Water Act, as Amended in 1996, <http://www.epa.gov/compliance/resources/policies/civil/federal/ffsdwapenalty.pdf>.

³¹ *Ibid.*

³² *Ibid.*

The guidance also emphasizes that it is necessary to establish and document that “State or local authorities have not acted to protect the health of such persons” in the administrative record (though a mere phone log of conversations with state and local authorities in which they defer to EPA action should suffice). If EPA has information that State and local authorities have or intend to act, the guidance notes that EPA must determine whether the action is timely and protective of public health.³³

Under SDWA §1431, remedial powers are broad and may be taken notwithstanding any exemption, variance, permit, license, regulation, order, or other requirement that would otherwise apply. Actions include issuing orders requiring provision of alternative water supplies at no cost to the consumer by persons who caused or contributed to the endangerment, information about actual or impending emergencies, public notification of hazards, study to determine the extent of contamination, an engineering study proposing to eliminate the endangerment, and the halting of disposal of contaminants that may be contributing to the endangerment.³⁴

The August 1998 decision by the Fourth Circuit in *Trinity American Corp. v. EPA*,³⁵ illustrates the broad scope of SDWA §1431 jurisdiction and remedial powers. Trinity’s appeal of an SDWA §1431 order that mandated systematic groundwater sampling within a three-quarter-mile radius of its property and to provide bottled water to affected local residents was dismissed. The fourth circuit rejected challenges based on an innocent landowner defense, causation, the existence of some state and local regulatory efforts, the imminence and substantiality of the hazard, and the broad scope of the remedy.

The SDWA guidance notes that Section 1431, 42 U.S.C. § 300i, authorizes the Administrator to take any action she deems necessary upon her “receipt of information that a contaminant which is present in or is likely to enter a public water system or an underground source of drinking water may present an imminent and substantial endangerment to the health of persons....”

CLEAN AIR ACT

Federal facility sites may present threats to public health and the environment through airborne pollutants. Federal agencies are subject to CAA requirements in the same manner and to the same extent as private entities. Section 118 waives federal agencies' sovereign immunity and

³³ *Ibid.*

³⁴ *Ibid.*

³⁵ 150 F.2d 289.

establishes an obligation to comply with all requirements of the CAA. Settlement with a Federal agency is encouraged in the same circumstances as with a private party.³⁶

Section 303 of the Clean Air Act allows EPA to issue an administrative order to a pollution source, which includes the United States, to abate an imminent and substantial endangerment to public health or welfare, to immediately restrain any person causing or contributing to the alleged reached under § 1447(b) and § 1414. pollution to stop the emissions of the pollutants or take other action as necessary.³⁷

Section 302 (g) defines "air pollutant" as:

any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive (including source material, special nuclear material, and byproduct material) substance or matter which is emitted into or otherwise enters the ambient air. Such term includes any precursors to the formation of any air pollutant, to the extent the Administrator has identified such precursor or precursors for the particular purpose for which the term "air pollutant" is used.³⁸

In 1986, Congress enacted the Emergency Planning and Community Right-to-Know Act (EPCRA) to assist state and local planning entities in preparing to respond to chemical releases. Because preventing accidents is preferable to responding to them, Congress added Section 112(r) in 1990 to the CAA.³⁹

Section 112(r)(9) gives EPA the authority to issue orders to Federal agencies to abate a danger or threat when an actual or threatened accidental release may cause an imminent and substantial endangerment to human health or welfare or the environment. Section 112(r)(9) covers stationary sources,⁴⁰ as defined by the CAA. It requires state notice prior to issuance and

³⁶ CAA, 42 USC 7603; See Memorandum on Implementation of EPA's Penalty/Compliance Order Authority Against Federal Agencies Under the CAA, <http://www.epa.gov/compliance/civil/federal/caa.html>.

³⁷ *Ibid.*

³⁸ CAA, 42 USC 7602(g).

³⁹ CAA 42 USC 7412(r); See Memorandum on Implementation of EPA's Penalty/Compliance Order Authority Against Federal Agencies Under the CAA, <http://www.epa.gov/compliance/civil/federal/caa.html>.

⁴⁰ Section 112(r)(2) defines "stationary source" as "any buildings, structures, equipment, installations or substance emitting stationary activities (I) which belong to the same industrial group, (ii) which are located on one or more contiguous properties, (iii) which are under the control of the same person (or persons under common

requires the Administrator to take action under Section 303 of the CAA rather than Section 112(r)(9) whenever that authority is adequate to protect human health and the environment. Order authority is in Section 112(r)(9), which provides:

In addition to any other action taken, when the Administrator determines that there may be an imminent and substantial endangerment to the human health or welfare or the environment because of an actual or threatened accidental release of a regulated substance, the Administrator may secure such relief as may be necessary to abate such danger or threat . . . The Administrator may also, after notice to the affected State in which the stationary source is located, take other action under this paragraph including, but not limited to, issuing such orders as may be necessary to protect human health....⁴¹

CERCLA § 106

CERCLA provides regulatory authority that may apply to contamination on or from military ranges. Under CERCLA, assessment and cleanup is required for a hazardous substance, pollutant or contaminant that creates an imminent and substantial endangerment to human health or the environment. Many of the compounds or constituents of military munitions including UXO are recognized hazardous substances under CERCLA [e.g., EPA Risk Assessment Guidance and toxicological databases], and listed hazardous wastes under RCRA. In addition, other chemicals or compounds found in military munitions and UXO are recognized as toxic by the Agency of Toxic Substances and Disease Registry (ATSDR) as noted within their toxicological profiles.

The primary mechanism within the CERCLA cleanup process for EPA enforcement has been CERCLA § 106. EPA has issued more emergency power administrative orders under §106(a) of CERCLA than any other statute. Approximately 1,300 such orders have been issued since the enactment of CERCLA.

CERCLA § 106 is somewhat different from § 7003 of RCRA, in that it authorizes an administrative order when there may be an imminent and substantial endangerment to the public

control), and (iv) from which an accidental release may occur.”

⁴¹ 42 USC 7412(r)(9).

health, welfare, or the environment because of an actual or threatened release of a hazardous substance. To be effective against Federal agencies, the Attorney General must concur on the order. *See, Comparison of CERCLA § 106(a) and RCRA § 7003*, above. CERCLA also requires that the President prepare a revised "national contingency plan" to reflect and carry out the responsibilities and powers created by the Act.

OIL POLLUTION CONTROL ACT

The Oil Pollution Act of 1990 (OPA) is the primary source of federal legislation addressing oil spills. OPA was enacted to expand spill prevention and preparedness activities and to improve spill response capabilities⁴².

The OPA amended § 311 of the Clean Water Act ("CWA" or "the Act") by, among other things, rewriting the response provisions of § 311(c) and (e) of the Act. EPA can issue administrative orders to Federal agencies under §311(c) and (e) of CWA for the cleanup and prevention of discharges and threatened discharges of oil and hazardous substances into navigable waters, adjoining shorelines, and certain other areas. Executive Order (E.O.12777 delegated this authority to EPA for discharges and threatened discharges in the inland zone, as defined in the National Contingency Plan).⁴³

CWA § 311 contains elements that are similar to those of other statutory provisions which allow the Agency to respond to the release or threatened release of materials that may harm the public health or welfare or the environment.⁴⁴

Joint use of the § 311(c) and (e) enforcement authorities is recommended whenever possible because of the broader reach of orders issued under both authorities. Joint orders, as well as orders issued under the separate authorities may not be issued either unilaterally or by consent.⁴⁵

The EPA Massachusetts Military Reservation Orders

EPA has taken enforcement action directly affecting an active military range only at one site: Massachusetts Military Reservation. EPA Region 2 is presently negotiating with the Navy

⁴² 33 USC 2701.

⁴³ 33 USC 1321(c) and (e).

⁴⁴ *Ibid.*

⁴⁵ Final Guidance on the Issuance of Administrative Orders Under Section 311(c) and (e) of the Clean Water, <http://www.epa.gov/Compliance/resources/policies/cleanup/superfund/guide-adord-rpt.pdf>.

on the terms of a RCRA order concerning the military's training range at Vieques, in Puerto Rico.

I. MMR Background

The Massachusetts Military Reservation (MMR) is a 22,000 acre facility located on Cape Cod, Massachusetts. MMR has been used since 1911 for training of military personnel and the National Guard. MMR lies on top of a portion of the Cape Cod Aquifer, which was designated by EPA as a sole source aquifer under the Safe Drinking Water Act in 1982. The Cape Cod Aquifer serves as the sole drinking water source for 200,000 permanent and 520,000 seasonal residents of Cape Cod. As a result of the area's permeable sandy soil characteristics, the aquifer is highly susceptible to contamination. The apex of the Sagamore Lens, the most productive part of the Cape Cod Aquifer, is located under Camp Edwards directly under the Impact Area and the J ranges (where contractors have conducted weapons testing). The Sagamore Lens has been identified as the most promising portion of the aquifer to satisfy the predicted gap of 11 million gallons/day between demand and supply which will occur by 2020 if new water supplies are not developed.

Since 1991, portions of the MMR have been investigated under Section 120 of CERCLA, first by the National Guard Bureau and now by the Air Force Center for Environmental Excellence. Eleven large plumes of contaminated groundwater have been identified, causing the shutdown of public and private water supply systems in towns adjacent to the base. Plumes from the base have polluted billions of gallons of water -- an amount that could supply the drinking water needs for all of Cape Cod for over seven years. Each day approximately 6-8 million gallons of groundwater are contaminated because of the rapid movement of the plumes through the subsurface soils.

The military training conducted in the Training Range and Impact Area has included:

- a. Firing of high explosive rounds from artillery and mortars into the Impact Area from gun positions in and near the Training Ranges;
- b. Use of propellants for firing artillery and mortar, and burning of excess artillery propellant bags at firing ranges and gun positions;
- c. Detonation practice for explosives at two or more demolition ranges;
- d. Routine detonation of unexploded ordnance (UXO) for disposal purposes, including detonation of high explosive rounds;
- e. Small arms firing at approximately 20 ranges;
- f. Use of pyrotechnics (smoke grenades, hand grenades, flares, lasers) in training; and
- g. Chemical warfare training;

The J1, J2 and J3 ranges at Camp Edwards were leased or used by private contractors under contract to the Department of the Army for development and testing of weapons systems from approximately 1957 to 1998. At the J-ranges, the contractors loaded explosives into munitions, tested them, and disposed of the byproducts of these tests. One contractor, Textron Systems Corporation, loaded explosives into depleted uranium rounds at the J-3 range. It is not yet clear whether those depleted uranium rounds were fired there.

II. EPA Involvement at Camp Edwards

In 1991, EPA and the National Guard Bureau entered into a "federal facilities agreement" (FFA) under Section 120 of CERCLA, which required the National Guard, and later the Air Force, to investigate and remediate hazardous substances, pollutants and contaminants at Otis Air Force base. However, because Camp Edwards was considered an active training range, study and clean up of these areas was not included in the CERCLA federal facilities agreement, except for two small disposal areas. Historically, it has been the policy of the Department of Defense not to clean up ranges under CERCLA until a decision has been made to close the range or to transfer it to other uses.

In 1996, the National Guard Bureau proposed to build new and expanded training facilities and Camp Edwards, and EPA New England became increasingly concerned about the potential for contamination in groundwater under Camp Edwards from past, ongoing and future military training. This concern was triggered by some limited data from the Impact Area showing elevated levels of explosives in groundwater, by the significant amount of contamination which was rapidly spreading from the Otis portion of MMR, and the intense public concern in neighboring towns. The National Guard Bureau still did not want to include Camp Edwards in the CERCLA federal facilities agreement, but ultimately proposed a cursory voluntary study of soil and groundwater in the Impact Area in late 1996. The proposal was scientifically indefensible, consisting a few wells around the perimeter of the Impact Area, and it had no schedule for implementation and was not well funded. (No investigations were proposed for the ordnance demolition areas, artillery and mortar target areas, the J ranges, or other areas which have ultimately been found to be sources of contamination.) In early 1997, the Region I Regional Administrator wrote four letters requesting that the NGB voluntarily commit to a comprehensive and accelerated study of groundwater at the Impact Area. EPA received no meaningful responses to this correspondence.

A. Administrative Order 1 -- Requiring Investigation

On February 27, 1997, EPA Region I issued an Administrative Order pursuant to Section 1431 of the Safe Drinking Water Act, requiring the National Guard Bureau to: (1) undertake a comprehensive study of the groundwater under and emanating from the Training Range and

Impact Area; (2) provide information to EPA concerning possible contamination in the Impact Area, activities conducted and materials used; (3) develop a proposal for pollution prevention measures; and (4) coordinate with a community-based oversight group. Under Section 1431 of the Safe Drinking Water Act, 42 U.S.C. §300i, upon receipt of information that contaminants which are likely to enter an underground source of drinking water may present a risk to human health, EPA may issue orders requiring such actions as EPA considers necessary to protect the health of persons.

The National Guard Bureau met with the EPA Regional Administrator and agreed that it would comply with the order to study groundwater. The Massachusetts National Guard also announced that it would implement several pollution prevention measures at the Training Range and Impact Area, most notably that it would suspend "live" artillery and mortar firing (i.e., with use of explosives) until the groundwater study was completed. However, non-live firing would continue. The Massachusetts National Guard stated that it would continue to use blank artillery training rounds, propellants, small arms ammunition that did not contain lead, and pyrotechnics, such as flares, smoke grenades and artillery simulators. Although these steps represented progress, EPA remained concerned about potential impacts to the aquifer from the activities that the NGB and the Massachusetts Guard proposed to continue, especially from contaminants associated with propellants and pyrotechnics.

EPA held a public meeting in March 1997 to hear from citizens regarding the scope of the groundwater study and the adequacy of the pollution prevention measures proposed by the Guard. More than 250 people attended. All of the comments from public officials, public health and water quality experts and citizens reflected a very high degree of concern about potential health impacts, frustration with the history of pollution problems at MMR, and distrust about the military's commitment to address the issues. Opinion was overwhelmingly in favor of EPA taking immediate action to suspend activities at the Training Range and Impact Area until the groundwater study was complete.

B. Administrative Order 2 - Limiting Training

Based on information provided by the NGB, EPA's own research, and considering public comment, the Region issued a second order on April 10, 1997 to the National Guard Bureau and the Massachusetts National Guard under the imminent and substantial endangerment provisions of Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6973, and the Safe Drinking Water Act, 42 U.S.C. §300i. The April 10, 1997 Order did three things: (1) it made enforceable the pollution prevention measures to be undertaken by the NGB, including the suspension of live fire and use of lead ammunition; (2) it required the suspension of use of propellants and pyrotechnics until completion of the groundwater study; and (3) it required the removal of lead from all small arms berms and a sweep for unexploded ordnance in the Impact Area and Training Ranges.

The National Guard Bureau requested a conference with EPA Administrator Browner with respect to Administrative Order 2, to which federal facilities are entitled under Section 6961(b) of RCRA. The National Guard's position was that training should not be limited; no contamination would result from firing artillery and mortars, they asserted, because all compounds would be fully consumed during firing of artillery and mortars. (This contention was later disproved by data collected at MMR, which clearly confirms EPA's original conclusion that routine training, as well as improper disposal of munitions, had caused contamination of soil and groundwater at MMR. The NGB has now agreed that training has caused groundwater contamination at MMR).

After hearing the appeal, Deputy Administrator Hansen upheld the order, directing EPA regional office to modify it in two respects to address the National Guard Bureau's concerns. The order was modified on July 26, 1997. First, the order was modified to rely solely upon Section 1431 of the Safe Drinking Water Act, which limited the precedential effect of the order to situations where training ranges and impact areas were located over underground sources of drinking water such as sole source aquifers. Second, the requirement for the National Guard Bureau to conduct a "sweep" of the training range and impact area for unexploded ordnance (UXO) was removed from Administrative Order 2. This modification was made in reliance on a written statement by Colonel Richard Wright, then the head of the Department of Defense Explosives Safety Board, that UXO does not leak or corrode and that the potential for contamination occurring from UXO was "virtually zero."⁴⁶

C. Administrative Order 3 – The Cleanup Order

Based on the results of the first phase of the investigation of the Impact Area and Training Ranges (discussed below), EPA determined that both immediate response actions and longer term cleanup actions would be needed. In the fall of 1999, EPA negotiated with the National Guard Bureau in an effort to obtain an agreement on consent under the authority of Safe Drinking Water Act to remediate contamination at Camp Edwards. The NGB was unwilling to agree to a consent order under the Safe Drinking Water Act, and therefore on January 7, 2000, EPA issued a third unilateral order under Section 1431 of the Safe Drinking Water Act.

Administrative Order 3 required the NGB to: (1) conduct rapid response actions to remove soil contamination at six highly contaminated source areas; (2) conduct feasibility

⁴⁶ This 1997 assertion by Col. Wright has been undercut by field observations and EPA's subsequent research. EPA's findings are reported in detailed in the findings of fact in Administrative Order 3 (discussed below). As noted in that order, DoD's own literature states that "UXO may also be found in parts or fragments. All UXO, whether intact or in parts, presents a potential hazard because it may contain chemical agents that could become exposed." At MMR specifically, DoD has found that ordnance which had been buried and later unearthed at MMR was corroded, presented "exposed filler," and that one 155mm round presented exposed RDX (an explosive) to the environment.

studies to evaluate groundwater and soil cleanup technologies at five areas which will require long-term remedies; and (3) to conduct remedial design and implement remedies once they were selected by EPA after the opportunity for public input.

One of the feasibility studies to be conducted under Administrative Order 3 is to evaluate technologies for remediating surface and subsurface UXO. This was necessitated by the finding discussed above that the UXO found at MMR and at other bases is often corroded and leaks explosives to soil. In the permeable soils of Cape Cod, explosive contaminants deposited on the ground move quickly to groundwater.

D. **Order No. 4 -- The January 4, 2001 RCRA Section 7003 Order -- Requiring Use of the Chamber for RCRA-Regulated Munitions and UXO**

1. Background

In July, September, November and December, 2000, the National Guard Bureau discovered approximately another 1715 additional rounds in burial pits at the J ranges.⁴⁷ Many of these rounds potentially contained high explosives.⁴⁸ Approximately 92 fuzed 81mm rounds had to be detonated in place for safety reasons. Other rounds were considered safe to move, even though they may have contained high explosives, and were set aside for disposal in the controlled detonation chamber.



On December 18, 2000, in response to the findings of buried munitions, EPA sent the National Guard Bureau a draft order under Section 7003 of RCRA. The draft order required that any RCRA-regulated munitions found at MMR be stored and disposed of in a controlled detonation chamber operating in accordance with RCRA requirements. EPA provided the NGB the opportunity to negotiate with EPA over the terms of an order on consent. Although the National Guard Bureau agreed that the buried munitions should be disposed of in the CDC, on December 21, 2000, they declined to agree to a RCRA order on consent to provide for their storage and disposal.

⁴⁷ One of these caches was found in the course of clearing for installation of a groundwater monitoring well. The other two caches were identified by civilians during interviews regarding the defense contractors' disposal practices.

⁴⁸ According to figures provided by the NGB and the Army Corps of Engineers (which is operating the CDC for the NGB), a total of 1124 rounds discovered in at the J range burial pits since September, 2000 potentially contain high explosive.

Therefore, on January 4, 2001, EPA issued a unilateral administrative order pursuant to Section 7003 of RCRA (Administrative Order 4) to the National Guard Bureau and the Massachusetts National Guard. Administrative Order 4 order required National Guard Bureau to: (i) store all RCRA-regulated munitions in accordance with RCRA; and (ii) if the military considered it safe to move a buried munition or other military munition which was a RCRA-regulated waste, to dispose of such munitions in the contained detonation chamber that was already on the base.

EPA consulted with Massachusetts Department of Environmental Protection on issuance of the Administrative Order, and incorporated the state's requested changes into the order. The state supported the use of the controlled detonation chamber and was supportive of the order. In addition, EPA held a public hearing on the issuance of Administrative Order 4 on January 25, 2001. The majority of the commenters supported issuance of the order. Region I took public comments on the order until February 18, 2001.

2 On Review by EPA HQ, Order No. 4 was Upheld

The order was upheld because information presented regarding the storage of exhumed munitions established that improper storage and open detonation of RCRA-regulated munitions which were safe to move and dispose of in a controlled manner, may present an imminent and substantial endangerment to human health and the environment, including the sole source aquifer which underlies the Massachusetts Military Reservation.

Between September, 2000 and March, 2001, several hundred RCRA-regulated munitions, including mutually incompatible groupings, were stored in open air on the ranges at MMR in violation of regulations promulgated by the Department of Defense Environmental Safety Board and EPA's RCRA regulations. Data presented in the order established that open detonation of munitions at MMR causes the release of explosives in soils at high levels, and that past practices of open detonation has caused significant contamination of groundwater at Demolition Area 1.



End Notes

1. Summary of Munitions Rule

- Rule clarified when conventional and chemical military munitions become a hazardous waste under the Resource Conservation and Recovery Act (RCRA). Rule also amended regulations regarding emergency responses and RCRA manifest requirements. Final Rule issued February 12, 1997 (62 Fed Reg 6621-6657).
- DoD was concerned differing regulations or interpretations from State to State substantially undermine its ability to carry out its mission. DOD particularly sought clarity in defining RCRA's application to military munitions storage and transport, the recycling or destruction of obsolete munitions, and immediate responses to emergencies involving explosives.
- Citizens groups were concerned that many military activities involving munitions were insufficiently regulated.
- Congress amended RCRA to include section 3004(y) in response to these concerns.
- Munitions rule established regulatory definition of solid waste as it applies to three specific categories of military munitions:
 - unused munitions;
 - munitions being used for their intended purpose; and
 - used or fired munitions.
- The rule conditionally exempts:
 - from RCRA Manifest Requirements and Container Marking Requirements, waste non-chemical military munitions that are shipped from one military-owned or -operated Treatment, Storage, or Disposal Facility to another in accordance with DOD military munitions shipping controls;
 - from RCRA Subtitle C storage regulations, waste non-chemical military munitions subject to the jurisdiction of the DoD Explosives Safety Board storage standards.
- Munitions rule identifies four specific circumstances under which an unused munition is considered to be a solid waste for regulatory purposes:
 - the unused munition is "abandoned by being disposed of, burned, or incinerated, or treated prior to disposal;"
 - the unused munition is removed from storage for purposes of disposal or treatment prior to disposal;
 - the unused munition is deteriorated, leaking, or damaged to the point that it can no longer be put back into serviceable condition, and cannot be reasonably recycled or used for other purposes; or
 - the munition has been determined by an authorized military official to be a solid waste.
- Military munitions are not a solid waste for regulatory purposes:
 - when a munition is being used for its intended purpose, which includes when a munition is being used for the training of military personnel; when a munition is being used for research, development, testing, and evaluation; and when a munition is destroyed during range clearance operations at operational ranges (active and inactive ranges); and
 - when a munition that has not been used or discharged, including components thereof, is repaired, reused, recycled, reclaimed, disassembled, reconfigured, or otherwise subjected to materials recovery activities.
- Munitions rule also specifies that used or fired munitions are solid waste when they are removed from their landing spot and then either:
 - managed off-range (i.e., when transported off-range and stored, reclaimed, treated, or disposed of; or
 - disposed of (i.e., buried or land filled) on-range.

In both cases, when the used or fired munition is a solid waste, it is potentially subject to regulation as a hazardous waste. Also, munitions that land off-range, and that are not promptly retrieved, are statutory

solid waste.

- Munitions rule postponed final action on the statutory status of used or fired munitions at closed or transferred ranges, and the regulatory status of used or fired munitions that are recovered and then treated on-range at a closed or transferred range.

Non-Military and Military

- There are three aspects of the rule that extend beyond waste military munitions and the military.
 - The rule sets forth new storage standards for the management of all military and non-military waste munitions and explosives.
 - Secondly, the rule clarifies that persons responding to time-critical munitions and explosives emergencies are not subject to RCRA Generator, Transporter, and Permitting Requirements.
 - Lastly, the rule exempts all generators and transporters, not just the military, from the RCRA manifest for transportation of hazardous waste on public or private right-of-ways on or along the border of contiguous properties under the control of the same person, regardless of whether the contiguous properties are divided by right-of-ways.

² ***The RCRA Sunset Issue*** – At the time EPA proposed the munitions rule EPA and DoD had reached an understanding that EPA would reinterpret the statutory definition of “solid waste” to exclude UXO on closed and transferred ranges when DoD promulgated the Range Rule. The proposed munitions rule stated that RCRA regulation of cleanups at closed and transferred ranges would be “temporary.” The proposal stated:

“if DOD promulgates, pursuant to DOD's own statutory authorities, rules that allow for public involvement in cleanups of these ranges and that are fully protective of human health and the environment, then these DOD regulations would supersede RCRA regulations. The DOD regulations, rather than RCRA, would then govern range cleanups. EPA would issue a notice at the time DOD's regulations were issued, announcing that DOD cleanup regulations took precedence and that munitions at closed or transferred ranges are not to be considered RCRA statutory solid waste.” (60 FR 56468, 56475)

This “sunset” provision would reflect EPA's conclusion that the legal arguments supporting the characterization of munitions on closed or transferred ranges as “solid waste,” and the legal arguments opposing such a characterization are finely balanced, with the result that EPA has the discretion to select either interpretation pursuant to section 3004(y).

EPA based its proposal on the idea that the discharge of a weapon does not constitute “waste management” for the purposes of RCRA. At the same time, however, the proposal provided that spent munitions left in the environment may at some point become “discarded,” in a RCRA statutory sense, and therefore may be potentially subject to various RCRA remedial statutory authorities such as RCRA section 7003, RCRA sections 3004(u) and (v), and RCRA section 3008(h).

The proposed rule stated that munitions left at closed ranges, or at ranges transferred out of military control, would be discarded material and therefore such munitions and debris would be a "solid waste" according to the RCRA section 1004(27) definition. A similar example of materials that may be classified as statutory "solid waste" under RCRA, but which are not automatically subject to RCRA subtitle C permitting or in-place waste management requirements, are wastes that were disposed of before the effective date of RCRA.

The choice of whether to define such munitions as "solid waste," then, rests with EPA, and the proposal reflected EPA's views of how human health and the environment can best be protected, given the special hazards posed by military munitions.

During negotiations on the proposed DoD Range Rule, DoD acknowledged that in light of the Appeals Court's decision in *Military Toxics Project v. EPA* (146 F.3d 948) there were serious concerns over the Government's defense of an attempt to "Sunset" RCRA. DoD therefore withdrew its demand for the RCRA Sunset in the Fall of 2000.

ADMINISTRATIVE ORDER
FOR: MASSACHUSETTS MILITARY RESERVATION
TRAINING RANGE AND IMPACT AREA RESPONSE ACTIONS

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I. JURISDICTION

1. This Administrative Order (Order) is issued to Respondents National Guard Bureau and the Massachusetts National Guard pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency (EPA) by Section 1431(a) of the Safe Drinking Water Act (SDWA), 42 U.S.C. § 300i(a). The Administrator of EPA has delegated the authority to take these actions to the Regional Administrator of EPA Region I by EPA Delegation No. 9-17 (1200-TN-350) dated May 11, 1994.
2. In the interests of environmental protection, public health and welfare, EPA hereby orders Respondents to undertake all actions required by this Order. With respect to response actions to be conducted, Respondent Massachusetts National Guard shall only be responsible to assist NGB for Work under Section XVII (Access) and under Section XX (Creation of Danger, Emergency Response).

II. STATE COORDINATION

3. Pursuant to Section 1431 of the SDWA, 42 U.S.C. § 300i, EPA consulted with the Commonwealth of Massachusetts and local authorities on this matter, to confirm the correctness of the information on which his action is based and to ascertain what actions they may be taking. EPA has determined that the Commonwealth of Massachusetts and local authorities have not by themselves taken the actions necessary to protect the health of persons who obtain drinking water from the Sagamore Lens. However, they will work with EPA under this order to protect such persons.

III. PARTIES BOUND

4. This Order shall apply to and be binding upon the Respondents, and upon their affiliated organizations, agents, contractors, and consultants.

IV. PURPOSE

5. This Order requires the Respondents to undertake Rapid Response Actions and Feasibility Studies, Design and Remedial Actions to abate the threat to public health presented by the contamination from past and present activities and sources at and emanating from the Massachusetts Military Reservation (MMR) Training Range and Impact Area. The required actions are described more fully in the Statements of Work (SOWs) attached to this Order as Appendices A and B, which are enforceable hereunder.

V. DEFINITIONS

6. All other terms, not otherwise defined herein, shall have their ordinary meanings unless defined in SDWA, in which case the SDWA definition shall control.

"Contractor" shall mean any person, including the contractors, subcontractors, or agents, retained or hired by Respondents to undertake any Work under this Order.

"Day" shall mean a calendar day, unless otherwise specified.

"Order" shall mean this SDWA § 1431 Administrative Order, any attachments or appendices to this Order, and all documents that are to be produced or submitted pursuant to this Order. All attachments or appendices to this Order, and all documents that are to be produced or submitted pursuant to this Order are incorporated into this Order, and shall be enforceable hereunder.

"Work" shall mean all tasks and activities required by this Order or related to the performance of tasks and activities required by this Order.

VI. FINDINGS OF FACT

7. Respondent National Guard Bureau (NGB) is an agency of the United States. The National Guard Bureau oversees, provides funding for and sets requirements for training activities conducted by the Massachusetts National Guard at MMR.
8. Respondent Massachusetts National Guard, and its divisions, the Massachusetts Army National Guard and Massachusetts Air National Guard, are agencies of the Commonwealth of Massachusetts.
9. The Massachusetts Military Reservation (MMR) is a 21,000-acre facility located on Cape Cod, in the townships of Bourne, Falmouth, Mashpee and Sandwich in Barnstable County, Massachusetts. The Massachusetts Army National Guard and Massachusetts Air National Guard conduct operations at MMR, under the direction of the National Guard Bureau.
10. On July 13, 1982, EPA determined that the Cape Cod Aquifer is the sole or principal source of drinking water for Cape Cod, Massachusetts, and that the Cape Cod Aquifer, if contaminated, would create a significant hazard to public health. 47 Fed. Reg. 30282. Among the findings on which EPA based this determination are the following:
 - a. The Cape Cod Aquifer is a single continuous aquifer, which then served as the "sole source" of drinking water for the approximately 147,725 permanent residents and 424,445 peak seasonal residents of Cape Cod;
 - b. There is no existing alternative drinking water source, or combination of sources, which provides fifty percent or more of the drinking water to the designated areas, nor is there any reasonably available alternative future source capable of supplying Cape Cod's drinking water demands; and
 - c. As a result of its highly permeable soil characteristics, the Cape Cod aquifer is susceptible to contamination through its recharge zone from a number of sources. Since

groundwater contamination can be difficult or impossible to reverse, and since this aquifer is relied on for drinking water purposes by the general population, contamination of the aquifer would pose a significant hazard to public health.

11. Currently, the Cape Cod Aquifer serves as the sole drinking water source for approximately 200,000 permanent and 520,000 seasonal residents of Cape Cod.
12. A study conducted by the Defense Department's Joint Program Office at MMR in April of 1999 estimated that in the year 2020, there will be a water supply shortage of between 9.8 and 11 million gallons per day for the regional water supply, that is the combined supplies of Bourne, Falmouth, Mashpee, Sandwich, South Sagamore and for Otis Air National Guard Station, which serves all users on MMR.
13. Approximately 14,000 acres of MMR constitute the Training Range and Impact Area.
14. The Training Range and Impact Area lie directly over the Sagamore Lens, the most productive part of the Cape Cod Aquifer. The Training Range and Impact Area is a major groundwater recharge area, located near to the apex of the Sagamore Lens. Groundwater flows radially in all directions from the Training Range and Impact Area.
15. The Sagamore Lens has been identified by the Cape Cod Commission as the portion of the Cape Cod Aquifer most capable of supplying sufficient water to satisfy future demand for drinking water on Cape Cod. If MMR is excluded from the list of potential future water supply areas on Cape Cod, only approximately 5 percent of Cape Cod lies over groundwater which is suitable as a future water supply. If MMR is included in the analysis, approximately 19 percent of Cape Cod is suitable as a future water supply area.
16. The part of an aquifer that directly supplies a public water supply well is known as a "wellhead protection area". The Training Range and Impact Area lie directly above segments of several wellhead protection areas on Cape Cod.
17. For over fifty years, military and law enforcement training has been conducted in the Training Range and Impact Area, including training by Respondents. This training and associated activities has included, but has not been limited to:
 - a. Small arms firing at several ranges in the Training Range and Impact Area involving the use of small caliber munitions;
 - b. Artillery firing and mortar firing into the Impact Area from gun and mortar firing points located within and/or near the Training Range;
 - c. Burning of excess propellant bags at firing ranges and gun and mortar locations;

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- d. Detonation practice for explosives at demolition ranges in or near the Training Range and Impact Area;
 - e. Detonation of unexploded ordnance (UXO) found in and near the Impact Area, including detonation of high explosive mortar and artillery rounds.
 - f. Training activities with various other munitions including pyrotechnic devices, rockets, grenades, and mines;
 - g. Packing, testing and development of weapons by Department of Defense contractors at ranges under lease from the United States Department of Army;
 - h. The disposal and abandonment of unexploded ordnance, partially exploded ordnance and used ordnance at various locations in and around the Training Ranges and Impact Area; and
 - i. The storage of munitions, including explosives, at Ammunition Supply Points.
18. On February 27, 1997, pursuant to Section 1431 of the SDWA, EPA issued Administrative Order SDWA I-97-1019, which required the National Guard Bureau to investigate contamination at and emanating from the Training Range and Impact Area.
19. On April 10, 1997, EPA issued Administrative Order SDWA I-97-1030, which required the National Guard Bureau and the Massachusetts National Guard to cease certain training activities pending the completion of environmental investigations at the Training Ranges and Impact Area. Administrative Order SDWA I-97-1030 was later modified on July 25, 1997.
20. Munitions and other materials used at the Training Ranges and Impact Area, both currently and in the past, contain hazardous constituents, including the compounds detected in groundwater and soil discussed in paragraph 39 below. A partial list of the munitions used at MMR and their components is contained in the Ordnance and Explosives Archive Search Report (Army Corps of Engineers, March, 1999), the Draft Range Use History Report (Ogden Environmental, June, 1997) and Draft Chemical Composition of Munitions Report (Ogden Environmental, June, 1997).
21. Munitions used by Respondents in artillery and mortar firing at MMR contained explosive compounds. High explosives used at MMR in the past for mortar, rocket and artillery firing and for grenades include trinitrotoluene (TNT) and Royal Demolition Explosive (RDX), hexahydro-1,3,5-trinitro-1,3,5-triazine.
22. TNT has been the most widely used military explosive since World War I.
23. RDX has been used since World War II, and is used in combination with TNT.

24. Cyclotetramethylenetetranitramine, or octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine, commonly known as HMX or High Melting Explosive, is an explosive that has been used at MMR in rocket propellants, grenades, Dragon warheads and in other munitions.
25. HMX is also contained in RDX as a manufacturing impurity.
26. Propellants that were used at MMR for artillery include single base propellants. The constituents of single base propellants include, among other things, dinitrotoluene (DNT), dibutylphthalate and diphenylamine. The isomers 2,4-DNT and 2,6-DNT are compounds that compose technical grade DNT.
27. One artillery propellant used at MMR was the White Bag M4 series. DNT and diphenylamine together account for 24% of the reported weight of this propellant.
28. Propellants that were used at MMR for mortar and rocket firing included double-base propellants, including M7, M8, and M9 propellants. Generally, double-base propellants include nitroglycerin as one of the constituents. Nitroglycerin and diethylphthalate together account for 46% of the reported weight of M8 propellants. M9 propellants also contain diphenylamine.
29. N-nitrosodiphenylamine is a combustion breakdown product of diphenylamine, a component of single-based and double-based propellants. It is also used as an intermediate in the synthesis of p-nitrosodiphenylamine, an anti-scorching agent, and has been found in soil and groundwater contamination at U.S. Army ammunition plants.
30. Munitions used by Respondents at MMR contained metals that have been found in soil in the Training Ranges and Impact Area, including lead, copper, barium, aluminum, magnesium, and cadmium.
 - a. The primary constituent of the small arms used by Respondents at MMR prior to 1997 was a lead core in a metal alloy jacket, usually composed of lead, copper, iron, antimony, nickel and barium.
 - b. Lead was also used in the primer of most small arms ammunition and mortars.
 - c. Copper was utilized for the shaped charge liner for Dragon warheads used at MMR, in addition to being used in small arms munitions.
 - d. Aluminum was used in 155mm smoke rounds, in the flash composition of artillery simulators, and in the flash composition of hand grenade simulators.
 - e. Magnesium was used as a tracer compound in 50 caliber ammunition, in the flash composition of hand grenade simulators and in pyrotechnics.
 - f. Cadmium was used in the coating and electroplating of steel, which is used in the production of artillery rounds and other munitions.
 - g. Arsenic was used in pre-World War II military pyrotechnics.
 - h. Barium, in the form of barium chlorate, barium nitrate, barium chromate, and barium peroxide, was used in military pyrotechnics, primers, and smoke compositions.

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31. Pyrotechnics were also used in training operations at MMR. Available information indicates that many of the pyrotechnics have hazardous constituents, including but not limited to contaminants detected in soil and groundwater in the Impact Area and Training Range.
32. Many pyrotechnics used at MMR contain hazardous constituents such as lead thiocyanate, nitroglycerin, diethylphthalate, hexachlorobenzene, magnesium, aluminum, and acetone.
33. Petachlorophenol, dieldrin, MCP and arsenic were common pesticides used during the period that Respondents used the Training Range and Impact Area for training exercises.
34. 1,2-Dibromoethane, or ethylene dibromide (EDB) is a component of leaded gasoline that was used at the Training Ranges and Impact Area until 1984.
35. The burning of energetics containing plastics and chlorine in the presence of diesel fuel and wood may produce dioxins and furans. In controlled studies, furans were detected in a simulated waste burn and dioxins were detected in a controlled burns of a flare (type M43A2), and a mixture of diesel fuel and dunnage (scrap wood from ammunition boxes, styrofoam packing materials and other combustible materials) typically disposed of through open burning.
36. Studies conducted at other firing ranges suggest that explosive and propellant contaminants migrate to groundwater. In a study conducted at a firing range at Fort Ord in 1994, the Army observed that the impact areas were contaminated with residues of high explosives, including HMX, RDX, TNT and TNT transformation products. In a subsequent study published in August of 1998, the Army's Cold Regions Research & Engineering Laboratory compared data from the 1994 study with data collected at the Fort Ord Ranges in 1997. The CRREL study concluded that levels of explosives contamination in soil had declined over the intervening three years and that it had likely migrated downward with percolating water to deep into the aquifer. Once dissolved in water, RDX is known to migrate rapidly in soils.
37. In a study conducted by CRREL at Valcartier Air Force base, although RDX was detected in soils at levels that were usually under 2 ppm, it was detected in groundwater at 46 ppb, well in excess of the EPA Health Advisory of 2 ppb.
38. Portions of the Training Ranges and Impact Area have been investigated for groundwater, soil and sediment contamination pursuant to EPA's Administrative Order SDWA I-97-1019. To date, this study has revealed that a number of areas in the Training Ranges and Impact Area have been contaminated by Respondents' disposal and training related activities. Contamination from explosives, propellants, metals, herbicides, pesticides, volatile organic compounds, semivolatile organic compounds and UXO have been discovered in soil and/or groundwater in numerous areas. Investigations regarding the nature and extent of contamination at the Training Ranges and Impact Area are ongoing.

39. Information gathered to date under this study indicates that specific areas at or near the Training Ranges and Impact Area require response action, as described in Section X of this Order. The specific areas, and some of the levels of contamination detected, are as follows:

A. Demolition Area I: Demolition Area I, a training area used primarily for demolition, is located south of the Impact Area and north of Pocasset-Forestdale Road. Types of materials used for training purposes at this location included C4, TNT, dynamite, shape charges, cratering charges, bangalore torpedoes, claymore mines and detonating cord. This area was also used for open burn/open detonation disposal of munitions.

RDX has been detected in groundwater monitoring wells in the vicinity or downgradient of Demolition Area 1 at concentrations in excess of EPA's Health Advisory for RDX of 2 ppb, as follows:

| | |
|-------|------------|
| MW 19 | 260 ppb |
| MW 34 | 6.2 ppb |
| MW 31 | 370 ppb |
| MW 73 | Over 2 ppb |
| MW 77 | 148 ppb |

MW34 is approximately one half mile west of Demolition Area 1.

2,4,6-TNT has been detected in groundwater in MW 19 at Demolition Area 1 at 16 ppb, which is in excess of EPA's Lifetime Health Advisory for TNT of 2 ppb.

The following contaminants have also been detected in surface and subsurface soils at Demolition Area 1:

Surface Soils:

| | |
|------------------------|-----------|
| RDX | 2,900 ppb |
| HMX | 690 ppb |
| 2A-4,6-DNT | 800 ppb |
| 4A,2,6-DNT | 400 ppb |
| 2,4,-DNT | 1,800 ppb |
| 2,6-DNT | 40 ppb |
| Di-N-Butylphthalate | 290 ppb |
| N-nitrosodiphenylamine | 930 ppb |

Subsurface Soils:

| | |
|------------|-----------|
| RDX | 9,300 ppb |
| HMX | 380 ppb |
| 2A-4,6-DNT | 360 ppb |

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| | |
|------------------------|---------|
| 4A-2,6-DNT | 340 ppb |
| 2,4-DNT | 150 ppb |
| Di-N-Butylphthalate | 200 ppb |
| N-nitrosodiphenylamine | 34 ppb |

The contaminants found in soil and groundwater in and downgradient of Demolition Area 1 lie within the zone of contribution for active public water supply wells in Bourne, Massachusetts. A zone of contribution defines the land area from which groundwater flows into a drinking water well under pumping conditions. Contaminants in soil and groundwater in a zone of contribution may be drawn into a drinking water well.

The contamination in soils at Demolition Area has entered and is likely to continue to enter the underlying groundwater.

B. Chemical Spill (CS)-19: The CS-19 site is a small area in the west-central region of the Impact Area that was used for the disposal of munitions, among other things.

RDX has been detected in groundwater monitoring wells in the vicinity or downgradient of CS-19, in excess of EPA's Health Advisory of 2 ppb for RDX as follows:

| | |
|------------|---------|
| MW 25 | 4.1 ppb |
| 58 MW 0002 | 20 ppb |
| 58MW0009E | 17 ppb |

Contaminants have also been detected in surface and subsurface soils at at CS-19, including the following:

Surface Soils:

| | |
|------------------------|-------------|
| HMX | 2,713 ppb |
| diethylphthalate | 14,000 ppb |
| Hexachlorobenzene | 4,600 ppb |
| 2,4-DNT | 710 ppb |
| N-nitrosodiphenylamine | 380 ppb |
| OCDD | 3.5 ppb |
| Total Hp CDF | .38 ppb |
| DCDF | 2.9 ppb |
| Total HpCDD | .31 ppb |
| MCPP | 232,000 ppb |
| Aluminum | 26,100 ppm |
| Lead | 1,830 ppm |
| Magnesium | 12,200 ppm |

Subsurface Soils:

| | |
|-------------------|-----------|
| HMX | 789 ppb |
| Hexachlorobenzene | 3,500 ppb |
| OCDD | 1.9 ppb |
| Total HxCDF | .68 ppb |
| Total Hp CDF | .67 ppb |
| DCDF | 3.9 ppb |
| Aluminum | 9,050 ppm |
| Lead | 1,500 ppm |
| Magnesium | 2,100 ppm |

Contamination in soils at CS-19 has entered and is likely to continue to enter the underlying groundwater.

The soil and groundwater contamination related to CS-19 lie within the zone of contribution for Long Range Water Supply 8, a potential water supply well site being investigated as a future public drinking water well.

C. Southeast Corner of the Ranges: This area is close to the top of the groundwater mound of the Sagamore Lens. Explosives have been detected in wells outside of the Impact Area north of Snake Pond close to the J Ranges. Explosives were disposed on the ground surface and into underground holding tanks.

RDX has been detected in groundwater monitoring wells in the vicinity or downgradient of the J Ranges in excess of EPA's Health Advisory of 2 ppb for RDX as follows:

| | |
|-----------|---------|
| 90WT 013 | 5.2 ppb |
| 90MW 0022 | 5.4 ppb |

HMX has been detected in a well installed near the melt-pour facility on the J-3 Range at 12 ppb.

Contaminants have also been detected in surface soils at the steel lined pit at the J Ranges including the following:

| | |
|---------------------|------------|
| HMX | 9,300 ppb |
| 2,4-DNT | 200 ppb |
| di-n-butylphthalate | 80 ppb |
| pentachlorophenol | 37 ppb |
| aluminum | 24,600 ppm |
| lead | 616 ppm |

| | |
|-----------|-----------|
| magnesium | 2,720ppm |
| barium | 1,140ppm |
| copper | 2,350 ppm |
| cadmium | 33.3 ppm |

Contamination in soils at the steel lined pit is likely to enter the underlying groundwater. The soil and groundwater contamination related to the J Ranges lie within the zone of contribution for Long Range Water Supply Wells 95-6 and 95-15, potential water supply well sites being investigated for future public drinking water wells. This contamination may also lie within the zone of contribution for the J Well, a current water supply well for MMR.

D. Groundwater in and emanating from the Central Impact Area: Numerous detections of explosives in groundwater at various depths in the aquifer track back to, or originate from, the center of the Impact Area. The Impact Area contains numerous target areas where mortar and artillery, including high explosive and white phosphorous warheads, were fired over time.

RDX has been detected in groundwater monitoring wells in the vicinity or downgradient of the targets in the Central Impact Area at levels in excess of EPA's Health Advisory of 2 ppb for RDX, as follows:

| | |
|-------|---------|
| MW-2 | 13 ppb |
| MW-23 | 4.7 ppb |
| MW-38 | 2.5 ppb |
| MW-1 | 2.5 ppb |
| MW-25 | 4.0 ppb |
| MW-40 | 2.8ppb |
| MW-37 | 2.9 ppb |

MW-2 and MW-23 are located within the zone of contribution for Long Range Water Supply Well 95-6, a potential water supply well site being investigated for a future public drinking water well. MW-1, MW-25 and MW 37 are located within the zone of contribution for Long Range Water Supply Well 2, a potential water supply well site being investigated for a future public drinking water well.

RDX at levels below the Health Advisory of 2 ppb has also been detected at numerous wells within and downgradient of the Impact Area.

The detection of RDX emanating from the Impact Area at levels below and above the Health Advisory indicates that RDX has been introduced into the aquifer in the Impact Area, that it is migrating in groundwater at concentrations above the Health Advisory

level from source areas toward potential drinking water supplies, and that it has migrated as far as 6,900 feet from its probable source.

In addition, the following contaminant has been found in surface soils in Study Area 2 within the Impact Area, which lies within the zone of contribution for Long Range Water Supply Well 95-6, a water supply well site being investigated for a potential drinking water supply well:

1,2-dibromoethane 190 ppb

The contamination in soils in Study Area 2 is likely to enter the underlying groundwater.

E. The KD Range: The KD Range is located southeast of the Impact Area, on Pocasset-Forestdale Road. Ordnance known to have been used at KD Range has included: all pistol calibers; 5.56 mm and 7.62 mm ball and tracer rounds; 14.5 mm subcaliber training devices; 40 mm High Explosive (HE) and practice grenades; Dragon High Explosive Anti-tank (HEAT) and practice artillery rockets, 90 mm recoilless rifle HEAT and practice rounds, and TOW practice rounds. The area was primarily used for rocket training.

The following contaminants, including but not limited to explosives and propellants, have been found in surface soil near targets used in the KD Range:

| | |
|---------------|------------|
| RDX | 43,000 ppb |
| HMX | 10,100 ppb |
| TNT | 2,100 ppb |
| 2A-4,6-DNT | 220 ppb |
| 4A-2,6-DNT | 140 ppb |
| copper | 1,820 ppm |
| lead | 816 ppm |
| dieldrin | 1,800 ppb |
| nitroglycerin | 6,400 ppb |

In profile samples collected during drilling, 2,6-DNT and HMX were detected in MW 61M at 10.2 feet below the water table and 20.2 feet below the water table, respectively. Consultants for NGB have concluded that shallow detections of 2,6-DNT and HMX in MW-61 are likely to have originated from the KD Range target area.

In addition, the following contaminant (a constituent of propellants) was found in surface soil near the firing position for the KD Range:

Nitroglycerin 130,000 ppb

Contamination in soils at the KD Range is likely to enter the underlying groundwater. The contaminants in soil at the KD Range are within the zone of contribution of current public drinking water wells of Bourne, Massachusetts.

F. J-3 Wetland: The J-3 Wetland is located south of the J-3 Range and north of Snake Pond. The property on which the J-3 Wetland is located was formerly part of the MMR.

The following contaminants, which include propellants and their byproducts, as well as the pesticide dieldrin, have been detected in sediment samples at the following levels at the J-3 Wetland:

| | |
|------------------------|-----------|
| Nitroglycerin | 5,200 ppb |
| Di-n-butyl phthalate | 37 ppb |
| N-nitrosodiphenylamine | 240 ppb |
| Dieldrin | 200 ppb |

Contamination in soils and sediments at the J-3 Wetland is likely to enter the underlying groundwater.

G. Gun Positions: The following contaminants, which include propellants, propellant breakdown products, pesticides and metals, have been found in soils at the following gun positions:

i. Gun Position 7

| | |
|---------|-----------|
| 2,4-DNT | 1,300 ppb |
| 2,6-DNT | 26 ppb |

ii. Gun Position 16

| | |
|---------|---------|
| 2,4-DNT | 600 ppb |
|---------|---------|

iii. Gun Position 9

| | |
|------------------------|------------|
| 2,4-DNT | 17,000 ppb |
| 2,6-DNT | 960 ppb |
| N-nitrosodiphenylamine | 930 ppb |
| Pentachlorophenol | 180 ppb |
| Arsenic | 17 ppb |
| Di-N-butylthalate | 16,000 ppb |

Contamination in soils at these gun positions is likely to enter the underlying groundwater.

H. Armored Personnel Carrier: The following explosives and explosives breakdown products have been found in soil beneath a pile of UXO and debris near the Armored Personnel Carrier to the east of Turpentine Road in the Impact Area:

Surface Soils

| | |
|----------|-----------|
| 2A46 DNT | 230 ppb |
| RDX | 1,150 ppb |
| HMX | 150 ppb |

Soils 6-12" below Surface

| | |
|----------|---------|
| 2A46 DNT | 155 ppb |
| RDX | 565 ppb |
| HMX | 150 ppb |

The contaminants in soil at the Armored Personnel Carrier are likely to enter groundwater.

I. Unexploded Ordnance (UXO) and Munitions: Some military munitions employed on military ranges fail to function as intended, which can result in Unexploded Ordnance (UXO) remaining on the range. The generally accepted percentage of munitions that fail to function as designed is between 10 and 20%.

UXO can be located either on the surface, or if they were buried or fired, below the surface. UXO may pose a safety hazard and/or an environmental hazard.

UXO may leak propellant, explosive and pyrotechnic components to the environment.

i. As stated in Department of Defense's proposed rule to regulate Closed, Transferred and Transferring Ranges Containing Military Munitions (the "Range Rule"), propellant, explosive and pyrotechnic compounds in military munitions may be released to the environment when the munitions casing is damaged or deteriorated. 62 Fed. Reg. at 50800. According to the Draft Fate and Transport of Munitions Report prepared by the NGB for MMR, "undetoxated explosive compounds contained in UXO have the potential to leach into the environment." (Ogden, June 1977). Metals from UXO can also build up over time in the environment.

ii. According to a military technical manual, shells containing TNT and Amatol can exude TNT even under the controlled conditions of above ground storage in an ammunition supply point. (War Department Technical Manual TM 9-1900, Ammunition-General)

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iii. A DOD Pamphlet entitled **Unexploded Ordnance (UXO): An Overview** states that “UXO may also be found in parts or fragments. All UXO, whether intact or in parts, presents a potential hazard because it may contain chemical agents that could become exposed.”

iv. Sandia National Laboratory’s fact sheet on UXO states that at number of its environmental restoration sites unexploded ordnance/high explosives may be present. “The UXO/HE found include high explosive chunks....[and] five-inch shells with recrystallized TNT seeping from threads....”

v. A June 1998 report prepared by the Department of Army Defense Ammunition Center on UXO exhumed from the J Range at MMR in December 1997 found the vast bulk of the exhumed ordnance to be “corroded” or “extremely corroded;” that much of the ordnance found presented “exposed filler”; and that one 155mm round presented exposed RDX to the environment. This was a low order detonation which, in the report’s words, resulted in “open projectile. Dirt in Body.”

vi. A March 1999 report prepared by the Army Corps of Engineers states that “virtually every type of OE (live ammunition or components, debris derived from live ammunition, CWM or explosives that have been lost, abandoned, discarded, buried, fired or thrown from demolition pits or burning pads)” has been discovered in various areas of MMR.

vii. Until the mid-1970s, land burial of unexploded ordnance was an authorized method of disposal. According to an Army Corps of Engineers guidance document: “It was much cheaper to dig a trench and bury ammunition than it was to destroy it by burning or detonation.... It was much easier to discard unneeded ammunition into a pond or lake than fill out the required paperwork and return it to the ammunition supply point.”

viii. According to a February 1999 U.S. Army Corps of Engineers Report, “Conceptual Model and Process Descriptor Formulations for Fate and Transport of UXO,” UXO can exist on firing ranges in a number of physical states that greatly affect the fate and transport of explosives contained in the UXO. Intact delivery systems may occur at the firing range from either deliberate burial or fired munitions that failed to detonate. Explosives contamination from intact delivery systems results from corrosion and development of pinhole cracks that may occur over time or leaking through screw threads linking the fuse assembly to the main charge. Incomplete detonation or breakup of the delivery system without detonation may also occur, leading to the survival of part or all of the explosive. These explosives may be scattered over the firing range as free product or partially encased in the remains of the delivery system.

ix. According to a September 1997 U.S. Army Corps of Engineers Report, “Assessment of Sampling Error Associated with Collection and analysis of Soil Samples at a Firing Range Contaminated with HMX,” a 7 gram sample of metallic rocket debris collected at a firing range was contaminated with residues of HMX and TNT at concentrations of 50 mg/kg and 0.1 mg/.kg, respectively.

Contamination from UXO located on the surface and subsurface in the Training Ranges and Impact Area is likely to enter the underlying groundwater.

VII. ENDANGERMENT AND RESPONSE

40. The detection of contaminants in soil and groundwater samples discussed above demonstrates the release or threat of release of contaminants from the Training Ranges and Impact Area to the Sagamore Lens, a part of the sole source aquifer underlying Cape Cod

41. EPA has established Maximum Contaminant Level (MCLs) and Contaminant Level Goals (MCLGs) for certain contaminants in drinking water, pursuant to Section 1412 of SDWA. MCLGs are set at levels at which no known or anticipated adverse health effects would occur and with an adequate margin of safety. MCLs are set as close to MCLGs as is feasible, taking into account available treatment technologies and cost.

42. EPA has established Lifetime Health Advisories for certain contaminants. Lifetime Health Advisories establish the concentration of a chemical in drinking water that is not expected to cause any adverse non-carcinogenic effect over a lifetime of exposure with a margin of safety.

43. EPA has also established Drinking Water Equivalency Levels (DWELs). A DWEL represents the concentration of a substance in drinking water that is not expected to cause any adverse non-carcinogenic health effects in humans over a lifetime of exposure. The DWEL is calculated assuming that all exposure to the chemical comes from drinking water.

44. The Lifetime Health Advisory for RDX is 2 ppb. Consumption of large amounts of RDX by humans has caused seizures, indicating that the nervous system is a primary target organ. A 1984 Department of Defense study of female mice showed an increased incidence of liver tumors following chronic oral exposure to RDX. In its cancer classification system, EPA has classified RDX as a possible human carcinogen (Group C carcinogen).

45. The Lifetime Health Advisory for TNT is 2 ppb. Chronic exposure to TNT by humans has been associated with skin irritation and cataracts. Exposure to very high levels of TNT in the workplace has been associated with disorders of the blood and abnormal liver functions. Oral and inhalation exposures to TNT in animals have resulted in adverse effects on the blood and liver as well as the spleen and immune system. TNT has been found to cause serious effects on the male reproductive system in rats following high exposures to TNT. In a 1984 U.S. Army study, TNT was found to cause urinary bladder tumors in female Fisher rats. In its cancer classification system, EPA has classified TNT as a possible human carcinogen (Group C carcinogen).

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46. EPA has established DWELs to assess the non-carcinogenic potential for 2,4-DNT and 2,6-DNT in adults. The DWEL for 2,4-DNT is 100 ppb and the DWEL for 2,6-DNT is 40 ppb. Human exposure to 2,4 or 2,6-dinitrotoluene (DNT) in occupational settings, presumably via inhalation, may result in an increase in the death rate due to ischemic heart disease and has been associated with central nervous system effects and effects on blood. In oral exposure to high levels of 2,4-DNT or 2,6-DNT, reproductive effects have been noted in animals. Oral exposure studies in animals have also revealed effects on the blood, nervous system, liver and kidney. Both 2,4-DNT and 2,6-DNT have been found to cause liver cancer in laboratory rats of both sexes. 2,4-DNT has been found to cause kidney tumors in male mice. In its cancer classification system, EPA has classified the mixture of 2,4-DNT and 2,6-DNT as a probable human carcinogen (Group B2 carcinogen).

47. The MCLG for lead is zero. Lead is a reproductive hazard that can adversely affect the brain and central nervous system by causing encephalopathy and peripheral neuropathy. Lead exposure across a broad range of blood lead levels has been associated with a spectrum of pathophysiological effects, including interference with heme synthesis necessary for formation of red blood cells, anemia, kidney damage, impaired reproductive function, interference with vitamin D metabolism, impaired cognitive performance (as measured by IQ tests, performance in school and other means), delayed physical development, and elevations in blood pressure. Lead has the potential to bioaccumulate. This phenomenon occurs when the tissues of prey organisms (plant or animal) are passed into those of predators resulting in increased lead concentration levels orders of magnitude higher. Lead can accumulate in the tissues of many free-living wild animals, including birds, mammals, fishes and invertebrates such as worms and snails. Lead has been demonstrated to adversely affect bacteria and fungi on leaf surfaces and soil, many of which play key roles in the decomposer food chain.

48. EPA has established a Lifetime Health Advisory for HMX in drinking water of 400 ppb. Animal studies indicate that HMX may be harmful to humans and may cause liver damage and central nervous system damage if ingested or absorbed through the skin.

49. EPA has established a DWEL for dibutylphthalate (also known as di-N-butylphthalate) in drinking water of 4 ppm. Long term exposure to dibutylphthalate may result in reproductive problems and lower fertility.

50. EPA has set a Lifetime Health Advisory for N-Nitrosodiphenylamine in drinking water of 700 ppb. In its cancer classification system, EPA has classified N-Nitrosodiphenylamine as a probable human carcinogen (Group B2 carcinogen).

51. MCPP, also known as Mecoprop, is a general use pesticide. It is classified by EPA as class II toxicity, slightly toxic. MCPP is a teratogen in rats at moderate to high doses and may be mutagenic at very high doses.

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52. MCPP and its salt forms are very mobile in a variety of soils. Because of this high mobility, it may generally leach to and migrate quickly in groundwater.

53. EPA has established a MCL of 1 ppb and an MCLG of 0 for pentachlorophenol for drinking water. Short term exposure to large amounts of pentachlorophenol or long term exposure to low levels can harm the liver, kidneys, blood, lungs, nervous system, immune system and gastrointestinal tract. In its cancer classification system, EPA has classified pentachlorophenol as a probable human carcinogen (Group B2 carcinogen).

54. EPA has established a MCL for barium of 2 ppm in drinking water. Barium compounds that dissolve easily in water can cause difficulties in breathing, increased blood pressure, changes in heart rhythm, stomach irritation, brain swelling, muscle weakness and damage to the liver, kidney, heart, and spleen.

55. EPA has established a MCL for cadmium in drinking water of 5 ppb. Long term exposure to low levels of cadmium in drinking water leads to a build up of cadmium in the kidneys and possible kidney disease. Other potential long term effects are lung damage and fragile bones. The U.S. Department of Health and Human Services has determined that cadmium and cadmium compounds may reasonably be anticipated to be carcinogens.

56. EPA has established a DWEL of 150 ppb for 2A46 DNT in drinking water and a DWEL of 40 ppb for 4A26DNT in drinking water.

57. EPA has established a DWEL of 5 ppb for Nitroglycerin (Trinitroglycerol) in drinking water. Exposure to relatively small amounts of nitroglycerin can produce an intense throbbing headache, often associated with nausea and occasionally with vomiting and abdominal pain. Exposure to larger amounts may result in hypotension, depression, confusion, occasional delirium, and cyanosis.

58. EPA has established an MCL of .05 ppb and an MCLG of zero for 1,2-Dibromoethane in drinking water. 1,2-Dibromoethane may cause redness and inflammation, including skin blisters and mouth and stomach ulcers if large amounts are swallowed. In its cancer classification system, EPA has classified 1,2-dibromoethane as a probable human carcinogen (Group B2 carcinogen).

59. EPA has established a Long Term Health Advisory of 2 ppb for dieldrin in drinking water. A Long Term Health Advisory is the concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for up to fourteen consecutive days of exposure, with a margin of safety. Dieldrin affects mainly the central nervous system. Ingestion of moderate levels of dieldrin over a long period of time may cause convulsions. In its cancer classification system, EPA has classified dieldrin as a probable human carcinogen (Group B2 carcinogen).

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60. EPA has established an MCL of 5 ppb for arsenic in drinking water. Arsenic may damage tissues including nerves, stomach and intestines, and skin. High levels of arsenic may be fatal. Low levels of arsenic may cause nausea, vomiting, diarrhea, decreased production of red and white blood cells, abnormal heart rhythm, and blood vessel damage. In its cancer classification system, EPA has classified arsenic as a human carcinogen (Group A carcinogen).

61. The presence of RDX, TNT, DNT, 2,4,6-TNT, HMX and other contaminants in groundwater and the likely release to groundwater of RDX, TNT, HMX, 2A-4,6-DNT, 4A-2,6-DNT, 2,4-DNT, 2,6-DNT, Di-N-Butylphthalate, N-nitrosodiphenylamine, furans, dioxins, aluminum, lead, magnesium, pentachlorophenol, barium, copper, cadmium, 1,2-dibromoethane, nitroglycerin, dieldrin, arsenic and other contaminants from the Training Ranges and Impact Area through a natural leaching process, may present an imminent and substantial endangerment to the health of persons.

62. The Work required under this Order is necessary to prevent, minimize, and/or mitigate the threat of an imminent and substantial endangerment to the health of persons posed by the actual or potential releases of contaminants into the soils and groundwater at and emanating from the Training Ranges and Impact Area.

VIII. CONCLUSIONS OF LAW

Based on the foregoing, EPA makes the following conclusions of law:

63. Respondent National Guard Bureau is a "person" as that term is defined in Section 1401(12) of the SDWA, 42 U.S.C. § 300f(12).

64. Respondent Massachusetts National Guard is a "person" as that term is defined in Section 1401(12) of the SDWA, 42 U.S.C. § 300f(12).

65. The lead, RDX, TNT, DNT, 2,4,6 TNT, HMX, 2A-4,6-DNT, 4A-2,6-DNT, 2,4-DNT, 2,6-DNT, Di-N-Butylphthalate, N-nitrosodiphenylamine, Picric Acid, furans, dioxins, aluminum, magnesium, hexachlorobenzene, di-n-butylphthalate, pentachlorophenol, barium, copper, cadmium, 1,2-dibromoethane, nitroglycerin, dieldrin and arsenic found at, beneath or near the Training Ranges and Impact Area and which may leach to groundwater, are "contaminants", as that term is defined in Section 1401(6) of SDWA, 42 U.S.C. § 300f(6).

66. The lead, RDX, TNT, DNT, 2,4,6 TNT, HMX, 2A-4,6-DNT, 4A-2,6-DNT, 2,4-DNT, 2,6-DNT, Di-N-Butylphthalate, N-nitrosodiphenylamine, Picric Acid, furans, dioxins, aluminum, magnesium, hexachlorobenzene, di-n-butylphthalate, pentachlorophenol, barium, copper, cadmium, 1,2-dibromoethane, nitroglycerin, dieldrin, arsenic contained in UXO, found in the soil and/or in and the groundwater beneath or near the Training Ranges and Impact Area are present in or likely to enter the Sagamore Lens of the Cape Cod Aquifer.

67. The Sagamore Lens is part of the Cape Cod Aquifer, an "underground source of drinking water", as that term is defined in 40 C.F.R. Section 144.3.

IX. DETERMINATIONS

Based on the foregoing and the Administrative Record for this Site, EPA has determined that:

68. The contaminants present in or likely to enter the underground source of drinking water may present an imminent and substantial endangerment to the health of persons, within the meaning of Section 1431(a) of SDWA, 42 U.S.C. § 300i(a).

69. Respondents have caused or contributed to the endangerment described immediately above.

70. In accordance with the requirements of Section 1431 of the SDWA, EPA determines that the Commonwealth of Massachusetts and local authorities have not by themselves taken the actions necessary to protect the health of persons whose sole source of drinking water is the Sagamore Lens of the Cape Cod Aquifer. They will work in concert with EPA under this order to provide such protection.

71. The actions required by this Order are necessary to prevent further release or threat of release of contaminants and to protect the health of persons who are or may be users of the Sagamore Lens of the Cape Cod Aquifer. Based on the endangerment described above, the response actions in this Order are necessary. The response actions will consist of Respondents' implementation of the Statements of Work appended to this Order. The Statements of Work are designed to prevent, minimize, and/or mitigate damage to the health of persons which may otherwise result from the release or threat of release of contaminants.

X. ORDER

Based on EPA's jurisdiction, Findings of Fact, Conclusions of Law set forth above, the Administrative Record supporting issuance of this Order, and in order to abate or prevent any imminent and substantial endangerment to health, the Respondents are **ORDERED** to perform all Work required under this Order. The Respondents shall comply with the following provisions and perform all actions required by the terms and conditions of this Order.

72. With respect to the following areas, Respondents must conduct the following actions, as further specified in the Statements of Work attached to this Order:

Demolition Area 1. Respondents shall conduct a feasibility study for remediation of soils and groundwater contamination related to Demolition Area 1 under this Order. After EPA selects an appropriate remedy based on this feasibility study and public comment, Respondents shall conduct remedial design and remedial action at Demolition Area 1 under this Order.

CS-19: Groundwater and soil contamination at CS-19 is currently being addressed by the Air Force under the Installation Restoration Program (IRP). The Respondents are required to take action under this Order for the CS-19 area only if EPA determines that remediation proposed under the IRP program is not adequately protective.

Southeast Corner of the Range: Respondents shall conduct a feasibility study for remediation of soils and groundwater at the J Ranges. After EPA selects an appropriate remedy based on this feasibility study and public comment, Respondents shall conduct remedial design and remedial action at J Ranges area under this order. Respondents shall also conduct a rapid response action for contaminated soils at the steel lined pits.

Central Impact Area: Respondents shall conduct a feasibility study for groundwater contamination at and emanating from in the Central Impact Area. After EPA selects an appropriate remedy based on this feasibility study and public comment, Respondents shall conduct remedial design and remedial action for contaminated groundwater at and emanating from the Central Impact Area under this order. This Order also requires the Respondents to conduct a rapid response action for soils contaminated with 1,2-dibromoethane.

KD Range: Respondents shall conduct a rapid response action for contaminated soils at the firing and target positions at the KD Ranges.

J-3 Wetland: Respondents shall conduct a rapid response action for contaminated soils and sediments at the J-3 Wetland.

Gun Positions: Respondents shall conduct a rapid response action for contaminated soils at Gun Positions 7 and 16. Respondents shall take action at GP 9 if EPA determines that the remediation proposed under the IRP program is not adequately protective.

Armored Personnel Carrier: Respondents shall conduct a rapid response Action for contaminated soils at the Armored Personnel Carrier.

Unexploded Ordnance in the Training Range and Impact Area: Respondents shall conduct a feasibility study for remediation of surface and subsurface UXO. After EPA selects an appropriate remedy based on this feasibility study and public comment, Respondents shall conduct remedial design and remedial action for surface and subsurface UXO under this Order.

76. All response actions proposed by Respondents under this Order shall meet or exceed the substantive cleanup standards of M.G.L. c. 21 E and the Massachusetts Contingency Plan, 310 CMR 40.000 et seq. Nothing herein shall limit the Respondents' obligations to provide any notifications to DEP as required by M.G.L. c. 21E and the Massachusetts Contingency Plan.

77. Respondents shall conduct additional response actions as required by the Statements of Work attached to this Order, and any modifications thereto made in accordance with this Order.

**XI. DESIGNATION OF SUPERVISING CONTRACTOR AND
PROJECT COORDINATOR**

78 Within **seven (7) days** after the effective date of this Order, the Respondents shall retain the services of a qualified and experienced Supervising Contractor for the purpose of performing the work required by this Order in accordance with the terms and conditions of the Scope of Work. Within the same **seven (7) day** period, the Respondents shall notify EPA in writing of the name, address, and qualifications of the proposed supervising contractor and the name and telephone number of the supervising contractor's primary contact person. The Respondents shall also notify EPA of the identity and qualifications of any other contractor(s) or subcontractor(s) to be used at the Site at least **seven (7) days** in advance of their performing any work under this Order.

79. The supervising contractor shall be a qualified professional with substantial expertise and experience in the investigation and cleanup of hazardous waste sites, munitions and contaminated groundwater, as well as clearance and remediation of UXO. EPA reserves the right to disapprove, based on professional qualifications, conflicts of interest, and/or deficiencies in previous similar work, any contractor or subcontractor or other person engaged directly or indirectly by the Respondents to conduct work activities under this Order. If EPA disapproves the selection of any proposed contractor, the Respondents shall notify EPA in writing of the name, address, and qualifications of another contractor within **seven (7) days** after receipt of the notice of disapproval.

80. Respondents shall provide a copy of this Order to all contractors, subcontractors, laboratories, and consultants retained in connection with this Order within **seven (7) days** after the Order's effective date or of such retention, whichever is later. The Respondents shall ensure that all such contractors, subcontractors, laboratories and consultants will perform all work in conformity with the Resource Conservation and Recovery Act, 42 U.S.C. §6901 (RCRA), SDWA, and the terms and conditions of this Order and Scope of Work. Respondents shall nonetheless be responsible for ensuring that their contractors and subcontractors perform the Work in accordance with this Order.

81. Within **seven (7) days** after the effective date of this Order, the Respondents shall designate a Project Coordinator who shall be responsible for administration of all of the Respondents' actions called for by this Order, and shall submit the designated coordinator's name, address, and telephone number to EPA. EPA will deem the project coordinator's receipt of any notice or communication from EPA relating to this Order as receipt by the Respondent.

XII. NOTICE OF INTENT TO COMPLY

82. Each Respondent shall provide, within **seven (7) days** after the effective date of this Order, written notice to EPA stating whether it will comply with the terms of this Order. If a Respondent

does not unequivocally commit to perform the work required by this Order, that Respondent shall be deemed to have violated this Order and to have failed or refused to comply with this Order. The absence of a response by EPA to the notice required by this paragraph shall not be deemed to be acceptance of Respondents' assertions.

XIII. EPA TECHNICAL PROJECT COORDINATOR

83. The EPA Technical Project Coordinator (TPC) will administer EPA's responsibilities and receive all written notices, reports, plans and other documents required by this Order. EPA's TPC under this Order will be Todd Borci or other EPA designee. All submissions required by this Order shall be sent to EPA's TPC at the following address:

Attention: MMR Impact Area Technical Project Coordinator

Mr. Todd Borci
U.S. Environmental Protection Agency
J.F.K. Federal Building
Boston, MA 02203-2211

84. EPA's TPC shall have the authority to modify the Scope of Work in writing. Absence of the TPC from the Site shall not be cause for stoppage of work by the Respondents unless specifically directed by the TPC.

XIV. WORK TO BE PERFORMED; COMPLETION OF WORK

85. Immediately after EPA approval of Respondents' retention of the supervising contractor, unless modified pursuant to Section XXXVI of this Order, Modification of the SOW, the Respondents shall commence the work detailed in the Scope of Work. All work performed by the Respondents shall be conducted in accordance with SDWA, applicable guidance documents provided by EPA, and the provisions of this Order including any standards, specifications, and time schedules contained in the Scope of Work or specified by the TPC.

86. Within **forty-five (45) days** after completing all work required under this Order, the Respondents shall submit for EPA approval a Completion of Work Report summarizing the activities conducted pursuant to the Scope of Work. The Completion of Work Report shall include the categories of information and conform to the requirements specified in the Scope of Work. The Completion of Work Report shall be certified by the supervising contractor, to the effect that all response activities have been completed in full satisfaction of the requirements of this Order.

87. When EPA determines that all work has been fully performed in accordance with this Order, and that all goals and objectives of this Order and the Scope of Work have been satisfied, EPA will provide written notice to the Respondents. If EPA determines that all response activities have not been completed in accordance with the provisions of this Order, it will so notify the Respondents and provide a list of the tasks remaining and a schedule for their completion. The Respondents shall perform all remaining tasks and shall submit an amended Completion of Work Report in accordance with the EPA notice. If EPA determines that the remaining tasks have not been completed in accordance with the provisions of the EPA notice and this Order, the Respondents shall be in violation of this Order.

88. EPA's issuance of the notice referred to in the paragraph immediately above shall not preclude it from later determining, based upon new information or otherwise, that the Respondents have not completed all response activities in accordance with the provisions of this Order.

**XV. SUBMISSIONS REQUIRING AGENCY APPROVAL;
RESPONDENTS' OBLIGATION TO PROCEED**

89. After review of any deliverable, plan, report or other item (submission) that the Respondents are required to submit for review and approval pursuant to this Order and Statements of Work, EPA may: (i) approve the submission; (ii) conditionally approve the submission with required modifications; (iii) disapprove the submission and notify the Respondents of deficiencies; or (iv) disapprove the submission and modify the deliverable, plan, report, or other item itself to cure any deficiencies. In the event EPA approves or conditionally approves the submission, or disapproves and modifies the submission itself, the Respondents shall perform all actions required by the submission, as approved, conditionally approved, or modified by EPA.

90. Upon receipt of a notice of disapproval with deficiencies ((iii) above), the Respondents shall correct the deficiencies and resubmit the submission within **seven (7) days** or such other time period specified in the notice of disapproval. Notwithstanding a notice of disapproval, the Respondents shall proceed to take any action required by any non-deficient portion of the submission. If EPA does not approve the submission as resubmitted, Respondents shall be in violation of the Order.

91. For each submission provided to EPA, the Respondents shall submit such copies as specified by the TPC. Any deliverable, plan, or report submitted to EPA pursuant to this Order shall be dated and shall include, in a prominent location in the document, the following disclaimer: "Disclaimer: This document has been prepared pursuant to a government administrative order (U.S. EPA Region I SDWA Docket No. 1-2000-0014) and is subject to approval by the U.S. Environmental Protection Agency. The opinions, findings, and conclusions expressed are those of the authors and not those of the U.S. Environmental Protection Agency." In addition, any such deliverable, plan, or report which has not received final approval from EPA shall be marked "Draft" on each page. The Respondents shall provide copies of all deliverables to the Massachusetts Department of Environmental Protection (DEP). EPA will consult with the DEP in

its review of each major deliverable; however, EPA retains the authority to approve or disapprove any of the deliverables.

XVI. INCORPORATION AND ENFORCE ABILITY OF DOCUMENTS

92. The Statements of Work and all other appendices or attachments to this Order shall be deemed incorporated into, and made an enforceable part of, this Order. Upon approval by EPA, all contracts, deliverables, plans, reports, specifications, schedules, or other items required by or developed under this Order shall be deemed incorporated into, and made an enforceable part of, this Order. In the event of conflict between this Order and any document attached to, incorporated into, or enforceable hereunder, the provisions of this Order shall control.

XVII. SITE ACCESS

93. To the extent Respondents own, occupy, lease or control property at the MMR, or property other than the MMR to which access is required in order to properly carry out the terms of this Order, they shall grant access to EPA, the Commonwealth of Massachusetts (the "State") and their officers, employees, agents, contractors, consultants, and other authorized representatives for purposes of implementing and monitoring work to be performed under this Order.

94. To the extent access to, use or ownership of, or easements over property other than the MMR is required for the proper and complete implementation of this Order, the Respondents shall use best efforts to obtain site access agreements or other interests in the property, in writing, sufficient to allow implementation of this Order within **thirty (30) days** after the Order's effective date. For purposes of this paragraph, "best efforts" include but are not limited to the payment of money, consistent with the Anti-Deficiency Act, in consideration of access to property.

95. Such written access agreements or other interests obtained pursuant to the preceding paragraph shall provide EPA, the State, and their officers, employees, agents, contractors, consultants, and other authorized representatives access to the MMR or other such property at all times for purposes of implementing and monitoring work under this Order. Such written access agreements or other interests shall specify that the Respondents are not EPA's representatives or agents with respect to liability associated with the Site.

96. In the event that site access agreements or other interests sufficient for implementation and monitoring of work under this Order are not obtained within the time period specified above, the Respondents shall notify EPA in writing within **three (3) days** thereafter regarding the lack of such agreements and the efforts made by the Respondents to obtain them. Lack of access shall not excuse or justify failure to perform any activity or to meet any deadline not requiring or directly dependent upon such access.

XVIII. QUALITY ASSURANCE/SAMPLING

97. The Respondents shall submit immediately to EPA and the State, upon receipt, the results of all sampling or tests and all other data generated by the Respondents, their contractor(s), or on the Respondent's behalf in the course of implementing this Order. The Respondents shall also provide the quality assurance/quality control procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

98. Upon request, the Respondents shall allow EPA, the State, or their authorized representatives to take split and/or duplicate samples of any samples collected by the Respondents while performing work under this Order. The Respondents shall notify EPA and the State not less than four (4) days in advance of any sample collection activity. In addition, EPA shall have the right to take any additional samples that it deems necessary.

99. The Respondents shall assure that EPA and its authorized representatives are allowed access to any laboratory utilized by the Respondents in implementing this Order. Upon request, the Respondents shall have a designated laboratory analyze samples submitted by EPA for quality assurance monitoring.

**XIX. ACCESS TO INFORMATION; RECORD PRESERVATION;
CONFIDENTIALITY CLAIMS**

100. Upon request, the Respondents shall provide EPA with copies of all records, documents, and other information generated by the Respondents and their contractor(s) which relates in any way to the facility or to the implementation of this Order, including but not limited to, sampling and analysis records, field sheets and field notes, engineering logs, chain of custody records, contracts, bills of lading, trucking logs, manifests, receipts, reports, and correspondence. In addition, the Respondents' employees, agents, or representatives with knowledge of facts concerning the conditions at the facility or performance of work under this Order shall be made available to EPA to provide such information.

101. For a period of at least five (5) years following completion of all work conducted by the Respondents pursuant to this Order, the Respondents shall preserve all documents, records, and information of whatever kind, nature or description in their possession and/or control or that of their officers, employees, agents, licensees, accountants, contractors, attorneys, successors and assigns, that relate in any way to the performance of work under this Order, or relate in any way to releases or threatened releases of contaminants which are the subject of the actions addressed by this Order. After this five (5) year period has expired, the Respondents shall provide EPA with thirty (30) days advance written notice prior to the destruction of any such records, documents, or information. The Respondents shall send such notice, accompanied by a copy of this Order, to:

Attention: MMR Impact Area Counsel
Office of Environmental Stewardship

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U.S. Environmental Protection Agency
J.F.K. Federal Building
Boston, Massachusetts 02203-2211

Re: Response Action at Massachusetts Military
Reservation

EPA Docket No. SDWA-1-2000-0014

Upon request, the Respondents shall provide to EPA copies of all such records, documents, or information.

102. Respondents may assert a confidentiality claim, if appropriate, covering part or all of the information required by or requested under this Order, pursuant to Section 1445(d)(1) of SDWA, 42 U.S.C. § 300j-4(d)(91) and 40 C.F.R. § 2.203(b) (1989). Respondents shall adequately substantiate all such assertions. Information determined to be confidential by EPA will be afforded the protection required by 40 C.F.R. Part 2, Subpart B. If no confidentiality claim accompanies the information when submitted to EPA, EPA may make it available to the public without further notice to the Respondents. However, pursuant to Section 1445(d)(2) of SDWA, 42 U.S.C. § 300j-4(d)(2), any information shall be disclosed to the public to the extent that it deals with the level of contaminants in drinking water.

XX. CREATION OF DANGER; EMERGENCY RESPONSE

103. Upon the occurrence of any incident or change of conditions during the activities conducted pursuant to this Order that causes or threatens a release of contaminants from the facility or an endangerment to the public health or welfare or the environment, the Respondents shall immediately take all appropriate action to prevent, abate or minimize such release or endangerment. The Respondents shall also immediately notify the TPC or, in the event of his/her unavailability, shall notify the Regional Duty Officer of the Emergency Planning and Response Branch, EPA Region I, telephone (800) 424-8802. In taking any actions under this paragraph, the Respondents shall act in accordance with all applicable provisions of the Health and Safety Plan prepared pursuant to the Statements of Work.

104. The Respondents shall submit a written report to EPA within **seven (7) days** after each incident specified above, setting forth the events that occurred and the measures taken and to be taken to mitigate any release or endangerment caused or threatened by the incident and to prevent the reoccurrence of such an incident.

105. Nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to

prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the facility.

XXI. AMENDMENTS

106. This Order, other than the Statements of Work, may only be amended in writing by signature of the Regional Administrator of EPA Region I. Amendments or modifications to the Statements of Work may only be made in writing by the TPC.

107. No informal advice, guidance, suggestion, or comment by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by the Respondents shall be construed as relieving the Respondents of their obligation to obtain such formal approval as may be required by this Order.

XXII. PUBLIC INVOLVEMENT

108. Respondents shall ensure adequate public involvement in all Work undertaken pursuant to the Order and SOW. Within fifteen days of the effective date of the Order, Respondents shall submit to EPA a plan for ensuring adequate public involvement, including but not limited to the following:

- A. Making immediately available to the public all non-privileged information obtained or compiled pursuant to this Order;
- B. Coordinating the Work under this Order and SOW with the Impact Area Review Team established pursuant to Administrative Order I-97-1019 and providing resources for the effective functioning of the Impact Area Review Team;
- C. Providing periodic oral and written updates to the public on the progress of the Work;
- D. Sharing immediately with the public all conclusions reached by the Respondents or their representatives with respect to the Work;
- E. Coordinating the Work under this Order and SOWs with the ongoing groundwater investigations being undertaken by Respondents and with response actions being undertaken at MMR by the Installation Restoration Program.

XXIII. COOPERATIVE MANAGEMENT OF ACTIVITIES

109. EPA intends to implement a fully collaborative and cooperative approach to management of Rapid Response actions and response actions under this Order. Toward that end, EPA intends to establish a three-level management structure to oversee these actions. These Management Groups

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Administrative Order

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are to meet regularly to review progress and anticipate and minimize problems with the response actions:

a.. The first management level will be a Project Management Group consisting of the EPA Technical Project Coordinator, the Massachusetts DEP Project Manager, and the NGB Project Manager. This group shall attempt to meet on a weekly basis to discuss implementation of this Order.

b. The second management level will be a Senior Management Group consisting of the Senior Policy Advisor for EPA New England, the Deputy Regional Director of Waste Site Cleanup for Massachusetts, and the Chief, Environmental Programs Division, Army National Guard. This group shall meet periodically to discuss implementation of this Order.

c. The third management level will be an Executive Board consisting of the EPA Regional Administrator, the Massachusetts DEP Commissioner and Deputy Assistant Secretary of Army for Environment, Safety and Occupational Health. This group shall meet as needed to review overall progress under this Order.

d. In addition, on a monthly basis, more or less, issues shall be discussed with the Impact Area Review Team to receive input on key decisions.

XXIV. DISPUTE RESOLUTION

110. The dispute resolution procedures herein will apply to disputes regarding implementation of the requirements of this Order.

a. Respondents shall make reasonable efforts to resolve disputes informally at the Project Management and Senior Management levels. If resolution cannot be reached informally, then the procedures below shall be implemented to resolve a dispute.

b. During this informal dispute resolution period, EPA and the Respondents shall confer as many times as may be necessary to discuss and attempt resolution of the dispute, and shall involve the public as appropriate.

c. Within seven days after any party concludes that agreement cannot be reached through informal dispute resolution, the Respondent(s) shall submit to EPA a written statement of dispute, setting forth the nature of the dispute, the work affected by the dispute, the Respondent's position with respect to the dispute, and the technical or factual information the Respondent(s) is relying upon to support its position. The parties shall have seven days to reach agreement or the matter shall be referred to the Executive Board.

d. The Executive Board shall attempt to resolve disputes for which agreement has not been reached within 21 days of having a dispute referred to it. The Executive Board members shall, as

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appropriate, confer, solicit public involvement, and exert their best efforts to resolve the dispute and issue a unanimous written decision signed by the parties to the dispute. If the Board members are able to unanimously resolve the dispute, they shall memorialize their agreement in writing. If unanimous resolution is not reached, EPA's Regional Administrator shall use best efforts to issue a written decision within 14 days from the date on which the dispute was forwarded to the Executive Board but may issue a written decision in a longer time frame if considered necessary by the EPA Regional Administrator based on the particular circumstances of the dispute. No further review of the dispute is available.

e. This dispute resolution process shall not be construed to limit the right of any party to seek review and resolution of national security issues through existing processes as may be provided by Executive Order 12088.

f. The review of any dispute under these procedures shall not affect Respondents' responsibility for timely performance of the Work required by this Order, except that the time period for completion of work affected by such dispute shall be extended for a period of time usually not to exceed the actual time taken to resolve any good faith dispute in accordance with the procedures as specified herein. Whether a dispute has been made in good faith shall be determined by EPA. All elements of the work required by the Order, as determined by EPA, which are not affected by the dispute, shall continue to be completed in accordance with the applicable schedule.

g. EPA anticipates that Work affected by the dispute will continue during the dispute resolution process, with the time period for completion of the Work extended as set out in the previous paragraph. However, while dispute resolution is in progress, performance of specific elements of the Work affected by the dispute will be suspended if either EPA or the Respondent(s) requests, in writing, that such work element be suspended because (1) performing such work element will make the dispute moot, or (2) because such work element is inadequate or defective and such inadequacy or defect may result in an adverse effect on human health, welfare or the environment. Notwithstanding any other provision of this agreement, however, any element of Work that has been stopped pursuant to the previous sentence shall be immediately recommenced, if EPA determines that the stoppage, either by itself or in conjunction with other events, may present an imminent and substantial endangerment to human health and the environment.

h. After stoppage of Work as set out in the prior sub-paragraph, EPA and Respondents shall meet to discuss the stoppage. Following this meeting, and further consideration of the issues, EPA will issue a written opinion with respect to the Work stoppage if the dispute continues. In any event, any element of the Work that has been stopped under this paragraph shall be immediately resumed upon issuance and in accordance with the Regional Administrator's written decision on the underlying dispute, as provided in sub-paragraph d.

i. Within the time frame established in the resolution of a dispute pursuant to this provision, Respondents shall incorporate the resolution and final determination into the appropriate plan,

MASSACHUSETTS MILITARY RESERVATION

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timetable or procedures, and complete the Work according to such amended plan, timetable or procedure.

XXV. OTHER APPLICABLE LAWS

111. All actions required pursuant to this Order shall be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations, including but not limited to, the laws relating to occupational health and safety and worker's compensation.

XXVI. ENFORCEMENT; PENALTIES FOR NONCOMPLIANCE

112. Violation of this Order, or failure or refusal to comply with this Order, may subject the Respondents National Guard Bureau and Massachusetts National Guard to an enforcement action by EPA for civil penalties of up to fifteen thousand dollars (\$15,000) for each day in which such violation or failure to comply occurs, as provided in Section 1431(b) of SDWA, 42 U.S.C.300i(b) and Section 1447(b) of SDWA, 42 U.S.C. § 300j-6(b).

XXVII. DISCLAIMER OF LIABILITY BY EPA

113. By issuance of this Order, EPA assumes no liability for injuries or damages to persons or property resulting from acts or omissions by the Respondents, their officers, employees, agents, representatives, successors, assigns, contractors, or consultants in carrying out activities pursuant to this Order. EPA shall not be held as a party to any contract entered into by the Respondents or their employees, agents, representatives, successors, assigns, contractors, or consultants in carrying out activities pursuant to this Order.

XXIX. NO RELEASE FROM LIABILITY

114. Nothing in this Order shall constitute or be construed as a satisfaction or release from any claim, cause of action, or demand in law or equity against the Respondents or any other person, whether or not a party to this Order, for any liability such person may have for any conditions or claims arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the facility, including but not limited to any and all claims of the United States for money damages and interest under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), or under any other applicable statute or the common law.

XXX. RESERVATION OF RIGHTS BY EPA

115. EPA reserves all rights against the Respondents and all other persons to take any further civil, criminal, or administrative enforcement action pursuant to any available legal authority, including the right to seek injunctive relief; the recovery of money expended or to be expended (plus interest); monetary penalties; criminal sanctions; and/or punitive damages regarding: (i) any

violation of this Order; or (ii) any actual or potential threat to human health or welfare or the environment, or any release or threat of release of hazardous substances on, at, in, or near the facility. Nothing in this Order shall preclude EPA from taking any additional enforcement actions, including modification of this Order or issuance of additional Orders, and/or additional actions as EPA may deem necessary, or from requiring Respondents in the future to perform additional activities pursuant to RCRA, SDWA, or any other applicable law.

116. EPA further expressly reserves the right both to disapprove work performed by the Respondents and to request or order the Respondents to perform tasks in addition to those detailed in the Order. In addition, EPA reserves all rights it may have to undertake response actions at any time and to perform any and all portions of the work activities which the Respondents has failed or refused to perform properly or promptly, and to seek reimbursement from Respondents for its costs, or seek any other appropriate relief.

117. Notwithstanding any other provision of this Order, EPA shall retain all of its information gathering, entry, inspection, and enforcement authorities and rights under any applicable law, regulation, or permit.

XXX. OPPORTUNITY TO CONFER

118. Within **three (3) days** after signature of the EPA Regional Administrator on this Order, the Respondent(s) may request a conference with the Regional Administrator of EPA Region I or his designee to be held no later than **six (6) days** after issuance of this Order. Requests for a conference should be submitted to:

William Walsh-Rogalski, Esq. (RAA)
Office of the Regional Administrator
U.S. Environmental Protection Agency
1 Congress Street, Suite 100
Boston, Massachusetts 02203-2211
(617) 918-1035
FAX (617) 918-1029

119. The purpose and scope of the conference shall be to discuss the issue(s) which Respondent(s) would like the Regional Administrator to consider in connection with this Order. Respondent(s) should submit copies of all necessary information regarding the issue(s) to be discussed. The conference is not an evidentiary or adversarial hearing and is not part of any proceeding to enforce or challenge the Order. At any conference held pursuant to this section, the Respondent(s) may appear in person or by attorney or other representative.

XXXI. EXCUSED DELAY - FORCE MAJEURE

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Page 35

120. Respondents' activities under this Order shall be performed within the time limits set forth herein, or otherwise established or approved by EPA, unless performance is delayed or prevented by events which constitute "force majeure". For purposes of this Order, "force majeure" is defined as any event arising from causes beyond Respondents' control. "Force majeure" shall not include any inability of any Respondent(s) to pay the costs or expenses associated with complying with this Order, or increases in such costs or expenses, except as provided below in Section XXX, Anti-Deficiency Act. When an event constituting "force majeure" occurs, Respondents shall perform the affected activities within a time period not to exceed the time provided in this Order and the period of delay attributable to "force majeure". Respondents shall use best efforts to avoid or minimize any delay or prevention of performance of their obligations under this Order, and to discover and keep apprized of any and all circumstances which may result in a delay or prevention of the work required under this Order. A delay caused by EPA, and otherwise conforming with the terms of this Section, shall be treated as beyond the Respondents' control.

121. Respondents shall verbally notify the EPA Project Coordinator as soon as possible, and not later than forty-eight (48) hours, after the discovering that circumstances have occurred or are likely to occur which may delay or prevent the performance of any activity required by this Order, regardless of whether or not those circumstances constitute a "force majeure". If the Project Coordinator cannot be reached, Respondents shall leave a telephone message at the Project Coordinator's office. Respondents shall also notify EPA in writing within seven (7) days after the date any Respondent first became aware of the circumstances which may delay or prevent any performance of any activity required by this Order. Such written notice shall be accompanied by all available pertinent documentation including, but not limited to, third-party correspondence, and shall contain: 1) a description of the circumstances and the Respondents' rationale for interpreting such circumstances as being beyond its control; 2) the actions (including pertinent dates) Respondents have taken and/or intend to take to minimize any delay; and, 3) the date or time period Respondents propose to complete the delayed activities. Such notification shall not in and of itself relieve Respondents of any of their obligations under this Order. Respondents' failure to timely and properly notify EPA as required by this paragraph shall nullify any claim of "force majeure" and resulting entitlement to any extension of time therefor. Respondents shall have the burden of proving to EPA's satisfaction that an event constituting "force majeure" has occurred.

XXXII. EFFECTIVE DATE; COMPUTATION OF TIME

122. The obligations required by this Order shall become effective pursuant to the Safe Drinking Water Act seven days after the Order is signed by the EPA Regional Administrator, consistent with the opportunity to confer described above. All times for Performance of Work under this Order shall be calculated from the effective date. When computing any period of time under this Order, if the last day would fall on a Saturday, Sunday or federal holiday, the period shall run until the next working day.

XXXIII. ANTI-DEFICIENCY ACT

123. Nothing in this Order shall require the Respondent National Guard Bureau or other federal agency to violate the Anti-Deficiency Act.

XXXIV. SEVERABILITY

124. If a court issues an order that invalidates any provision of this Order, or finds the Respondent(s) have sufficient cause not to comply with one or more provisions of this Order, Respondent(s) shall remain bound to comply with all provisions of this Order not invalidated by such court's order. If a court issues an order requiring that either Respondent is not a proper Respondent under this Order, the remaining Respondent shall remain bound to comply with all provisions of this Order not invalidated by such court's order.

XXXV. TERMINATION

125. The provisions of this Order shall remain in full force and effect until all actions required by this Order have been completed and EPA has notified the Respondents, in writing, that the actions required by this Order have been completed. Respondents shall notify EPA in writing at such time as they believe that all such actions have been completed. EPA shall have sole discretion in determining whether all such actions have in fact been completed. Failure to complete all actions required hereunder as directed by EPA shall be deemed a violation of this Order. EPA's provision of written notice to Respondents pursuant to this paragraph shall not be construed as a waiver of any of EPA's rights to take further enforcement action under any environmental laws.

XXXVI. EXISTING CONSENT DECREE

126. The provisions of this Order are not intended to require any action inconsistent with applicable law or with the consent decree in Conservation Law Foundation of New England, Inc. v. Lt. Gen. Herbert R. Temple, Jr. as he is Chief of the National Guard Bureau, et al., No. 86-1044-S (D. Mass). To the extent that Respondents believe in good faith that any action required by this Order would be inconsistent with that Consent Decree, Respondents are to notify EPA immediately.

XXXVII. MODIFICATION OF THE SOW

127. If EPA determines that modification of the Work specified in the attached SOW or in work plans developed pursuant to the SOW is necessary and appropriate, EPA may require that such modification be included in the SOW and/or in such work plans.

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IT IS SO ORDERED

John P. DeVillars
Administrator, EPA-New England
U.S. Environmental Protection Agency

Date

**DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES REMEDIATION PROGRAM**

555 Cordova Street
Anchorage, AK 99501
PHONE: (907) 269-3094
FAX: (907) 269-7687
<http://www.state.ak.us/dec>

June 12, 2001

Mr. Mark Murphy, P. E.
Engineering Field Activity, Northwest
Naval Facilities Engineering Command
19917 Seventh Avenue NE
Poulsbo, WA 98370-7570

Dear Mr. Murphy:

Subject: Written Comments from Alaska Department of Environmental Conservation on
Operable Unit B-1 Proposed Plan, May 2001

Alaska Department of Environmental Conservation (ADEC) has reviewed the Proposed Plan for Cleanup of Ordnance and Explosives and Unexploded Ordnance within Operable Unit B-1 on Adak Island, dated May 2001. The Navy prepared this Proposed Plan in consultation with ADEC and EPA; therefore, ADEC is in agreement with statements made in the plan. However, ADEC would like to take this opportunity to reiterate and elaborate on the following key points. These elaborations should be reflected in the OU B-1 ROD.

1. Although the ordnance sites were investigated and cleared using methodology that had the consent of project team members and the best technology available to date, due to limitations of these technologies, we cannot state that Adak is 100 percent clear of ordnance and explosives (OE) and unexploded ordnance (UXO). Despite the residential use designation established for Adak, residents must not confuse this with *unrestricted use*. Residents and visitors must exercise caution when engaging in activities in and around known or suspected ordnance sites and follow procedures outlined in the ordnance awareness program.
2. The Navy is committed to providing awareness training in the form of Blue Card briefing for all island residents and visitors. The Navy must reach an agreement with the Aleut Corporation prior to completion of land transfer to determine which party will be responsible for ensuring training is implemented and continued for the life of reuse on Adak.
3. All future property owners on Adak must be informed of the history of their property in order to make responsible decisions regarding land use. To accomplish this, ADEC requires the Navy to implement institutional controls that "run with the land."

4. ADEC is aware that despite the soundness of the technology used to cleanup Adak, improvements in technology are made every day, including technology related to ordnance investigation and clearance. ADEC reserves the right to evaluate technologies available at the time of the CERCLA 5-year Review to determine the need for additional work on former ordnance sites if a higher degree of cleanup standard is warranted. If additional work is determined necessary, work may include performing additional investigative activities as well as removal.

ADEC is aware that the Navy is committed to removing all ordnance items found and reported on Adak. If ordnance items are found and reported, ADEC reserves the right to require the Navy to perform investigative activities in the area surrounding the found ordnance item in addition to performing removal, using the best technology available at that time. Determination to conduct additional investigative activities will be made based on evaluation of location of found ordnance item, type, size, and quantity.

DEC also request that the OU B-1 ROD discuss the following subjects in substantially greater detail than presented in this proposed plan:

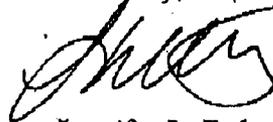
--The maximum depth below ground surface at which OE/UXO could be expected to exist on Adak, and the reasons for concluding that penetration or other placement or migration of OE/UXO would not have occurred below that level.

--Any site-specific determination(s) made under DDESB 6055.9-STD C12.3.4.3.

--The "reasonably likely future land use" for each site, as referred to (but not described) in the second column of page 7 of the Proposed Plan.

Thank you for the opportunity to comment on the proposed plan. Please contact me if you have any questions or need further clarifications on DEC's comments.

Sincerely,



Jennifer L. Roberts
Section Manager

CC: Kevin Oates, EPA Anchorage
Chris Riggio, Aleutian/Pribilof Island Association
Chris Kennedy, AGO
The Aleut Corporation
Greg Siekaniec, U.S Fish and Wildlife Service
Adak Restoration Advisory Board, c/o Jeannette Romig

1
2 **FORMER ADAK NAVAL COMPLEX**
3 **DECLARATION OF THE RECORD OF DECISION, OPERABLE UNIT B-1**

4 **SITE NAME AND LOCATION**

5
6 Operable Unit B-1
7 Adak Naval Complex
8 Adak Island, Alaska
9

CERCLIS ID # AK4170024323

10 **STATEMENT OF BASIS AND PURPOSE**

11
12 This Record of Decision (ROD) presents the selected remedial actions for Operable Unit B-1 (OU B-1) at
13 the former Adak Naval Complex (NAF Adak or Adak military reservation) on Adak Island, Alaska.
14 OU B-1 includes 130 ordnance explosives (OE) or unexploded ordnance (UXO) areas of concern (AOCs,
15 or sites). A ROD was prepared for OU A in 1999 and signed in 2000, which covered Adak's petroleum
16 sites and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites. An
17 additional ROD will be prepared for the areas of concern (AOCs) within OU B-2. The ROD for OU B-2
18 will be the final ROD for the former Adak Naval Complex on Adak Island, Alaska.
19

20 Naval Air Facility (NAF) Adak was placed on the National Priorities List (NPL) in 1994. For technical and
21 administrative purposes, Adak was divided into two operable units (OUs), OU A and OU B in 1998. In
22 general, OU A encompasses the entire military reservation with respect to chemical contamination, while
23 OU B encompasses the entire military reservation with respect to ordnance contamination. OU B was
24 further subdivided into OU B-1 and OU B-2 to facilitate expedited transfer of real estate within OU B-1.
25

26 This decision document presents the Selected Remedy for OU B-1, which was chosen in accordance with
27 CERCLA (1980) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA); 42
28 United States Code (USC) Section 9601 et seq.; and, to the extent practicable, the National Oil and
29 Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative
30 Record for sites identified within OU B-1.
31

32 The State of Alaska concurs with the selected remedy.
33

34 **ASSESSMENT OF THE SITE**

35
36 The response action selected in this Record of Decision is necessary to protect the public health or welfare
37 or the environment from actual or threatened releases of hazardous substances into the environment. Such
38 a release or threat of release may present an imminent and substantial endangerment to public health,
39 welfare, or the environment.
40

41 **DESCRIPTION OF THE SELECTED REMEDIES**

42
43 OU B-1 addresses all of the OE/UXO sites within the former Adak Naval Complex with the exception of
44 areas in the vicinity of Mt. Moffett and Andrew Lake. OU B-1 includes 130 sites containing OE/UXO
45 items. OE/UXO educational awareness programs and incorporation of deed notices in property transfer
46 documents will be implemented throughout the former Adak Naval Complex that will encompass these 130
47 sites. No Further Action (NOFA) is selected for 104 of the 130 sites. OE/UXO clearance to 4 feet below
48 ground surface (bgs) will be conducted at three of the remaining 26 sites. The remaining 23 sites will
49 undergo final characterization and clearance as needed to support future land use. Fourteen of the 23 sites
50 will have soil sampled for explosives-related chemicals and soil removed, treated, and disposed of either on
51 site or offsite, if necessary. The major components of the selected remedies are summarized in the
52 following section.
53

RECEIVED

AUG 13 2001

DEPT. OF ENVIRONMENTAL CONSERVATION

1 **NO FURTHER ACTION (NOFA)**

2
3 NOFA is selected for 104 of the OU B-1 sites, based on initial screening efforts by the Adak OU-B Project
4 Team and on evaluations completed as part of the Remedial Investigation/ Feasibility Study (RI/FS)
5 process.

6
7 The major components of the NOFA alternative include:

- 8
9
- 10 • Continue the Adak OE/UXO awareness program. The program applies to the entire military
11 reservation at Adak, including areas that are part of OU B-1. This program is intended to
12 familiarize island residents and visitors with the history of ordnance use, storage, handling, and
13 disposal on Adak Island; basic characteristics of OE/UXO items on Adak; and the procedures that
14 should be followed if a suspected OE/UXO item is encountered.
 - 15 • Provide copies of this ROD and the Finding of Suitability to Transfer (FOST) to the Bureau of
16 Land Management (BLM) to be maintained as part of the permanent file of conveyance
17 documentation. This information will summarize the known nature and extent of OE/UXO on
18 these sites and the depths of clearance actions taken. Reference to these documents and their
19 availability in the BLM permanent conveyance file will be included in the interim conveyance
20 executed by BLM.
- 21

22 **UXO CLEARANCE TO 4 FEET BELOW GROUND SURFACE**

23
24 Based on additional field investigation and documentation through the RI/FS process, 3 of the remaining 26
25 sites (C3-01A, C6-01A, and ML-01A) were recommended for OE/UXO Clearance to 4 feet bgs.

26
27 The major components of the selected remedy for the C3-01A, C6-01A, and ML-01A sites include:

- 28
- 29 • Remove all metallic debris from the surface that could interfere with geophysical surveys.
 - 30 • Geophysically survey sites to find possible OE/UXO.
 - 31 • Identify locations to dig for possible OE/UXO (based upon geophysical data).
 - 32 • Re-locate and excavate identified targets.
 - 33 • Dispose of OE/UXO by detonation in place or removal and treatment at a remote location
 - 34 • Disposal site C3-01A will be cleared to a depth of 4 ft below the lowest depth that OE/UXO was
35 found or to bedrock – whichever is encountered first.
- 36
37
38
39
40
41

42 **SITES SELECTED FOR OBSERVATIONAL APPROACH AND PRESUMPTIVE CLEARANCE**
43 **(OAPC SITES)**

44
45 The 23 other sites have been identified for final characterization and clearance as needed to support future
46 land use. These sites include the following: Combat Range 3 Sites C3-01B, -01C, -01D, -01E, and C3-04A;
47 Combat Range 8 Sites C8-01, -03 and -05A; Lake Jean Site LJ-01; Mitt Lake Sites ML-01B, -02A and
48 -02B; Lake DeMarie Site DM-06A; Finger Bay Sites FB-01 and -04; Blind Cove Site BC-01; Husky Pass
49 Training Area; the Shagak Bay Gun Emplacement; the 20-mm, 40-mm, and 37-mm gun emplacements
50 (GUN-01, -02, and -03); and the Ammo Pier sites, FBAP-02 and AP-02. OE/UXO that has been identified
51 at these areas during past investigations has been removed.

52
53 The major components of the selected remedy for 17 of the 23 sites noted above are the same as for the 3
54 sites previously discussed. For these sites, implementing the remedy will require gathering data on the
55 extent of ordnance contamination as part of an observational approach to executing clearance at the site,
56 However, at 6 sites (the Shagak Bay Gun Emplacement, 20-mm, 40-mm, and 37-mm gun emplacements,
57 and the two Ammo Pier sites, FBAP-02 and AP-02, a reconnaissance survey will be performed in addition
58 to these activities.

1
2 **SITES SELECTED FOR EXPLOSIVE-RELATED CHEMICAL INVESTIGATIONS**
3

4 For 14 sites of the 23 OAPC sites, there is a potential for the presence of explosives-related chemical
5 contamination in soils. The selected remedy at these sites includes the following:
6

- 7 • Sample sites where explosives compounds may pose a risk to human or ecological receptors and
8 excavate, containerize, and treat and/or dispose contaminated soils that exceed cleanup levels.
9

10 **INSTITUTIONAL CONTROLS**
11

12 It is not possible to entirely eliminate the potential for encountering OE/UXO. While the remedies for OU
13 B-1 sites will, in most cases, allow residential land use, the need for maintaining the existing ordnance
14 education and awareness program is recognized by the Navy is a component of the selected remedy for all
15 OU B sites as part of this. This institutional control will provide residents and visitors with information on
16 the past ordnance use, storage, handling, and disposal practices on Adak as well as necessary procedures to
17 be followed should they encounter OE/UXO items. For OU B-1 sites designated for residential use, no
18 other institutional controls or land restrictions will apply.
19

20 For any OU B-1 sites that employ land use restrictions as part of the selected remedy (e.g. land use limited
21 to recreational purposes or wildlife refuge) Navy will provide specific descriptions of the applicable land
22 use restrictions, as well as complete legal descriptions of the sites to which these land use restrictions apply.
23 These restrictions will be recited in the conveyance documentation prepared and executed by Department
24 of Interior to convey the property to The Aleut Corporation, and will "run with the land."
25

26 **ROD DATA CERTIFICATION CHECKLIST**
27

28 The following information is included in the Decision Summary section of this ROD. Additional
29 information can be found in the Administrative Record for OU B-1.
30

- 31 ✓ Land and groundwater restrictions, if any (Section 6)
32
33 ✓ Cleanup levels established for chemicals of concern and the basis for these levels (Sections 7 and
34 8)
35
36 ✓ How source materials constituting principal threats are addressed (Section 11.2)
37
38 ✓ Current and reasonably anticipated future land use assumptions (Section 6)
39
40 ✓ Potential land and groundwater that would be available at the site as a result of the selected
41 remedy (Sections 6 and 11)
42
43 ✓ Estimated capital, operation and maintenance (O&M), and total present worth costs; discount rate;
44 and the number of years over which the remedy cost estimates are projected (Section 11.3 and
45 Table 11-2)
46
47 ✓ Decisive factor(s) that led to the selection of the remedy (Section 11.1).
48

49 Information concerning explosive compound chemicals of concern (COCs) and their respective
50 concentrations, baseline risks represented by the COCs, and cleanup levels established for COCs and the
51 basis for the levels, can be found in Sections 5.8 and 8.3 of this document.
52

53 **STATUTORY DETERMINATIONS**
54

55 The Selected Remedy is protective of public safety, human health, and the environment; complies with
56 federal and state requirements that are applicable or relevant and appropriate to the remedial action; is cost-
57 effective; and uses permanent solutions and alternative treatment technologies to the maximum extent
58 practicable.

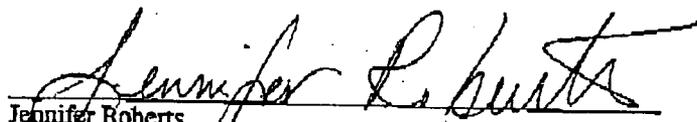
1
2 This remedy also satisfies the statutory preference for treatment as a principal element of the remedy (i.e.,
3 reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal
4 element through treatment) by destroying OE/UXO through excavation, treatment, and disposal (as
5 appropriate) of soils contaminated with explosives-related chemicals. Due to the presence of chemicals
6 above cleanup levels at OU A sites, the need for evaluation of the OE/UXO educational awareness and
7 educational programs, the former Adak Naval Complex will continue to be subject to 5-year reviews
8 pursuant to §300.430(f)(4)(ii) of the NCP.
9

1 **RECORD OF DECISION**
 2 **FORMER ADAK NAVAL COMPLEX, ADAK ISLAND, ALASKA**
 3 **OPERABLE UNIT B-1**
 4

5 The State of Alaska, Department of Environmental Conservation (ADEC) concurs in the selection of the
 6 remedial actions chosen in this Record of Decision.
 7

8 Despite the soundness of the technology choices reflected in this document, ADEC notes that technology
 9 related to ordnance investigation and clearance has advanced rapidly in recent years and may continue to
 10 advance. As new technologies develop, their existence may alter the context in which decisions are made
 11 as to the effectiveness of the remedy to protect human health and the environment. ADEC will expect the
 12 lead agency to take this altered context into account when conducting the reviews required by 42 U.S.C. §
 13 9621(c) and 40 C.F.R. § 300.430(f)(4)(ii). As noted in the letter of Jennifer Roberts to Mark Murphy dated
 14 June 12, 2001, ADEC reserves the right to evaluate technologies available at the time of these reviews to
 15 determine the need for additional work on former ordnance sites if a higher degree of cleanup standard is
 16 warranted. If additional work is determined necessary, that work may include performing additional
 17 investigative activities as well as removal.
 18

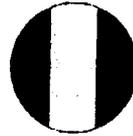
19 ADEC concurs with the observation in this document that the State of Alaska presently has no quantitative
 20 legal standards governing cleanup of OE/UXO. This concurrence should not be construed to suggest that
 21 Alaska law does not prohibit the improper release, abandonment, or disposal of OE/UXO. On the contrary,
 22 such OE/UXO is within the statutory definitions of "hazardous waste" and "pollution" in AS 46.03.900,
 23 and must be managed and cleaned up as required for such materials in Title 46 of the Alaska Statutes.
 24
 25
 26
 27

28 
 29



30 Jennifer Roberts
 31 Manager, Contaminated Sites Remediation Program
 32 Division of Spill Prevention and Response
 33 Alaska Department of Environmental Conservation
 34
 35

Date



***Strategic Management, Analysis, Requirements
and Technology Team***

Operable Units for Ordnance and Explosives

The undersigned parties agree that the Fort Ord Federal Facility Agreement provides an appropriate and dynamic framework and process to address the Army's ordnance and explosives response activities. The undersigned parties agree that these activities will be subject to all provisions of the Fort Ord Federal Facility Agreement. Further, the parties agree to establish one or more operable units for ordnance and explosives, taking into account: any past response activities that may have been conducted; whether ordnance and explosives have been associated with the site; the anticipated future land use of the site; and other relevant human health, environmental, and explosives safety considerations. In particular, the operable units should be structured in such a way as to expedite investigation, selection of appropriate response actions, implementation of response activities (if necessary), and transfer of properties that have been determined to be suitable for transfer.

The undersigned further direct their respective project managers to work cooperatively and expeditiously, to share information, to establish reasonable schedules, to submit and review required documents in a timely manner, and to conduct such other activities as may be necessary to ensure a timely and appropriate response.

Department of the Army

Environmental Protection Agency, Region 9

Department of Toxic Substances Control

DLIFLC and Presidio of Monterey

U.S. Army Training & Doctrine Command

APR 11 2000



DTSC

TRADOC

PARTNERSHIP Strategic Management, Analysis, Requirements and Technology Team

Based on the principle of solutions-oriented partnering, the undersigned are committed to resolving the challenge of cleaning Fort Ord property of ordnance and explosives to a safe level prior to transfer. The work should be done as safely and expeditiously as possible, while protecting the health, safety, and welfare of the communities and the environment.

The signatories agree to investigate forward-thinking approaches to consensus building, innovative procedures for cleanup, and policies that may currently be obstacles to the process. The signatories also agree to dedicate adequate resources, to the extent practicable, to support this effort. The focus will be to manage the cleanup and ordnance and explosives removal efforts such that the property at Fort Ord can be turned over to the intended recipients in a safe and timely manner pursuant to the regulatory responsibilities held by all signatories. The signatories have identified the following objectives:

- *Involve stakeholders in the decision-making process, to include local and state regulators, the property recipients, and the community at large with a public involvement plan*
- *Evaluate current practices and emerging technologies to identify the most feasible approach for ordnance and explosives clearance – preparing the area, sampling, ordnance and explosives detection, detonation, and disposal.*
- *Assess, address/mitigate safety, health, environmental concerns before and during the clearance process*
- *Identify cleanup priorities, criteria, and management*
- *Identify budget requirements*
- *Resolve policy and regulatory conflicts*
- *Establish land use controls (if required) for transferred property*
- *Transfer property as soon as safely cleared*

Signatories:

Department of the Army
Steven M. Myer for Bob Borzelleri
Department of Toxic Substances Control

Environmental Protection Agency, Region 9

Defense Language Institute & Presidio of Monterey
U.S. Army Training and Doctrine Command

26 Aug 99

California's Involvement in the SMART Team at Fort Ord

Dan Ward

Cal EPA

Department of Toxic Substances Control

www.FortOrdCleanup.com

Presentation Outline

- **Background**
- **What led up to SMART?**
- **Formation of the SMART Team**
- **SMART Successes**
- **Unresolved Issues**

Background

- 28,000 acres, including an 8,000 acre multi-range area
- FFA signed in 1990 - *did not include 410*
- NPL in 1990
- Fort Ord closed in 1995

What Led up to SMART?

- **Pressure to Transfer Land**
- **Regulatory Agencies not Fully Involved in UXO Cleanup**
- **Site Security Concerns**
- **Regulatory Concerns about UXO Detection and Clearance**
- **Application of Land Use Controls**
- **Community Involvement Issues**

Pressure to Transfer Land

- **Very high local desire for reuse of Fort Ord lands**
- **Several local jurisdiction waiting for land transfer**
- **High property value**
- **Political pressure**

Regulatory Agencies not fully Involved

- **Is UXO on closed ranges Hazardous Waste?**
- **Army position was that UXO was not remedial action under CERCLA and the FFA**
- **UXO cleanup done under removal actions – reduced regulatory involvement**

Regulatory Agencies not fully Involved (Continued)

- **Agency involvement was on a need to know basis**
- **More regulatory input to UXO cleanup process**
- **Agency/Army disagreement over UXO cleanup approach**
- **Regulators had concerns with the environmental safety of in-place detonations**

Site Security Concerns

- Thousands of residents in very close proximity to Ft. Ord
- Ranges much more accessible after closure
- Fence issues
- Regulatory concern with public safety

Regulatory Concerns about UXO Detection and Clearance

- QA/QC
- Instrumentation
- Lane width

Application of Land Use Controls

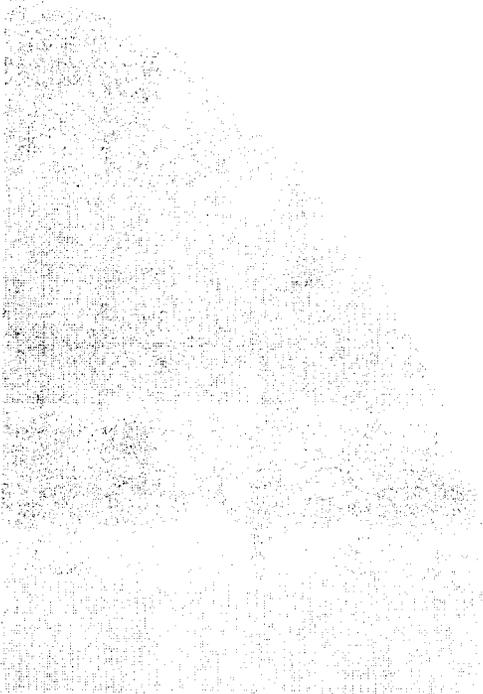
- **Questions about California's Land Use Covenant**
- **Local Government Acceptance**

Community Involvement

- **Strong public outcry over UXO issues**
- **Community not fully involved**
- **RAB Issues**

Formation of the SMART Team in 1999

- Army stepped up and proposed SMART
- High levels from each organization involved.



SMART Successes

Land Transferred

- **Several FOSTs and FOSETs approved**
- **Thousands of acres transferred**

Regulatory Agencies now more involved in UXO Cleanup

- **Army spent time to inform regulators about all issues related to UXO**
- **Inclusion of UXO investigation and remediation in the FFA**
- **Process to bring in issues to SMART**
- **Regulator input into the UXO contractor selection process**

Site Security Improved

- **Installation Site Security Plan finalized**
- **Improved fencing**
- **Surface UXO clearance of accessible parcels**

Regulatory Concerns about UXO Detection and Clearance

- **Alternatives to Open Detonation tested**
- **ODDS - Detection Technologies Evaluated**
- **Initiative to devise OE Risk Assessment**

Application of Land Use Controls

- **Army and local governments willing to enter into and accept institutional controls, including California's landuse covenant**

Community Involvement Improved

- **Monthly Community Involvement Meetings**
- **Community now has access to reports – provided to key community members**
- **Army Website with most Administrative Record Documents Included**

Why SMART Works

- **The Army, regulatory agencies, politicians, and local governments all bought in**
- **Regulators now in the game, with a way to raise issues**
- **Openness, Mutual Trust**

Why SMART Works (Continued)

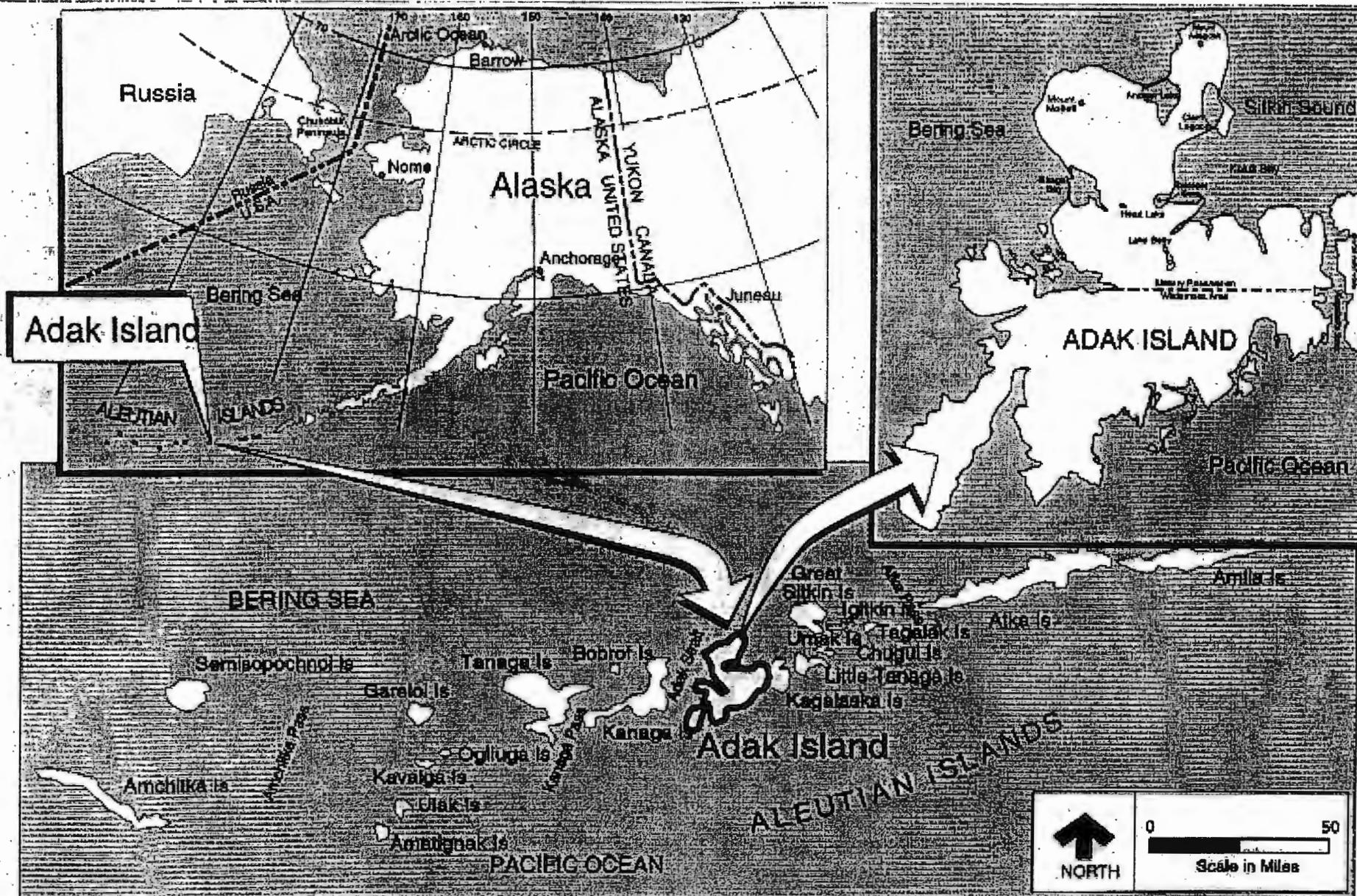
- **All parties willing to listen to concerns and try to work out issues**
- **It's a quick Dispute Resolution Process – Upper management of all agencies have bought in. Can elevate quickly and get resolution.**

Unresolved Issues

- **UXO cleanup protocol for residential use**
- **Quantify residual risk from unfound UXO**
- **Comprehensive plan to manage the residual risk**
- **Blow-in-place issues - Should we use detonation chamber?**
- **Classification of UXO as Hazardous Waste**

Adak Dispute Resolution

Jennifer Roberts
Alaska Dept. Environmental Conservation
ASTSWMO UXO Symposium
November 14, 2002



Background

- Listed on National Priority List
- Federal Facility Agreement
- BRAC
- Expanded Stakeholders
- New Information on Historic Range Use

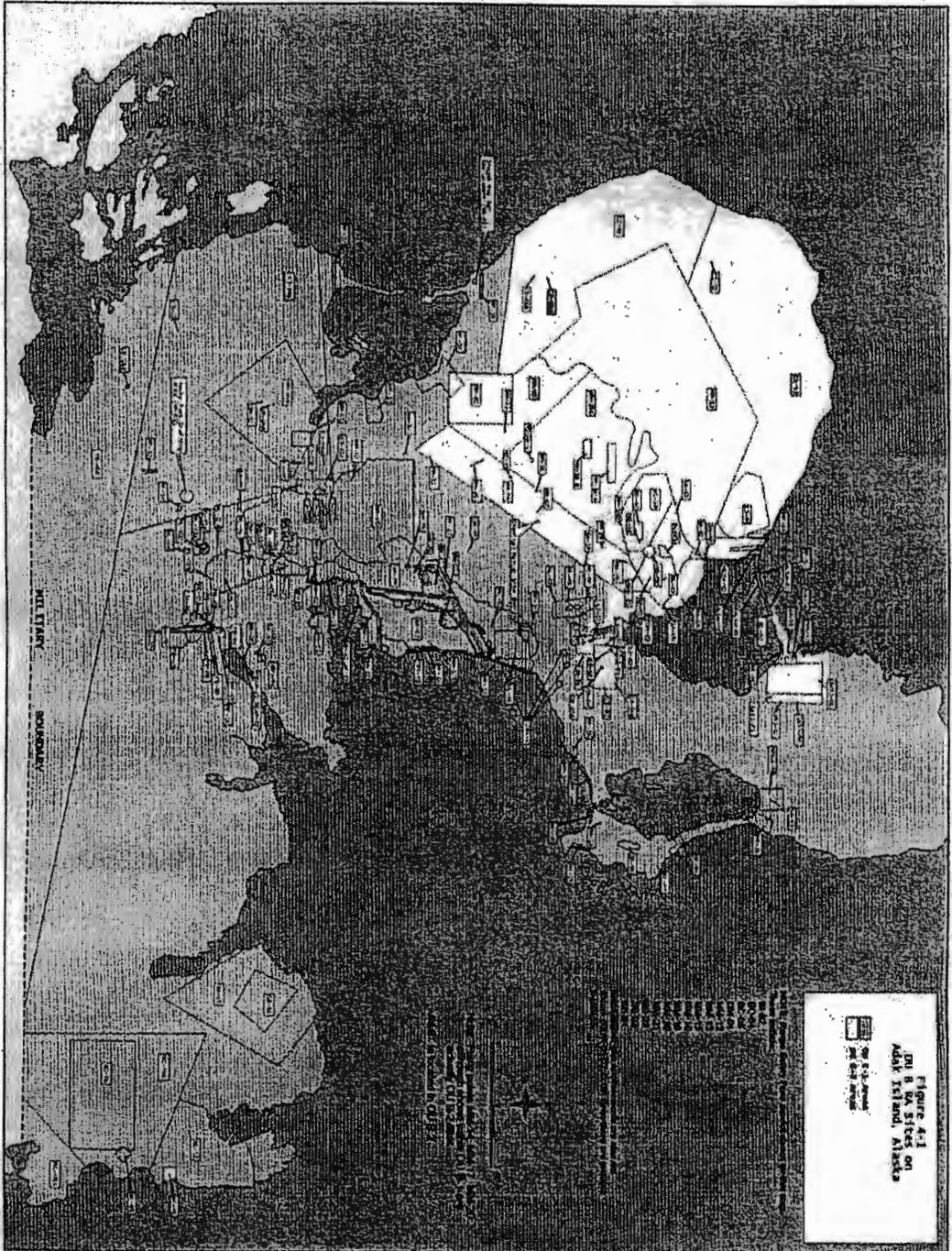


Figure 4-1
Military Sites on
Adak Island, Alaska

Informal Dispute

- Elements of UXO Investigation Work plan
 - Fall/Winter of 1998 for 1999 field season
 - RI/FS Work plan
 - Site Stats/Grid Stats & OECert
 - Inflated cost estimates
- Project Managers
- Project Manager & Supervisor

Formal Dispute

- Formal Dispute filed June 9, 1999 (EPA), June 17, 1999 (DEC)
- FFA Dispute Resolution calls for 1st level to meet within 21 days
- 1st Level Dispute Resolution Committee
- July 22, 1999 Meeting
 - DEC requires stakeholders to be observers
 - Navy shifts position

Directions from DRC

- Go back and design an investigative process
 - Adequate information for decision process
- Develop an acceptable risk model
- Technical Team
 - Include tribe, future landowner, and US F&W
 - Multiple sub-teams
- Report back to DRC every 30 days

Where Are We Now?

- OU B-1 ROD signed January 2002
- Cost for investigation and remediation
- Importance of QA/QC by regulators
- Institutional Controls
 - Adak Community
 - Blue Cards
- New site discovered

Mark Murphy, P.E.
Engineering Field Activity, Northwest
Naval Facilities Engineering Command
19917 Seventh Avenue NE
Paulsbo, WA 98370-7570

Subject: Written Comments from Alaska Department of Environmental Conservation on Operable Unit B-1 Proposed Plan, May 2001

Dear Mr. Murphy:

Alaska Department of Environmental Conservation (ADEC) has reviewed the Proposed Plan for Cleanup of Ordnance and Explosives and Unexploded Ordnance within Operable Unit B-1 on Adak Island, dated May 2001. The Navy prepared this Proposed Plan in consultation with ADEC and EPA; therefore, ADEC is in agreement with statements made in the plan. However, ADEC would like to take this opportunity to reiterate and elaborate on the following key points. These elaborations should be reflected in the OU B-1 ROD.

1. Although the ordnance sites were investigated and cleared using methodology that had the consent of project team members and the best technology available to date, due to limitations of these technologies, we cannot state that Adak is 100 percent clear of ordnance and explosives (OE) and unexploded ordnance (UXO). Despite the residential use designation established for Adak, residents must not confuse this with *unlimited use*. Residents and visitors must exercise caution when engaging in activities in and around known or suspected ordnance sites and follow procedures outlined in the ordnance awareness program.
2. The Navy is committed to providing awareness training in the form of Blue Card briefing for all island residents and visitors. The Navy must reach an agreement with the Aleut Corporation prior to completion of land transfer to determine which party will be responsible for ensuring training is implemented and continued for the life of reuse on Adak.
3. All future property owners on Adak must be informed of the history of their property in order to make responsible decisions regarding land use. To accomplish this, ADEC requires the Navy to implement institutional controls that "run with the land."
4. ADEC is aware that despite the soundness of the technology used to cleanup Adak, improvements in technology are made every day, including technology related to ordnance investigation and clearance. ADEC reserves the right to evaluate technologies available at the time of the CERCLA 5-year Review to determine the need for additional work on former ordnance sites if a higher degree of cleanup standard is warranted. If additional work is determined necessary, work may include performing additional investigative activities as well as removal.

ADEC is aware that the Navy is committed to removing all ordnance items found and reported on Adak. If ordnance items are found and reported, ADEC reserves the right to require the Navy to perform investigative activities in the area surrounding the found ordnance item in addition to performing removal, using the best technology available at that time. Determination to conduct additional investigative activities will be made based on evaluation of location of found ordnance item, type, size, and quantity.

DEC also requests that the OU B-1 ROD discuss the following subjects in substantially greater detail than presented in this proposed plan:

--The maximum depth below ground surface at which OE/UXO could be expected to exist on Adak, and the reasons for concluding that penetration or other placement or migration of OE/UXO would not have occurred below that level.

--Any site-specific determination(s) made under DDESB 6055.9-STD C12.3.4.3.

--The "reasonably likely future land use" for each site, as referred to (but not described) in the second column of page 7 of the Proposed Plan.

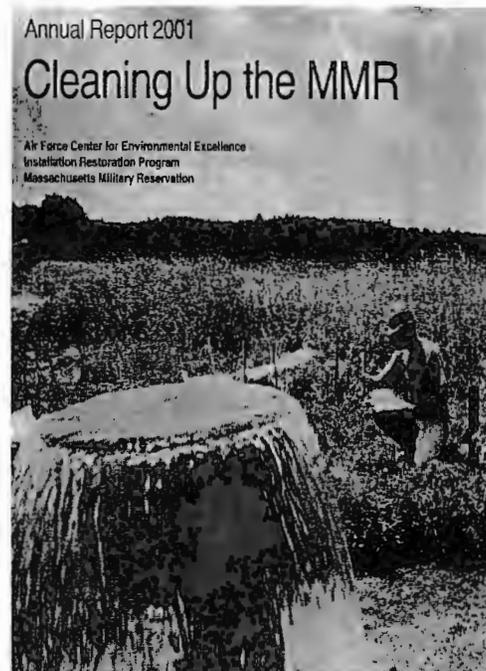
Thank you for the opportunity to comment on the proposed plan. Please contact me if you have any questions or need further clarifications on DEC's comments.

Sincerely,

Jennifer L. Roberts
Section Manager

Cc: Adak Restoration Advisory Board
Aleutian Pribilof Island Association
Chris Kennedy, AGO
Kevin Oates, EPA Anchorage
The Aleut Corporation

Massachusetts Military Reservation and Enforcement



Millie Garcia-Surette, Deputy Regional Director
MADEP Bureau of Waste Site Cleanup

Massachusetts
Department of
Environmental
Protection



MMR and Enforcement Presentation Objectives

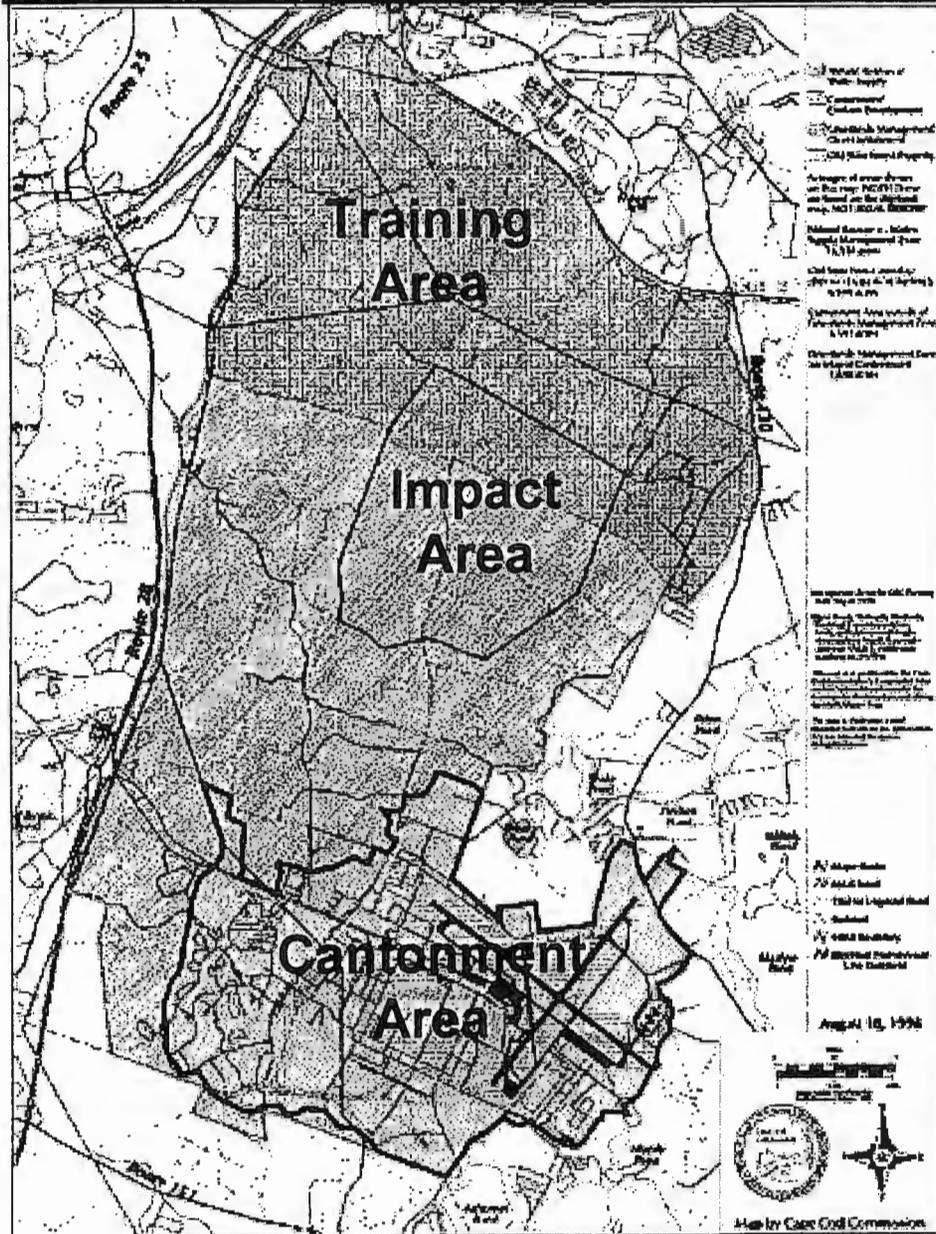
- Discuss Events Leading to Remediation of Sole Source Aquifer and Source Areas
- Describe Enforcement Actions Taken to Address Past Contamination and an MOA Designed to Prevent Current and Future Training-Related Impacts
- Provoke Dialogue Regarding
 - Lessons Learned
 - Current & Future Challenges Faced by Regulators, the Military and the Community as a Whole



Background

- Otis Air Force Base, Otis Air NG Base, Camp Edwards
- Located on upper western portion of Cape Cod
 - Bourne, Mashpee, Sandwich & Falmouth
- Established in 1935
 - State-owned/DoD leased
- Total 22,000 acres (30 sq mi)
 - Camp Edwards training ranges and impact area
 - Northern 15,000 acres
 - Cantonment / industrial area
 - Southern 5,000 acres
- Primary Tenants
 - MA Army and Air National Guard
 - US Coast Guard
 - US Air Force
 - US Veterans Administration

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Looking Back

MMR's Northern 15,000 Acres

Camp Edwards Training Ranges and Impact Area

That was then...

- Heaviest use by the US Army between 1940 - 1946
 - Former artillery and mortar range
 - Destruction of UXO at demolition areas
 - Testing of munitions and weapons systems (J ranges)
 - Propellant bag burning
 - Burial of drums / explosives / mortar or munition rounds
- Resulting in "exotic" munitions-related contamination
 - HMX, RDX, TNT, 2,4-DNT, perchlorate

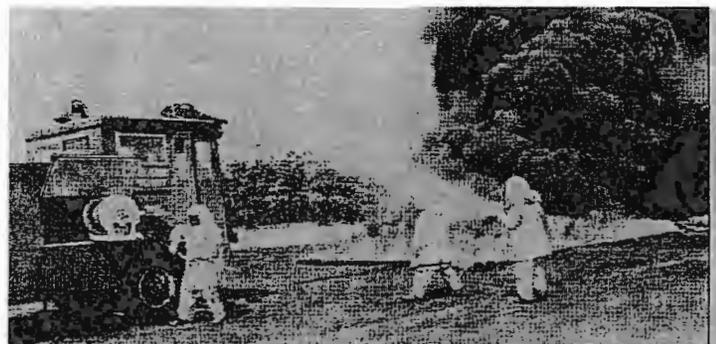


Looking Back

MMR's Southern 5,000 Acres Cantonment / Industrial Area

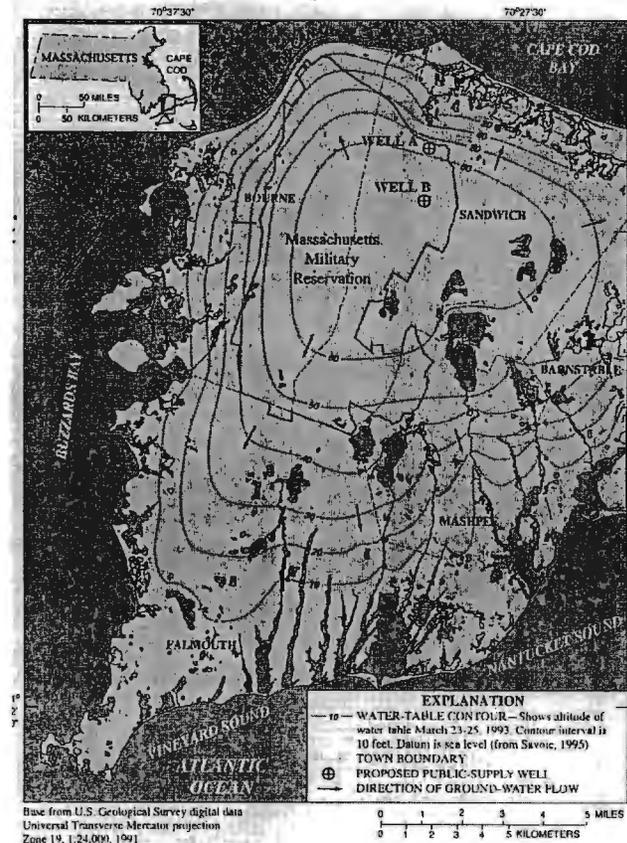
That was then...

- Heaviest use by the US Air Force between 1955 - 1972
 - Military support areas included aircraft runways, aircraft/vehicle maintenance, landfills and firefighting training areas
 - Disposal of hazardous waste in unlined landfills, drywells
 - Fuel dump & burn at firefighting training areas
- Resulting in "classic" fuel and solvents-related contamination
 - PCE, TCE, EDB

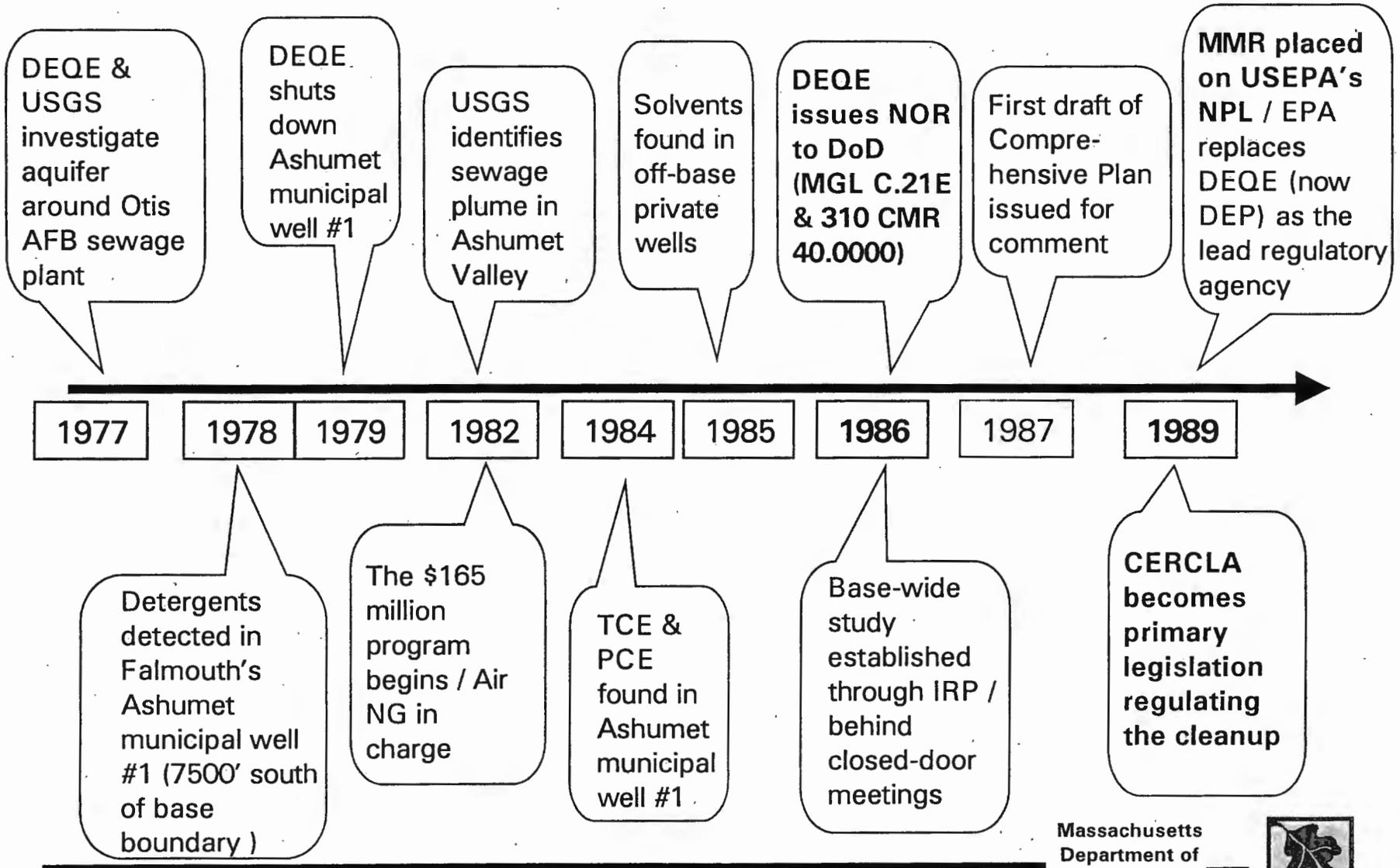


MMR and the Sagamore Lens

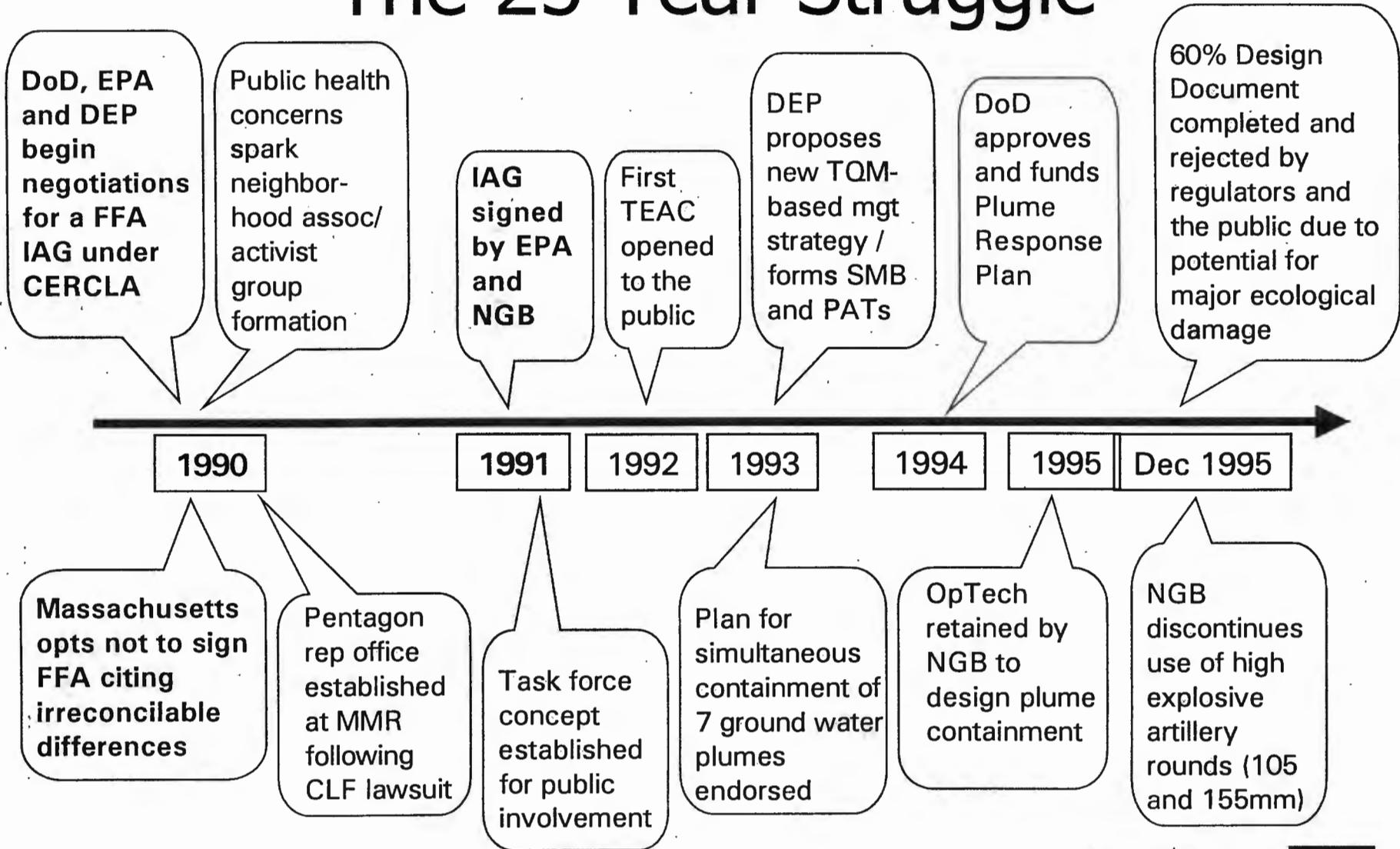
- Large 300-foot thick layer of groundwater
- Recharged by rainwater that seeps through sandy soils into the aquifer
- MMR's Impact Area located atop Sagamore Lens recharge area
- Only source of freshwater for western Cape Cod communities
- Deemed a sole source aquifer by the EPA in 1982
- Groundwater as the primary driver for the cleanup programs and NRDA



The 25 Year Struggle



The 25 Year Struggle



Flames of Public Opinion

Sunday, January 5, 1997

Operation: Failure

Spreading blue...
breakers water...
in health concerns rise

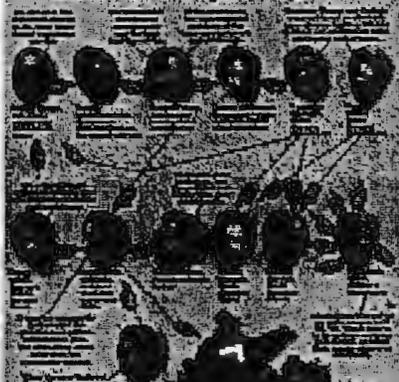
Monday, January 6, 1997

\$100

Terms of...
\$100...
\$100...

Tuesday, January 7, 1997

Who is responsible?



Wednesday, January 8, 1997

The cancer question

Research suggests...
link to...
link to...

Is pollution hitting her?

Female...
link to...

Thursday, January 9, 1997

Starting together...
or recycled trash?

It's not supposed to be...
link to...
link to...

Friday, January 10, 1997

Today's cleanup...
tomorrow's water

Where do we go from here?

part...
link to...
link to...

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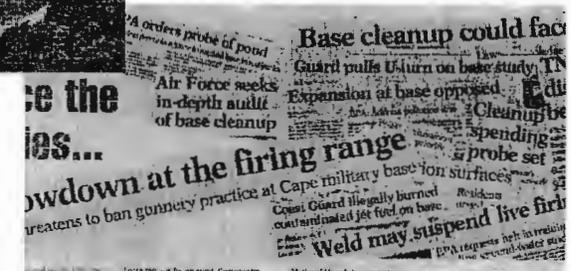
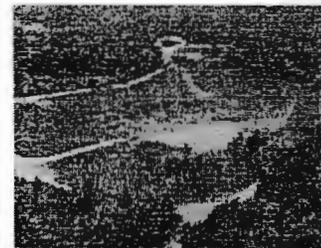
Picking up the Pieces and Making the Community “Whole”

- Regulators request that AFCEE be brought in to help with project
- Good-bye Air National Guard/ Hello AFCEE
 - Accountability and transparency
- Reconnecting with the community and restoring confidence
- Amendment of FFA under CERCLA
 - Re-setting enforceable milestones, IRODs and enlisting new signatories
- NRDA as the link to “making the Cape whole”
 - Commonwealth of Massachusetts and Attorney General’s Office initiate NRDA process



The Sleeping Giant: Camp Edwards Training Ranges and Impact Area

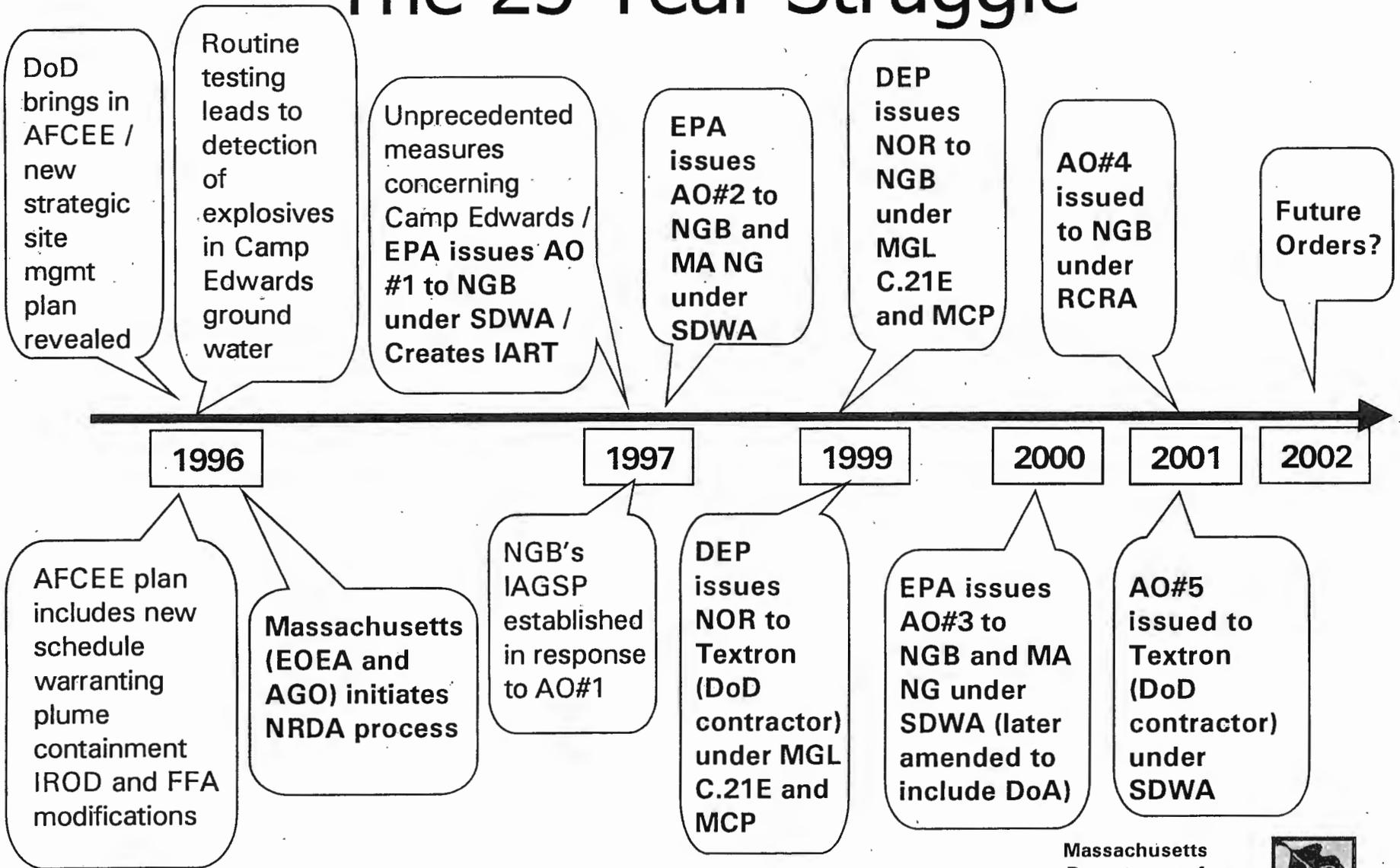
- On-going Impact Area groundwater sampling indicates explosives contamination
- National impasse regarding UXO regulatory framework for active ranges leads EPA Region I to solve the problem
 - Safe Drinking Water Act invoked



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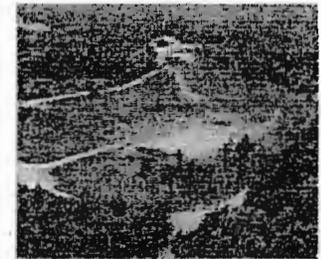


The 25 Year Struggle



The SDWA Advantage

- Section 1431(a) of the SDWA, 42 U.S.C. Code Section 300i
 - Emergency provision: “broad authority”
 - EPA at the “driver seat”
 - Command – control dynamic
 - \$25,000/day penalty assessment
 - Resolves sovereign immunity issues
- Potential SDWA ramifications
 - Could it require additional cleanup, beyond CERCLA requirements, in areas with overlapping/co-mingled contamination?
 - Does it warrant need for extra coordination with State regarding drinking water program requirements?
 - Does it warrant creation of a “CERCLA-like” process?



Balancing SDWA Needs

Under a “Non-Adequately Regulated” Scenario

| | EPA Region 1 Position | MA DEP Position |
|---------------------------------------|---|---|
| Groundwater Cleanup Endpoint Basis | Non-Detect if technically feasible | Guided by risk-based program requirements w/ FAAB component |
| Soil Cleanup | Driven by scenarios protective of sole source aquifer | Takes into account current and future use (per MCP requirements) |
| UXO and OE Cleanup | Clean-up commensurate with aquifer protection and safety | Considers impacts unto vast vegetative cover and feasibility criteria |
| Public Involvement | Created a citizen’s advisory team and mandated monthly public meetings | DEP is an active participant at monthly public meetings |



The Wave of the Future?: Enforceable "Eco-Friendly" Military Training

*"Ensuring Permanent Protection of
Water Supply and Wildlife Habitat of
Upper 15,000 Acres..."*

MOA Parties

- Governor's Office
- Department of the Army
- National Guard Bureau
- Massachusetts National Guard
- MA Executive Office Environmental Affairs

Environmental Management

Commission

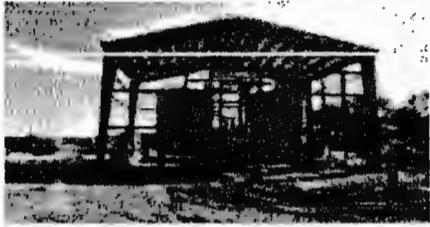
- MA Dept. of Environmental Protection
- MA Dept. of Fisheries, Wildlife, and
Environmental Law Enforcement
- MA Dept. of Environmental Management



***...by using independent monitoring
and oversight to ensure that all
military and other activities are
consistent with that purpose."***



MMR and Enforcement in a Nutshell

| | | | |
|---------------------------------|--|---|---|
| |  |  |  |
| MMR Project Name | AFCEE's Installation Restoration Program | NGB's Impact Area Groundwater Study Program | MOA for Environmentally Compatible Training |
| Regulatory Body/Scope/ Approach | EPA and MA DEP /Past contamination/Current notification to EPA & DEP/ Negotiated | EPA and MA DEP /Past contamination/Current notification to EPA/DEP/ Enforcement (AOs & NORs) | Environmental Management Commission/ Current & future training impacts/ Audits & enforcement |
| Regulatory Framework | <ul style="list-style-type: none"> ● FFA (EPA/AF) pursuant to CERCLA ● C.21E and MCP | <ul style="list-style-type: none"> ● SDWA ● RCRA ● C.21E and MCP | <ul style="list-style-type: none"> ● MOA ● Executive Order ● House Bill 3579 ● C.47 of Acts of 2002 |
| Respondent | Air Force (lead Agent) | NGB / MA NG / DoA / Textron | Governor/ DoA / NGB / MA NG |
| Geographic Boundary | Fenceline to fenceline for contamination regulated under CERCLA | Northern 15,000 Acres (AO's address contamination "at & emanating from...") | Northern 15,000 Acres / Article 97 land |



MMR Current and Future Challenges Ahead

- New discoveries lead to differing and often competing views that emerge during active public participation (IART, PCT, SMB)
- Need for selection of Land Use Controls & UXO/OE cleanup endpoints
- Addressing the constant struggle to convey complex information in a clear concise fashion
- Addressing community concerns resulting from “lower than action level” detections
- Need for regulatory levels for perchlorate
 - Including consensus on health effects information



Looking Forward

Air Force's Commitment to Aquifer Restoration

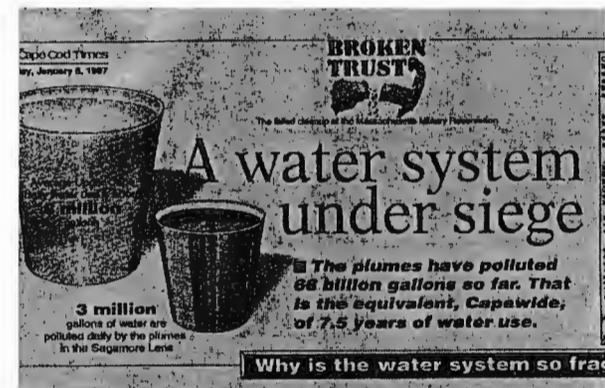
- CERCLA-guided cleanup in accordance with FFA and MGL C. 21E and the MCP
 - It's working well!
- Mature cleanup program
 - O&M of 12 activated carbon plume cleanup systems
 - 11.4 billion gallons of water cleaned-up to date
- Dedicated Funding Source since 1996
 - \$56M (FY03)



Looking Forward

NGB, MA NG and DoA's Commitment to Aquifer Restoration

- SDWA and MGL C.21E / MCP guided clean-up program
 - Investigation Projects
 - Demolition Area 1
 - Central Impact Area
 - So. East Corner of the Ranges
 - Gun and Mortar Firing Positions
 - UXO
 - EPA Rapid Response Action / DEP Release Abatement Measures Project
 - Munitions Survey Project
- US Army Audit Agency report (9/02)
 - Strategic Management Plan warranted?
 - Need for streamlined management scheme?
- Dedicated funding
 - \$60M (FY03)



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Looking Forward

Training that's Compatible with the Environment

- Artillery and mortar firing permanently ceased
 - Light infantry, bivouac
- Chapter 47 of the Acts of 2002 as a guiding framework
 - Permanent protection of water supply and wildlife habitat
- Article 97 protected open space designation



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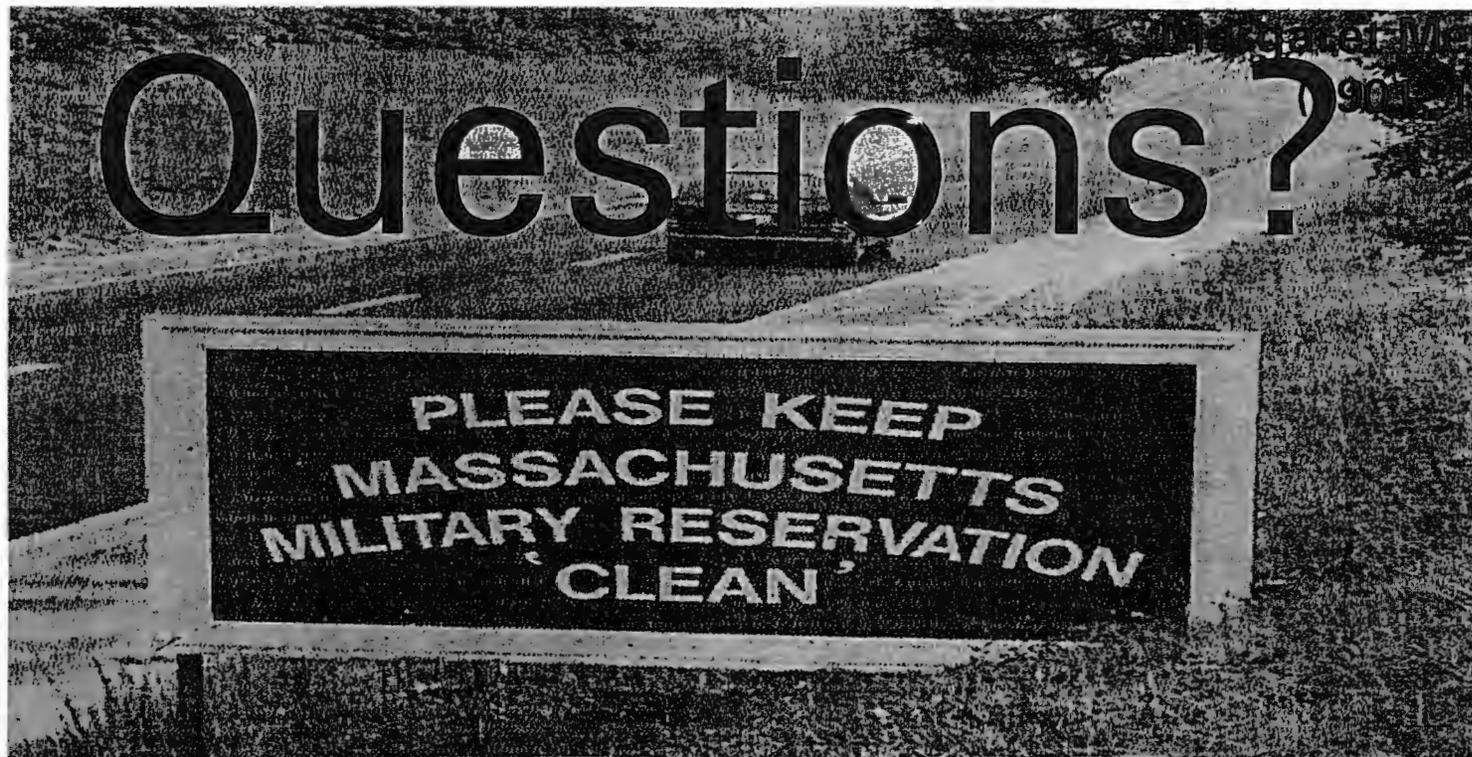


Hindsight is 20/20: Lessons Learned

- Good intentions and poor understanding of conditions lead to unrealistic plume containment plans
- Believe that new challenges lead to new ways of doing enforcement
 - SDWA as a tool to get at UXO / OE in active ranges
 - C.21E and the MCP as a tool to get at UXO in Massachusetts (e.g., Nomans Land Island, Martha's Vineyard, MA)
- Don't underestimate the power of enforcement
 - DEP may not always be the lead regulatory agency but we play a very strong role
- Venture to try new models (e.g., Upper 15,000 Acres MOA)



"Never doubt that a small group of thoughtful, committed citizens can change the world: Indeed it's the only thing that ever has."



Margaret Mead
(1904-1978)

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Protection



UXO Symposium: Regulatory Setting The DOI Perspective

A. Regulatory Uncertainty

With respect to jurisdiction over cleanups of munitions, both the controlling law and regulatory policies are currently the subject of substantial debate. EPA's Handbook on Unexploded Ordnance (2001) states, for example, that:

"The reader should keep in mind that the regulatory context for UXO investigation and cleanup is evolving. The writing of this Handbook has taken place against a background of extensive debates between DOD, EPA, states, and the public over the manner in which used or fired munitions and UXO will be cleaned up and regulated . . . the debate continues today."

B. General Concerns of Interior

1. There is a large, but as yet unquantified, universe of properties contaminated with unexploded ordnance from defense activities. According to GAO estimates, there are more than 9,000 sites currently identified for potential cleanup under DOD's Formerly Utilized Defense Site (FUDS) program. (GAO, Environmental Contamination: Cleanup Actions at Formerly Used Defense Sites (July 2001)). Many of these sites are contaminated with UXO as well as other substances.

The Department of the Interior (DOI) has confirmed the presence of several hundred sites containing UXO on public lands. It believes that there may be hundreds more sites that have not yet been identified. Because of Interior's obligation to ensure that its lands are open for multiple uses, the potential presence of UXO can present significant risks to the public if not addressed.

2. The costs of addressing UXO hazards can be immense. The Corps of Engineers has estimated the costs of addressing the principal hazards at FUDS properties – many of which are explosives risks arising from UXO – at more than \$20 billion. DOD's priorities for addressing such sites may not be consistent with those of the federal land managers.

3. Interior often receives properties from the defense agencies that are contaminated with UXO. The defense agencies frequently prefer to transfer contaminated lands to other federal agencies because, in so doing, they need not comply with the requirements of CERCLA section 120(h) – under which agencies generally must covenant, before transferring property outside the federal government, that all necessary remedial action has been taken. Although Interior sometimes enters into MOUs with defense agencies regarding cleanups, defense agencies may be unwilling or unable to cleanup the property prior to transfer.

After land transfers to DOI, does DOI become responsible for any clean ups?
Max DOI become responsible for any clean ups?
does DOI become responsible for clean up

4. Sites with UXO may not be well-characterized, and thus the risk presented by potential munitions may not be well-known. The GAO recently concluded, for example, that the Corps of Engineers “does not have a sound basis for determining that about 38% . . . of formerly used defense sites do not need further study or cleanup.” (GAO, Environmental Contamination: Corps Needs to Reassess Its Determination That Many Former Defense Sites Do Not Need Cleanup (Aug. 2002). The GAO also found that the Corps did not notify property owners in 72% of the cases in which it determined that no further study or cleanup was necessary.

5. Even after cleanup, UXO hazards often remain. For this reason, Interior may be required to impose and enforce institutional controls (restrictions on access, uses; fences, signs; monitoring of access, etc.). In addition, the defense agency’s obligation to return and address newly discovered issues post-transfer is often unclear.

C. Legal Authorities Used to Address UXO

1. *Interior’s Authorities.* With respect to public lands, Interior takes the position that it has been delegated authority under CERCLA to address UXO. Pursuant to Executive Order 12580, the Department has been delegated the President’s CERCLA authority for releases on or from any facility under “the jurisdiction, custody or control” of the Department where the site are is on the NPL, and for removal actions other than emergencies. Thus, Interior has taken the position that it has the authority to act as lead agency under CERCLA with respect to most munitions cleanups on federal lands. (As a practical matter, this means that Interior often insists on entering into negotiated agreements with DOD governing the cleanup of UXO on federal lands).

2. *DOD Authorities.* In the preamble to the proposed range rule, DOD set forth its understanding of its authority to address contamination found on closed, transferred and transferring ranges. Under the Defense Environmental Restoration Program (DERP), the Secretary of the Defense is directed to carry out a program of environmental restoration at facilities under the jurisdiction of the Secretary of Defense – including the detection and disposal of unexploded ordnance.

Under 10 U.S.C. section 172, the Department has a charter to prevent “hazardous conditions from arising to endanger life and property” within or outside of military ranges. DOD’s Explosives Safety Board (DDESB) has issued various Ammunition and Explosives Safety Standards to be followed by all of the armed services.

DOD also asserts that it has authority under CERCLA to address military munitions on federal lands. Under Executive Order 12580, the President has delegated his 104 response authorities to DOD with respect to releases or threatened releases from any facility under the jurisdiction of DOD. DOD takes the position that it has been delegated authority as lead agency under the NCP for munitions, wherever they may be found – even on lands that have been transferred to other federal agencies.

3. *EPA Authorities.* EPA has a variety of authorities it can exercise with respect to UXO. With respect to NPL sites on public lands, EPA plays an important role in remedy-selection under Section 120 of CERCLA -- whether the lands are managed by the defense agencies, or other federal agencies. On private lands, also EPA has taken the position that it can exercise its CERCLA authority notwithstanding DOD's DERP authorities to ensure that FUDS cleanups are conducted consistent with CERCLA. (EPA, FUDS Policy (2002)). EPA has expressed its view that, with respect to "most non-NPL FUDS, the States and Tribes will provide the primary regulatory oversight" of DOD response actions. EPA nevertheless often enters into enforceable agreements with DOD for the cleanup of FUDS sites. EPA also can exercise its authority under RCRA (administrative orders under section 7003) and the Safe Drinking Water Act to compel response activities by DOD.

D. Difficult Issues with Respect to UXO Cleanups

1. *Decision-making:* In its draft final range rule, DOD insisted that it must be the final decision-maker with respect to all cleanups of UXO on federal lands, with some rights of review and concurrence (and rights to elevate to dispute resolution) granted to various stakeholders such as Interior. Interior and other federal land managers disagreed with DOD's position. Interior maintained that, with respect to federal lands it manages, Interior has been delegated lead agency authority under CERCLA. As a practical matter, Interior was concerned that the draft range rule did not provide adequate rights of participation in Interior -- *i.e.*, a limited concurrence role with respect to some, but not all, DOD decisions, with limited rights to elevate disputes within the Executive.

2. *Land Use Controls:* Interior was also concerned that DOD intended to rely excessively on land use controls (citing explosives safety concerns, and the limits of detection technology or other issues relating to technical impracticability). Interior wanted more rights of participation at every stage of the cleanup process, and the ability to elevate to dispute resolution any decision that proposed the use of land use controls or made a decision based on technical impracticability.

3. *Prioritization.* Under the range rule, DOD would essentially determine when the thousands of former ranges in the queue would be addressed. Interior wanted rights to dispute DOD decisions with respect to the relative priority assigned to Interior property. (In particular, Interior was concerned that its facilities may be given a low priority for action because of their often-remote location, or because DOD assumes that Interior can control access better than many owners). Interior was also concerned that DOD's prioritization process may not be fully informed, because DOD may not always be aware of the existence of sensitive eco-systems, or reasonably foreseeable land uses, that may influence the extent of risk presented at a Site.

4. *Role of Explosives Safety:* In the range rule, DOD adopted a kind of NCP-hybrid -- a CERCLA-like process -- but with many provisions that were, in Interior's view, inconsistent with

the National Contingency Plan (NCP). In particular, Interior was concerned that DOD placed an undue emphasis on concerns for explosives safety, and did not try to fit explosives safety within the overall framework of the 9 NCP criteria (overall protection of health and the environment; compliance with ARARs; implementability; cost; etc.).

5. *Accelerated Responses*: The draft rule created a new set of removal authorities (“accelerated responses” and “emergency accelerated responses”) with limited requirements for PA/SIs, public participation, access to dispute resolution. Interior was concerned that these authorities could be used to impose institutional controls, or over-reliance on such remedies as open burning/open detonation, without full Interior review and concurrence.

6. *Off-Range Issues*: Interior was concerned that DOD intended to address UXO to the fence-line, or within the area of a designated range, and would not address off-range lands that had received UXO.

7. *Risk Management Issues*. The federal land managers and others were concerned about the status of the range rule risk methodology, and the adoption of a range rule before the clean-up standards and risk issues had been agreed to in a public forum. (Issues regarding sampling algorithms; clearance depths; use of open burning/open detonation as a final remedy).

8. *Operation and Maintenance*: Interior wanted a clear statement from DOD that DOD would remain responsible for the incremental costs of O&M relating to residual munitions on federal lands. In some cases, this could involve repeated work as UXO is exposed through erosion and frost. (DOD wanted such issues to be negotiated on a site-by-site basis).

9. *Changes in future land uses*. With respect to already transferred ranges, DOI wanted a clear commitment from DOD that it would reopen the cleanup in the event that land uses change, and the prior cleanup was deemed to be inconsistent with Interior’s statutory trust and land management responsibilities. (DOD was reluctant to agree to reopen cleanups based on changes in land use).

E. Where do we go from here?

1. *Interagency Military Land Use Coordinating Committee (IMLUCC)*. DOD and various federal agencies have created a committee to address a number of inter-agency land use issues. A subcommittee has begun to draft a model transfer agreement to address environmental issues arising when lands are transferred from DOD to federal land managers. Among other things, the draft:

- establishes a strong presumption that contamination will be addressed prior to transfer;
- provides for review of all DOD documents bearing on characterization and risk;

- contains commitments regarding DOD performance/funding of response actions;
- includes provisions addressing post-transfer discovery of contamination;
- includes provisions under which remedy is reopened if necessary.

2. *Munitions Response Committee (MRC)*. DOD and various other parties (including Interior) are involved in an effort intended, if successful, to develop a consensus process to address munitions cleanups on closed, transferred and transferring ranges.

- draft matrix of munition response activities, and roles for stakeholders;
- for federal agencies, provisions for dispute resolution within the Executive Branch.

3. *EPA/DOD Management Principles*. DOD and EPA have completed work on a set of management principles to address UXO on closed, transferred, and transferring ranges. The principles are generally-framed, but provide some overall guidance on a process to investigate and respond to environmental risks at such ranges.

- DOD will conduct the responses, and consider both explosives safety and environmental concerns in conducting the response;
- EPA/DOD disputes about the adequacy of the response will be resolved, whenever possible, at the field level;
- The cleanup will be conducted under all of the parties' legal authorities, including DERP, CERCLA, and the DOD Explosives Safety Board;
- The response process shall be consistent with the NCP and also with RCRA corrective action requirements;
- DOD and EPA will ensure appropriate participation by stakeholders, including consultation, review and comment on all phases of a response (except in the case of an emergency response taken because of an imminent threat to endangerment to public health);
- Adequate characterization of each range will be undertaken,
- The principles acknowledge that, in some cases, explosives safety, cost and/or technical limitations may limit the ability to conduct a response and thereby limit the reasonably anticipated future land uses (DOD should consult with other stakeholders). DOD must provide timely notice to the appropriate federal land managers of any intent to use land use controls. Land use controls must be chosen based on the NCP criteria and a detailed analysis of response alternatives.

-- Federal to Federal transfers: DOD may transfer land with UXO hazards to land managers for management purposes prior to completion of a response action, provided DOD provides notice of the potential presence of the hazard and appropriate institutional controls are in place. Generally, DOD should retain ownership or control of those areas at which DOD has not yet responded to UXO hazards.

Conclusion

The regulatory landscape in this area is very complex, and in flux. There is no consensus among stakeholders as yet on a number of key regulatory issues. What has become clear is that Interior and other land managers must be vigilant with respect to cleanups of UXO, to ensure that thorough cleanups are conducted and that federal lands can be used, to the extent possible, for multiple uses in a manner consistent with Interior's trust obligations.