



*FINAL*  
**TOOLKIT FOR IDENTIFYING  
APPLICABLE OR  
RELEVANT AND  
APPROPRIATE  
REQUIREMENTS  
(ARARs)**

AUGUST 2014



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# INTRODUCTION

The Navy, as lead agency, is responsible for complying with Applicable or Relevant and Appropriate Requirements (ARARs) for Environmental Restoration site response actions conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program. This toolkit provides Remedial Project Managers (RPMs) with exhibits and tables that convey the process for selecting ARARs and how to navigate through the most common challenges. Failing to properly identify ARARs leaves the Navy open to liability; consequently, RPMs should engage Navy legal early in the ARARs process. This toolkit supplements the ARARs guidance and resources presented in Exhibit 8.

ARARs are federal environmental or state environmental or facility siting laws and regulations that are identified when evaluating CERCLA removal or remedial actions. ARARs must be established for CERCLA actions because CERCLA provides exemptions from some aspects of environmental laws and regulations for activities conducted entirely on-site. Non-CERCLA actions and off-site CERCLA actions are subject to all aspects of laws and regulations. Therefore, ARARs are only developed for on-site CERCLA actions.

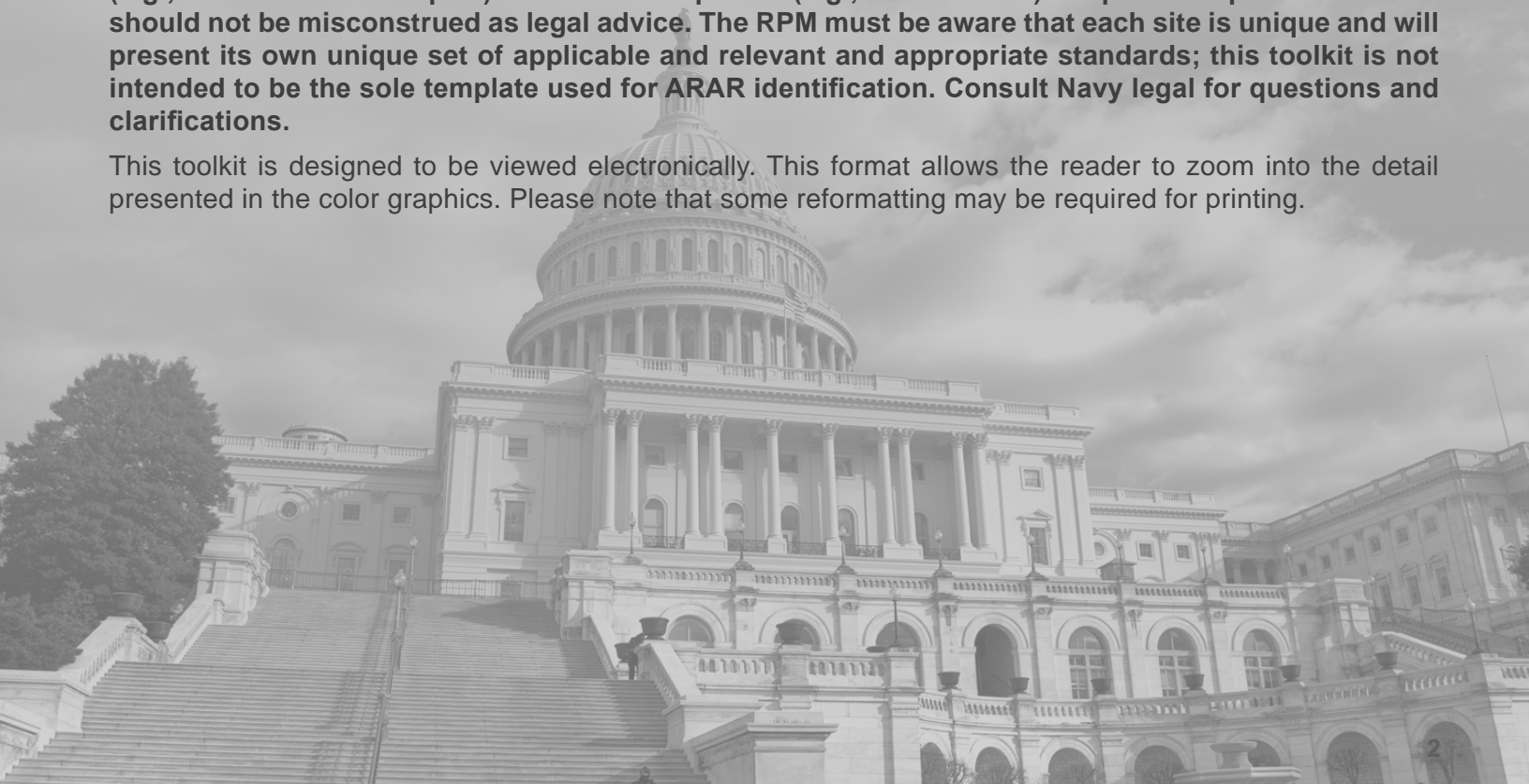
ARARs are typically first identified and negotiated with regulatory agencies in an Engineering Evaluation/ Cost Analysis or Feasibility Study. These preliminary ARARs are refined throughout the process to identify those chemical-, location-, and action-specific environmental laws and regulations pertinent to removal or remedial activities that will become legally binding when documented in a decision document (e.g., Action Memorandum, Record of Decision). ARARs are critical to the CERCLA process because they:

- Assist in developing removal or remedial action objectives
- Are a distinguishing threshold criterion for selecting the remedial action that must be met (unless a waiver is justified)
- Establish the action- or location-specific requirements for how or when to conduct specific elements of the action
- May establish criteria for identifying when the response is complete

This toolkit consists of eight graphical exhibits containing key information to aid in outlining the key concepts in identifying and documenting ARARs. The exhibits are intended to be examples only and are not all-encompassing. The exhibits in this toolkit focus on federal ARARs. Many states have additional, equally enforceable, and more stringent requirements that may also pertain to response actions.

**This toolkit provides an overview on the topic of ARARs and does not supersede existing installation- (e.g., Naval Station Newport) or command-specific (e.g., NAVFAC SW) templates or procedures and should not be misconstrued as legal advice. The RPM must be aware that each site is unique and will present its own unique set of applicable and relevant and appropriate standards; this toolkit is not intended to be the sole template used for ARAR identification. Consult Navy legal for questions and clarifications.**

This toolkit is designed to be viewed electronically. This format allows the reader to zoom into the detail presented in the color graphics. Please note that some reformatting may be required for printing.



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# EXHIBIT 1. WHAT IS THE PROCESS FOR IDENTIFYING AND DEVELOPING APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)?



## EXHIBIT 2. WHAT IS THE DIFFERENCE BETWEEN ON-SITE VS. OFF-SITE ACTIONS?

**Citation:** 40 CFR 300.5 and 40 CFR 300.400

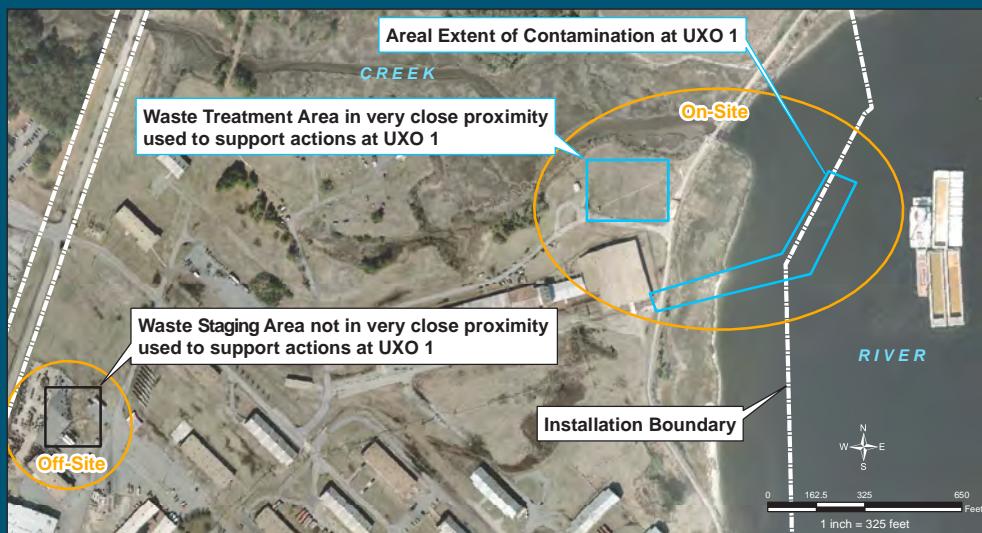
### Definitions:

*On-site* is considered “the areal extent of contamination and all suitable areas in very close proximity to the contamination that are necessary for implementation of the action.” Defining “in very close proximity” is flexible and should be determined in accordance with best professional judgement and negotiated with regulatory agencies. ARARs identify the regulatory requirements that must be met for on-site remedial actions.

*Off-site* is considered any area not on-site or in very close proximity to the site where activities associated with implementing the action take place. It is not necessary to identify ARARs for any actions conducted off-site because all laws and regulations apply in the normal manner to off-site actions.

The two scenarios below illustrate the ARAR implications for on-site vs. off-site actions.

### Scenario 1. Dredging Remedial Action



This scenario illustrates a site where a dredging remedial action is taking place. For this action, on-site includes the areal extent of contamination, including the area located outside of the installation boundary, and the waste treatment area that is in very close proximity. The waste staging area was determined by stakeholders not to be in very close proximity and is considered off-site. ARARs would need

to be developed for the dredging and treatment of spoils in the waste treatment area. Waste staged at the waste staging area is not considered “on-site” and is subject to all applicable laws and regulations in the normal fashion; therefore, ARARs should not be developed.

### Scenario 2. Central Waste Staging Area



This scenario illustrates an installation with a central waste staging area. Negotiations were conducted with the cleanup team, including regulatory agencies, to establish on-site and off-site areas. These negotiations resulted in the following:

- The waste staging area is considered on-site for Site 78 because it is located within the areal extent of contamination.
- The waste staging area is considered on-site for Site 96 because it is located in very close proximity.
- The waste staging area is considered off-site when receiving wastes generate from other sites (Sites 6, 82, and 88).

ARARs would need to be developed for the waste staging activities for Sites 78 and 96 whereas staging wastes generated from Sites 6, 82, and 88 would be subject to all applicable laws and regulations.



### EXHIBIT 3. WHAT IS THE DIFFERENCE BETWEEN AN APPLICABLE ARAR AND A RELEVANT AND APPROPRIATE ARAR?

**Citation:** 40 CFR 300.400(g) and 40 CFR 300.5

**Definitions:**

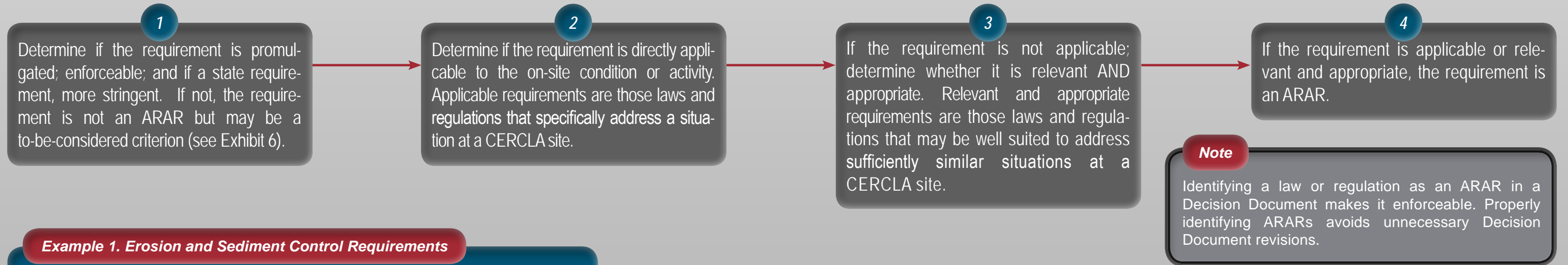
*Applicable* requirements are clean-up standards, standards of control, and other substantive environmental protection requirements, criteria, or limits promulgated under federal or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance.

*Relevant and appropriate* requirements are clean-up standards, standards of control, and other substantive environmental protection requirements, criteria, or limits promulgated under federal or state law that, although not applicable to a hazardous substance, a pollutant, a contaminant, a remedial action, or other circumstances at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site so that their use is well suited to the particular site.

The two scenarios below illustrate the rationale for determining if an ARAR is applicable or relevant and appropriate.

**ARARS PROCESS**

To identify which laws and regulations are ARARs, use the following process:



**Example 1. Erosion and Sediment Control Requirements**

Scenario	Requirement	Applicable	Relevant and Appropriate	Explanation
Area of land disturbance <1 acre	Stormwater Pollution Prevention Plan	No	Maybe	Developing a Stormwater Pollution Prevention Plan may be relevant and appropriate to retain contaminated soil on-site
Area of land disturbance ≥1 acre	Stormwater Pollution Prevention Plan	Yes	No	Disturbing ≥1 acre of land requires development and implementation of a Stormwater Pollution Prevention Plan



<1-acre Disturbance



>1-acre Disturbance

**Example 2. Solid Waste Landfill Requirements**

Scenario	Requirement	Applicable	Relevant and Appropriate	Explanation
Disposal occurred after solid waste regulations; landfill permitted	Cover	No	No	Permitted landfill requires a constructed cap and post-closure care requirements must be met
	Cap	Yes	No	
	Post-closure care	Yes	No	
Disposal pre-dates solid waste regulations; landfill never permitted	Cover	Yes	No	Waste must be covered to protect human health and the environment
	Cap	No	Maybe	Caps are always relevant to disposal areas; however, they would only be appropriate under high-risk circumstances (e.g., if chemical agent was disposed of)
	Post-closure care	No	Maybe	Post-closure care is only required at permitted landfills. Under CERCLA, continued protectiveness of the remedy is managed and evaluated through a long-term monitoring program/ Five-Year Review process.



Disposal Pre-dates Solid Waste Regulations



Permitted Landfill

# EXHIBIT 4. WHAT ARE SUBSTANTIVE AND ADMINISTRATIVE REQUIREMENTS?

**Citation:** 55 FR 8756-57 and 40 CFR 300.5

**Definitions:**

Laws and regulations have both substantive and administrative requirements.

*Substantive* requirements are those aspects of a law or regulation that you must do and/or accomplish during the action. They typically specify numerical levels or control standards that the action is required to meet.

*Administrative* requirements are those aspects of a law or regulation that help implement the substantive requirements. CERCLA provides exemptions from administrative aspects of laws and regulations for on-site actions (e.g., procedural, documentation, permitting, and administrative reviews).

The scenario below illustrates substantive and administrative requirements for a response action.

**Scenario: Soil excavation and treatment of groundwater via injection of oil substrate to achieve unlimited use/unrestricted exposure**



Activity:	Law/Regulation:	Substantive Requirement (ARARs):	Administrative Requirement (Not ARARs):
Establishing groundwater cleanup levels	Safe Drinking Water Act Standards	Achieve Maximum Contaminant Levels (MCLs)	Definitions and applicability statements
Working within a migratory flyway	Migratory Bird Treaty Act	Do not take birds nests or eggs	Applying for a permit to take birds nests or eggs
Performing in situ groundwater treatment	Underground Injection Control (UIC)	Construct and operate wells in accordance with injection well construction requirement Do not impact drinking water sources	Obtaining UIC permit and/or submitting notification State review and approval of designs
Generating remediation-derived waste	Waste Management in Containers	Maintain containers in good condition Meet waste labeling requirements Design and location of staging area	Obtain a generator number State review and approval of location and design of staging area Waste inventory reporting
Dewatering from a soil excavation	Water Discharge Requirements	Meet discharge limits Develop/implement plans or designs as needed Conduct equipment maintenance	Obtain a water discharge permit Reporting requirements P.E. or P.G. certifications

These substantive and administrative requirements are examples only and may differ by state or the site-specific situation.

**Note**

Differentiating administrative and substantive requirements may be open to interpretation, consult with Navy legal for assistance.



## EXHIBIT 5. WHAT ARE CHEMICAL-, LOCATION-, AND ACTION-SPECIFIC ARARS?

Citation: 55 FR 8756-57

### Definitions:

Chemical-, location-, and action-specific ARARs are site-specific substantive requirements to be met for removal and remedial actions. ARARs are limited to environmental and facility siting laws and regulations and exclude all others (e.g., Occupational Safety and Health Administration [OSHA] regulations)<sup>1</sup>. See Exhibit 6 for information on to-be-considered (TBC) criteria.

*Chemical-specific ARARs* are usually numerical values that establish the treatment and discharge standards for the removal or remedial action and cleanup levels for the media posing unacceptable human health or ecological risks at the site.

*Location-specific ARARs* prevent damage to unique or sensitive areas, such as floodplains, historic places, wetlands, and fragile ecosystems, and restrict other activities that are potentially harmful because of where they take place.

*Action-specific ARARs* are activity or technology based and control removal or remedial activities involving the design or use of certain equipment, or regulate discrete actions.

Examples of common chemical-, location-, and action-specific ARARs for soil, groundwater, sediment, and non-aqueous phase liquid are provided in the attached tables.

### Chemical-Specific ARARs

**ARAR:** Maximum Contaminant Levels (MCLs)

**Citation:** 40 CFR 141.61 and 40 CFR 141.62

**Requirement:** Ensures existing or potential sources of drinking water do not exceed Safe Drinking Water Act (SDWA) MCLs for organic and inorganic contaminants. Applicable to community and non-transient, non-community water systems.

**Implication:** If groundwater is classified as a potential drinking water source or the state considers all groundwater for beneficial use, cleanup levels must be set at MCLs. Potable use of groundwater must be prevented and groundwater treated and/or monitored until MCLs are met.

Contaminant	MCL (mg/L)
(1) Fluoride .....	4.0
(2) Asbestos .....	7 Million Fibers/liter (longer than 10 µm).
(3) Barium .....	2
(4) Cadmium .....	0.005
(5) Chromium .....	0.1
(6) Mercury .....	0.002
(7) Nitrate .....	10 (as Nitrogen)
(8) Nitrite .....	1 (as Nitrogen)
(9) Total Nitrate and Nitrite .....	10 (as Nitrogen)
(10) Selenium .....	0.05
(11) Antimony .....	0.006
(12) Beryllium .....	0.004
(13) Cyanide (as free Cyanide) .....	0.2
(14) [Reserved].	
(15) Thallium .....	0.002
(16) Arsenic .....	0.010

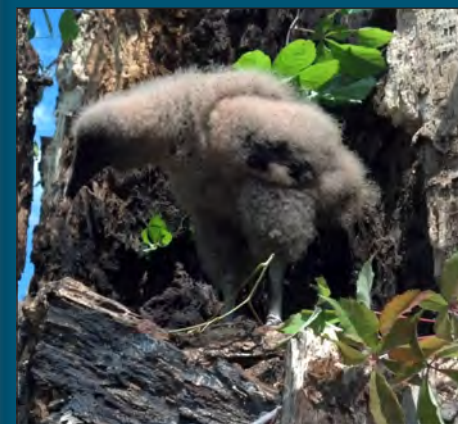
### Location-Specific ARARs

**ARAR:** Migratory Bird Treaty Act (MBTA)

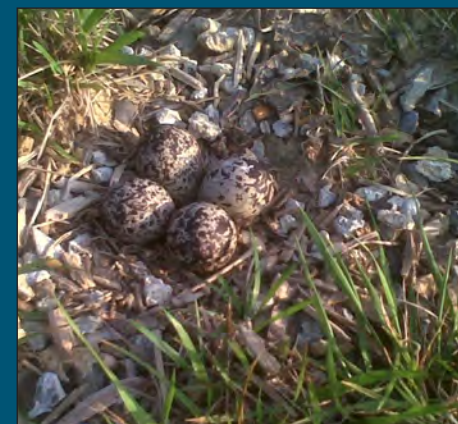
**Citation:** 16 USC 703

**Requirement:** Protects over 800 species of birds from unregulated taking.

**Implication:** MBTA is almost always an ARAR because every area within the United States is located within a migratory flyway. It protects almost every bird species native to the United States; therefore, if a contractor finds a bird nesting on your site, STOP WORK until you can determine if the bird is protected. Contact natural resources personnel at NAVFAC and/or Base Environmental for more information. There are criminal penalties for non-compliance.



Black Vulture Hatchling



Killdeer Bird Eggs

### Action-Specific ARARs

**ARAR:** Underground Injection Control (UIC)

**Citation:** 40 CFR 144.1(g), 144.6, 144.12(a) and (c), 144.24(a), 144.82, 144.83, 146.8, 146.10(c)

**Requirement:** Regulates the subsurface injection of fluids, including air, (e.g., in situ groundwater treatment) to prevent contamination of underground sources of drinking water. Provides the minimum requirements for well construction, well operation, monitoring, and abandonment.

**Implication:** Depending on the type of substrate being injected, UIC regulations provide minimum requirements for six different classes of injection wells. Recognize which classification applies to your site and implement the requirements.



Well Installation



Groundwater Injection

### Note

The ARARs tables included in Action Memorandums or Decision Documents contain mandatory requirements that must be carried through the design and implementation of the removal or remedial action. RPMs should ensure any follow-on contract actions include these requirements and that quality control is conducted to ensure compliance with the ARARs.

### Note

Ensure that ARARs are pertinent before including them in the table. For example, before including the Endangered Species Act in the table, determine whether threatened or endangered species are present on your site. If you are uncertain whether a specific requirement should be included, consult with Navy legal.

<sup>1</sup>Consult Navy legal when considering other laws and regulations that are not ARARs.





# EXHIBIT 7. WHY IS IT IMPORTANT TO BE SPECIFIC WHEN CITING ARARS?

ARAR citations should be as specific and precise as possible because not all aspects of the law or regulation may be an ARAR. For example, cite the specific subsection of RCRA Subtitle D that contains the applicable or relevant and appropriate standard (e.g., 40 CFR Part 264.310(a)) rather than citing all of RCRA Subtitle D (e.g., 40 CFR Part 264).

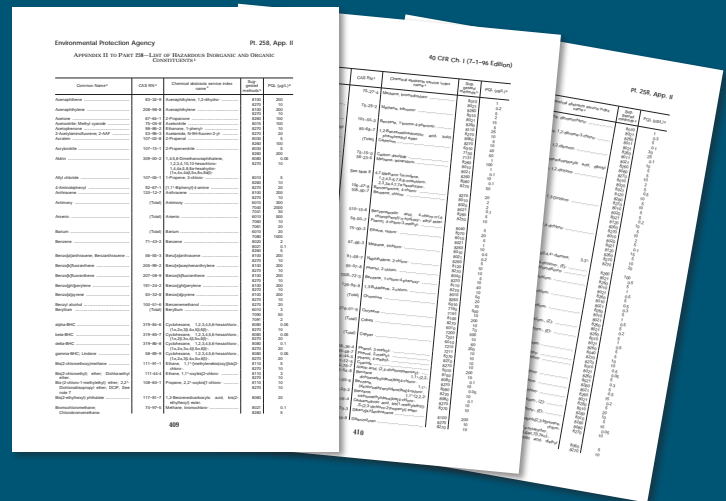
The scenario below illustrates the importance of ARAR citation specificity.

**Scenario: Closed landfill with three chemicals of concern (COCs) in groundwater**  
**ARARs identified in the Record of Decision (ROD):**

**ARAR 1: All of RCRA Subtitle D**

**ARAR 2: All Federal drinking water Maximum Contaminant Levels (MCLs)**

**ARAR 1:** By identifying all RCRA Subtitle D as an ARAR, all closure and post-closure care requirements must now be met. This can unnecessarily require long-term monitoring of the full constituent list of 40 CFR Part 258, Appendix II instead of just the COCs.



**Preferred Citation:** The only pertinent requirement from RCRA Subtitle D is RCRA cap performance standards. Therefore, the preferred citation is 40 CFR 258.61(a)(1) which eliminates all inappropriate requirements from being incorporated into the remedy.

**ARAR 2:** By identifying all Maximum Contaminant Levels (MCLs) as an ARAR (40 CFR 141), regulators may try to assert all MCLs must now be met. This can unnecessarily require long-term monitoring for all the chemicals with an MCL instead of just the COCs.

### 141.61 Maximum contaminant levels for organic contaminants

(a) The following maximum contaminant levels for organic contaminants apply to community and non-transient, non-community water systems.

Citation	CAS No.	Contaminant	MCL (mg/l)
141.61(a)(1)	(1) 75-01-4	Vinyl chloride	0.002
141.61(a)(2)	(2) 71-43-2	Benzene	0.005
141.61(a)(3)	(3) 56-23-5	Carbon tetrachloride	0.005

**Preferred Citation:** The only pertinent requirements from 40 CFR 141 are the three listed COCs (vinyl chloride, benzene, and carbon tetrachloride). Therefore, the preferred citation is 40 CFR 141.61(a)(1), 141.61(a)(2), and 141.61(a)(3). Also add a note in the ARARs tables to list the COCs and their clean-up levels.



## EXHIBIT 8. RESOURCES

- Department of Defense (DoD), 2012. *Defense Environmental Restoration Program (DERP) Manual*. March.
- Environmental Protection Agency (EPA), 1989. *Applicability of Land Disposal Restrictions to RCRA and CERCLA Ground Water Treatment Reinjection Superfund Management Review: Recommendation No. 26*. December.
- EPA, 1990. *ARARs Q's & A's: Compliance with Federal Water Quality Criteria*. June.
- EPA, 1990. *ARARs Q's & A's: State Groundwater Antidegradation Issues*. July.
- EPA, 1990. *CERCLA Compliance with Other Laws Manual: CERCLA Compliance with the Clean Water Act [CWA] and Safe Drinking Water Act [SDWA] (OSWER 9234.2-06)*. February.
- EPA, 1990. *CERCLA Compliance with Other Laws Manual. Part I. Interim Final*. August.
- EPA, 1991. *ARARs Q's & A's: General Policy, RCRA, CWA, SDWA, Post-ROD Information and Contingent Waivers*. July.
- EPA, 1991. *ARARs Q's & A's: Compliance with New SDWA National Primary Drinking Water Regulations for Organic and Inorganic Chemicals*. August.
- EPA, 1992. *ARARs Fact Sheet. Compliance with the Clean Air Act and Associated Air Quality Requirements*. September.
- EPA, 1992. *Permits and Permit 'Equivalency' Processes for CERCLA On-site Response Actions*. February.
- EPA, 1997. *Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals Under CERCLA*. August.
- EPA, 2000. *Applicability of RCRA Section 3020 to In-Situ Treatment of Ground Water*. December.
- EPA, not dated. *Class V UIC Study Fact Sheet: Aquifer Remediation Wells*. OGWDW fact sheet.



## ATTACHMENT: TABLES OF EXAMPLES OF COMMON CHEMICAL-, LOCATION-, AND ACTION-SPECIFIC ARARS

TABLE 1	Example Federal ARARs for Soil and Munitions Containment
TABLE 2	Example Federal ARARs for Soil In Situ Treatment
TABLE 3	Example Federal ARARs for Soil and Munitions Ex Situ Treatment
TABLE 4	Example Federal ARARs for Groundwater Containment
TABLE 5	Example Federal ARARs for Groundwater In Situ Treatment
TABLE 6	Example Federal ARARs for Groundwater Ex Situ Treatment
TABLE 7	Example Federal ARARs for Sediment and Munitions Containment
TABLE 8	Example Federal ARARs for Sediment In Situ Treatment
TABLE 9	Example Federal ARARs for Sediment and Munitions Ex Situ Treatment

### Notes

- The federal ARARs, removal or remedial actions, and technologies listed are intended to be examples only and are not all-encompassing.
- Only federal ARARs are listed, many states have additional and/or more stringent requirements that would also pertain to the response action.
- **Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.**
- A relative ranking format was used to identify whether each of the federal ARARs would be probable (●), potential (◐), or not likely (○) for each type of action. If there is a probable (●) ranking, the ARAR will most likely be pertinent to the action and/or site and there should be a good reason not to include it. If there is a potential (◐) ranking, the ARAR will be pertinent based on the action- and site-specific activities. If there is a not likely (○) ranking, the ARAR is not likely pertinent and there should be a good reason to include it.
- Consult Navy legal for site-specific questions and clarifications.

### Acronyms

ARAR	applicable or relevant and appropriate requirement
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
DoD	Department of Defense
EPA	Environmental Protection Agency
INRMP	Integrated Natural Resources Management Plan
NPDES	National Pollutant Discharge Elimination System
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
SPCC	Spill Prevention, Control, and Countermeasures
TSCA	Toxic Substances Control Act
USC	United States Code



**TABLE 1. EXAMPLE FEDERAL ARARS FOR SOIL AND MUNITIONS CONTAINMENT**

ARAR	Location of Federal Citation*	Description	Comments	Containment
<b>Example Technologies</b>				<b>Soil Cover, Cap</b>
<b>Chemical-Specific</b>				
Federal Maximum Contaminant Levels	40 CFR 141	Sets maximum concentrations allowable for contaminants in sources of drinking water.	Only an ARAR if the action also addresses groundwater.	○
Discharge of Effluent (on-site discharge of CERCLA waste only)	40 CFR 122 and state regulations approved under 40 CFR 131; 40 CFR 125; 40 CFR 136	Sets requirements for on-site discharges of treated wastewater to surface water.	Only an ARAR if the action includes a leachate management component.	○
Land Disposal Restrictions	40 CFR 268	Establishes treatment concentrations that must be met prior to on-site disposal of hazardous wastes.	Only an ARAR when waste will be disposed of on-site (e.g., waste from off-site is brought on-site or if waste is treated ex situ prior to removal). Not an ARAR if waste is simply consolidated on-site.	○
Clean Air Act (CAA) emissions	40 CFR 50, 61	Establishes limits on the amounts of pollutants than can be discharged to the air from specified sources.	Not typically an ARAR as emissions from remediation systems are generally exempt from CAA regulations.	○
Emissions from hazardous waste processes	40 CFR 264; Subparts AA, BB, and CC	Establishes limits on the amounts of pollutants than can be discharged to the air from hazardous waste processes.	Only an ARAR if an emissions trigger the need for air pollution control.	○
<b>Location-Specific</b>				
Migratory Bird Treaty Act	16 USC 703	Protects almost all species of native birds in the United States from unregulated taking.	Almost always an ARAR because a migratory species is almost always present.	●
Coastal Zone Management Act	15 CFR 930	Federal activities must be consistent with, to the maximum extent practicable, state coastal zone management programs.	Only an ARAR if "actions will affect" the coastal zone, as defined by the state. Federal lands are excluded from the definition of "coastal zone."	●
Disturbance of Wetlands (CWA)	40 CFR 230, 33 CFR 320	Provides specific requirements for mitigation when an action results in a permanent loss of wetlands. Prohibits certain activities in wetland areas.	Only an ARAR if there is a wetland on-site.	●
National Historic Preservation Act	16 USC 470	Requires protection of historical and cultural resources to the maximum extent practicable.	Only an ARAR if there are identified historical or cultural resources on-site.	●
Endangered Species Act	50 CFR 402	Requires protection of threatened and endangered species and habitat.	Only an ARAR if there are identified threatened or endangered species on-site. The federal government is not subject to state laws regarding threatened and endangered species; however, many times, DoD will voluntarily comply. Performing work in accordance with the INRMP at an active installation would constitute compliance.	●
<b>Action-Specific</b>				
Non-hazardous waste management (RCRA)	40 CFR 258	Provides standards for the management of non-hazardous wastes.	Almost always an ARAR for on-site waste management.	●
Hazardous waste management (RCRA)	40 CFR 264.171-175 or 40 CFR 262.34(a) incorporating 40 CFR 265.171-174 by reference	Provides standards for the management of hazardous wastes.	Only an ARAR when on-site hazardous waste management is anticipated.	●
Closure criteria for unregulated dump (RCRA)	40 CFR 258, Subpart A	Indicates prohibited conditions for sites where disposal occurred prior to regulation.	This is an ARAR when waste disposal occurred on-site prior to waste regulation (varies per state).	●
Cap design criteria for non-hazardous waste landfill (RCRA)	40 CFR 258, Subpart F	Indicates performance standards for non-hazardous waste landfill caps.	Only an ARAR when non-hazardous waste disposal occurred on-site after waste regulation (varies per state).	●
Cap design criteria for hazardous waste landfill (RCRA)	40 CFR 264.117(c), 228(a) and (b), 310(a) and (b)	Indicates performance standards for hazardous waste landfill caps.	Only an ARAR when hazardous waste disposal occurred on-site after waste regulation (varies per state).	●
Discharge of dredge and fill to waters of the United States (CWA)	33 CFR 320 - 330	Indicates prohibitions on dredge and fill of waters of the United States, including wetlands.	Only an ARAR if wetlands are disturbed on-site by the action. If so, this is an action-specific ARAR.	○
Management of an on-site water treatment plant (CWA/SDWA)	40 CFR 125	Requirements for the management of a water treatment plant.	Only an ARAR for actions with a leachate collection system.	○
Treatment of hazardous waste (RCRA)	40 CFR 264	Requirements and performance standards for treating and storing hazardous wastes in on-site units.	Not anticipated to be an ARAR for containment actions.	○
Land disposal restrictions (RCRA)	40 CFR 268	Specifies treatment standards and technologies for specific hazardous wastes. This is only an ARAR if hazardous wastes will undergo on-site treatment.	Not anticipated to be an ARAR for containment actions.	○

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.

**TABLE 1. EXAMPLE FEDERAL ARARs FOR SOIL AND MUNITIONS CONTAINMENT (CONTINUED)**

ARAR	Location of Federal Citation*	Description	Comments	Containment
<b>Example Technologies</b>				<b>Soil Cover, Cap</b>
Underground Injection Control (CWA)	40 CFR 144, 146, and 147	Regulates the subsurface emplacement of fluids (including air) with standards for the design and operation of five classes of injection wells.	Not anticipated to be an ARAR for containment actions.	○
PCB waste management (TSCA)	40 CFR 761	Regulates the management and disposal of PCB-contaminated articles and remediation wastes.	CERCLA actions are not subject to the remediation requirements of TSCA, although the standards may be integrated at the discretion of the lead agent for PCB sites.	●
Asbestos	40 CFR 61, Subpart M	Regulates the management and disposal of asbestos or asbestos-containing material.	Only an ARAR if friable asbestos is present on-site. Although not applicable to CERCLA sites, requirements in these sections may be relevant and appropriate to Superfund cleanup activities when they are sufficiently similar to the site situation and appropriate to the circumstances of the release.	●
Fugitive Dust Emissions	40 CFR 63	Regulates the generation of fugitive dust emissions during any on-site activity (i.e., not limited to specific sources).	Typically an ARAR as soil will likely be disturbed as part of a capping action and dust control is generally required.	●
Erosion and Sediment Control (NPDES program)	40 CFR 122	Regulates point-source discharges of stormwater pollutants to surface water.	Typically an ARAR for capping actions resulting in potential erosion.	●
Oil Storage (SPCC)	40 CFR 112	Regulates the on-site management of petroleum and non-petroleum oils.	Only an ARAR if more than 1,320 gallons of oil are stored on-site during the action.	●
Management of military munitions	40 CFR 266, Subpart M	Describes when military munitions are exempt from being managed as solid or hazardous waste.	Only an ARAR for management of unused military munitions that have been disposed of, or fired/used military munitions that have been removed from a range.	●
● Probable ARAR   ● Potential ARAR   ○ Not likely ARAR				

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.



**TABLE 2. EXAMPLE FEDERAL ARARS FOR SOIL IN SITU TREATMENT**

ARAR	Location of Federal Citation*	Description	Comments	In Situ Treatment				
				Venting/ Bioremediation	In Situ Heating	"Land Tilling/ Soil Mixing"	Monitored Natural Attenuation	Soil Flushing
<b>Example Technologies</b>				Bioventing, Phytoremediation	Electrical Resistive Heating, Steam Injection/ Extraction, Conductive Heating, Vitrification	Soil Mixing (e.g., Zero-valent Iron, Chemical Oxidation), Metals Stabilization	Long-term Monitoring	Surfactant or Cosolvent Flushing
<b>Chemical-Specific</b>								
Federal Maximum Contaminant Levels	40 CFR 141	Sets maximum concentrations allowable for contaminants in sources of drinking water.	Only an ARAR if the action may impact groundwater.	○	○	○	○	○
Discharge of Effluent (on-site discharge of CERCLA waste only)	40 CFR 122 and state regulations approved under 40 CFR 131; 40 CFR 125; 40 CFR 136	Sets requirements for on-site discharges of treated wastewater to surface water.	Not anticipated to be an ARAR for in situ soil actions.	○	○	○	○	○
Land Disposal Restrictions	40 CFR 268	Establishes treatment concentrations that must be met prior to on-site disposal of hazardous wastes.	Not anticipated to be an ARAR because in situ treatment does not constitute disposal.	○	○	○	○	○
Clean Air Act (CAA) emissions	40 CFR 50, 61	Establishes limits on the amounts of pollutants that can be discharged to the air from specified sources.	Not typically an ARAR as emissions from remediation systems are generally exempt from CAA regulations.	○	○	○	○	○
Emissions from hazardous waste processes	40 CFR 264; Subparts AA, BB, and CC	Establishes limits on the amounts of pollutants that can be discharged to the air from hazardous waste processes.	Only an ARAR if an emissions trigger the need for air pollution control.	●	●	○	○	○
<b>Location-Specific</b>								
Migratory Bird Treaty Act	16 USC 703	Protects almost all species of native birds in the United States from unregulated taking.	Almost always an ARAR because a migratory species is almost always present.	●	●	●	●	●
Coastal Zone Management Act	15 CFR 930	Federal activities must be consistent with, to the maximum extent practicable, state coastal zone management programs.	Only an ARAR if "actions will affect" the coastal zone, as defined by the state. Federal lands are excluded from the definition of "coastal zone."	●	●	●	●	●
Disturbance of Wetlands (CWA)	40 CFR 230, 33 CFR 320	Provides specific requirements for mitigation when an action results in a permanent loss of wetlands. Prohibits certain activities in wetland areas.	Only an ARAR if there is a wetland on-site.	○	○	○	○	○
National Historic Preservation Act	16 USC 470	Requires protection of historical and cultural resources to the maximum extent practicable.	Only an ARAR if there are identified historical or cultural resources on-site.	○	○	○	○	○
Endangered Species Act	50 CFR 402	Requires protection of threatened and endangered species and habitat.	Only an ARAR if there are identified threatened or endangered species on-site. The federal government is not subject to state laws regarding threatened and endangered species; however, many times, DoD will voluntarily comply. Performing work in accordance with the INRMP at an active installation would constitute compliance.	○	○	○	○	○
<b>Action-Specific</b>								
Non-hazardous waste management (RCRA)	40 CFR 258	Provides standards for the management of non-hazardous wastes.	Almost always an ARAR for on-site waste management.	●	●	●	●	●
Hazardous waste management (RCRA)	40 CFR 264.171-175 or 40 CFR 262.34(a) incorporating 40 CFR 265.171-174 by reference	Provides standards for the management of hazardous wastes.	Only an ARAR when on-site hazardous waste management is anticipated.	○	○	○	○	○
Closure criteria for unregulated dump (RCRA)	40 CFR 258, Subpart A	Indicates prohibited conditions for sites where disposal occurred prior to regulation.	Not anticipated to be an ARAR for in situ soil actions as they do not involve covers.	○	○	○	○	○

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.

**TABLE 2. EXAMPLE FEDERAL ARARS FOR SOIL IN SITU TREATMENT (CONTINUED)**

ARAR	Location of Federal Citation*	Description	Comments	In Situ Treatment				
				Venting/ Bioremediation	In Situ Heating	"Land Tilling/ Soil Mixing"	Monitored Natural Attenuation	Soil Flushing
<b>Example Technologies</b>				<b>Bioventing, Phytoremediation</b>	<b>Electrical Resistive Heating, Steam Injection/ Extraction, Conductive Heating, Vitrification</b>	<b>Soil Mixing (e.g., Zero- valent Iron, Chemical Oxidation), Metals Stabilization</b>	<b>Long-term Monitoring</b>	<b>Surfactant or Cosolvent Flushing</b>
Cap design criteria for non-hazardous waste landfill (RCRA)	40 CFR 258, Subpart F	Indicates performance standards for non-hazardous waste landfill caps.	Not anticipated to be an ARAR for in situ soil actions as they do not involve caps.	○	○	○	○	○
Cap design criteria for hazardous waste landfill (RCRA)	40 CFR 264.117(c), 228(a) and (b), 310(a) and (b)	Indicates performance standards for hazardous waste landfill caps.	Not anticipated to be an ARAR for in situ soil actions as they do not involve caps.	○	○	○	○	○
Discharge of dredge and fill to waters of the United States (CWA)	33 CFR 320 - 330	Indicates prohibitions on dredge and fill of waters of the United States, including wetlands.	Only an ARAR if wetlands are disturbed on-site by the action. If so, this is an action-specific ARAR.	○	○	○	○	○
Management of an on-site water treatment plant (CWA/SDWA)	40 CFR 125	Requirements for the management of a water treatment plant.	Not anticipated to be an ARAR for in situ soil actions.	○	○	○	○	○
Treatment of hazardous waste (RCRA)	40 CFR 264	Requirements and performance standards for treating and storing hazardous wastes in on-site units.	Not anticipated to be an ARAR for in situ soil actions.	○	○	○	○	○
Land disposal restrictions (RCRA)	40 CFR 268	Specifies treatment standards and technologies for specific hazardous wastes. This is only an ARAR if hazardous wastes will undergo on-site treatment.	Not anticipated to be an ARAR for in situ soil actions.	○	○	○	○	○
Underground Injection Control (CWA)	40 CFR 144, 146, and 147	Regulates the subsurface emplacement of fluids (including air) with standards for the design and operation of five classes of injection wells.	Only an ARAR if delivering a fluid, including air, into the subsurface via a well or trench.	●	●	○	○	●
PCB waste management (TSCA)	40 CFR 761	Regulates the management and disposal of PCB-contaminated articles and remediation wastes.	CERCLA actions are not subject to the remediation requirements of TSCA, although the standards may be integrated at the discretion of the lead agent.	●	●	●	○	●
Asbestos	40 CFR 61, Subpart M	Regulates the management and disposal of asbestos or asbestos-containing material.	Only an ARAR if friable asbestos is present on-site. Although not applicable to CERCLA sites, requirements in these sections may be relevant and appropriate to Superfund cleanup activities when they are sufficiently similar to the site situation and appropriate to the circumstances of the release.	●	●	●	○	●
Fugitive Dust Emissions	40 CFR 63	Regulates the generation of fugitive dust emissions during any on-site activity (i.e., not limited to specific sources).	Only an ARAR if soil may be disturbed as part of an in situ action and dust control is required.	○	○	●	○	●
Erosion and Sediment Control (NPDES program)	40 CFR 122	Regulates point source discharges of stormwater pollutants to surface water.	Only an ARAR when soil is disturbed, resulting in potential erosion.	○	○	●	○	●
Oil Storage (SPCC)	40 CFR 112	Regulates the on-site management of petroleum and non-petroleum oils.	Only an ARAR if more than 1,320 gallons of oil are stored on-site during the action.	●	●	●	○	●
Management of military munitions	40 CFR 266, Subpart M	Describes when military munitions are exempt from being managed as solid or hazardous waste.	Not likely an ARAR because mentions response actions generally require ex situ actions.	○	○	○	○	○

● Probable ARAR   ● Potential ARAR   ○ Not likely ARAR

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.

**TABLE 3. EXAMPLE FEDERAL ARARS FOR SOIL AND MUNITIONS EX SITU TREATMENT**

ARAR	Location of Federal Citation*	Description	Comments	Excavation and Ex Situ Treatment					
				Chemical Leaching/ Soil Washing	Off-site Disposal	Bioremediation	Vapor Extraction	Thermal Treatment	Stabilization/ Solidification
<b>Example Technologies</b>				Combination Acid Leaching/ Activated Carbon or Electrolytic Recovery System, Washing with Water and/ or Chemical Additives	Excavation and Off-site Disposal	Landfarming, Biocells, Biopiling, Bioreactors	Soil Venting, Vacuum Extraction	Incineration, Open Burn/ Open Detonation, Pyrolysis, Desorption, Vitrification	Portland Cement, Apatite, Organo-Clays
<b>Chemical-Specific</b>									
Federal Maximum Contaminant Levels	40 CFR 141	Sets maximum concentrations allowable for contaminants in sources of drinking water.	Only an ARAR if the action may impact groundwater.	○	○	○	○	○	○
Discharge of Effluent (on-site discharge of CERCLA waste only)	40 CFR 122 and state regulations approved under 40 CFR 131; 40 CFR 125; 40 CFR 136	Sets requirements for on-site discharges of treated wastewater to surface water.	Only an ARAR if wastewater is generated or if stormwater contacts contaminated media and that water is then treated and discharged on-site.	●	●	●	●	●	●
Land Disposal Restrictions	40 CFR 268	Establishes treatment concentrations that must be met prior to on-site disposal of hazardous wastes.	Would be an ARAR for all ex situ actions where wastes are treated ex situ and are subsequently disposed on-site.	●	●	●	○	○	●
Clean Air Act (CAA) emissions	40 CFR 50, 61	Establishes limits on the amounts of pollutants than can be discharged to the air from specified sources.	Not typically an ARAR as emissions from remediation systems are generally exempt from CAA regulations.	●	○	○	●	●	○
Emissions from hazardous waste processes	40 CFR 264; Subparts AA, BB, and CC	Establishes limits on the amounts of pollutants than can be discharged to the air from hazardous waste processes.	Only an ARAR if an emissions trigger the need for air pollution control.	●	○	○	●	●	○
<b>Location-Specific</b>									
Migratory Bird Treaty Act	16 USC 703	Protects almost all species of native birds in the United States from unregulated taking.	Almost always an ARAR because a migratory species is almost always present.	●	●	●	●	●	●
Coastal Zone Management Act	15 CFR 930	Federal activities must be consistent with, to the maximum extent practicable, state coastal zone management programs.	Only an ARAR if “actions will affect” the coastal zone, as defined by the state. Federal lands are excluded from the definition of “coastal zone.”	●	●	●	●	●	●
Disturbance of Wetlands (CWA)	40 CFR 230, 33 CFR 320	Provides specific requirements for mitigation when an action results in a permanent loss of wetlands. Prohibits certain activities in wetland areas.	Only an ARAR if there is a wetland on-site.	○	○	○	○	○	○
National Historic Preservation Act	16 USC 470	Requires protection of historical and cultural resources to the maximum extent practicable.	Only an ARAR if there are identified historical or cultural resources on-site.	○	○	○	○	○	○
Endangered Species Act	50 CFR 402	Requires protection of threatened and endangered species and habitat.	Only an ARAR if there are identified threatened or endangered species on-site. The federal government is not subject to state laws regarding threatened and endangered species; however, many times, DoD will voluntarily comply. Performing work in accordance with the INRMP at an active installation would constitute compliance.	○	○	○	○	○	○
<b>Action-Specific</b>									
Non-hazardous waste management (RCRA)	40 CFR 258	Provides standards for the management of non-hazardous wastes.	Almost always an ARAR for on-site waste management.	●	●	●	●	●	●
Hazardous waste management (RCRA)	40 CFR 264.171-175 or 40 CFR 262.34(a) incorporating 40 CFR 265.171-174 by reference	Provides standards for the management of hazardous wastes.	Only an ARAR when on-site hazardous waste management is anticipated.	○	○	○	○	○	○
Closure criteria for unregulated dump (RCRA)	40 CFR 258, Subpart A	Indicates prohibited conditions for sites where disposal occurred prior to regulation.	Not anticipated to be an ARAR for ex situ soil actions as they do not involve covers.	○	○	○	○	○	○

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.



**TABLE 3. EXAMPLE FEDERAL ARARS FOR SOIL AND MUNITIONS EX SITU TREATMENT (CONTINUED)**

ARAR	Location of Federal Citation*	Description	Comments	Excavation and Ex Situ Treatment					
				Chemical Leaching/ Soil Washing	Off-site Disposal	Bioremediation	Vapor Extraction	Thermal Treatment	Stabilization/ Solidification
<b>Example Technologies</b>				<b>Combination Acid Leaching/ Activated Carbon or Electrolytic Recovery System, Washing with Water and/ or Chemical Additives</b>	<b>Excavation and Off-site Disposal</b>	<b>Landfarming, Biocells, Biopiling, Bioreactors</b>	<b>Soil Venting, Vacuum Extraction</b>	<b>Incineration, Open Burn/ Open Detonation, Pyrolysis, Desorption, Vitrification</b>	<b>Portland Cement, Apatite, Organo-Clays</b>
Cap design criteria for non-hazardous waste landfill (RCRA)	40 CFR 258, Subpart F	Indicates performance standards for non-hazardous waste landfill caps.	Not anticipated to be an ARAR for ex situ soil actions as they do not involve caps.	○	○	○	○	○	○
Cap design criteria for hazardous waste landfill (RCRA)	40 CFR 264.117(c), 228(a) and (b), 310(a) and (b)	Indicates performance standards for hazardous waste landfill caps.	Not anticipated to be an ARAR for ex situ soil actions as they do not involve caps.	○	○	○	○	○	○
Discharge of dredge and fill to waters of the United States (CWA)	33 CFR 320 - 330	Indicates prohibitions on dredge and fill of waters of the United States, including wetlands.	Only an ARAR if wetlands are disturbed on-site by the action. If so, this is an action-specific ARAR.	●	●	●	●	●	●
Management of an on-site water treatment plant (CWA/SDWA)	40 CFR 125	Requirements for the management of a water treatment plant.	This is an ARAR if an on-site water treatment system is needed to implement the action.	●	●	●	●	●	●
Treatment of hazardous waste (RCRA)	40 CFR 264	Requirements and performance standards for treating and storing hazardous wastes in on-site units.	May be an ARAR for treatment facilities that are constructed on-site.	●	○	●	●	●	●
Land disposal restrictions (RCRA)	40 CFR 268	Specifies treatment standards and technologies for specific hazardous wastes. This is only an ARAR if hazardous wastes will undergo on-site treatment.	This is an ARAR for all ex situ actions where wastes are treated ex situ and are subsequently disposed on-site.	●	●	●	●	●	●
Underground Injection Control (CWA)	40 CFR 144, 146, and 147	Regulates the subsurface emplacement of fluids (including air) with standards for the design and operation of five classes of injection wells.	Not an ARAR for ex situ technologies.	○	○	○	○	○	○
PCB waste management (TSCA)	40 CFR 761	Regulates the management and disposal of PCB articles and remediation wastes.	CERCLA actions are not subject to the remediation requirements of TSCA, although the standards may be integrated at the discretion of the lead agent.	●	●	●	●	●	●
Asbestos	40 CFR 61, Subpart M	Regulates the management and disposal of asbestos or asbestos-containing material.	Only an ARAR if friable asbestos is present on-site. Although not applicable to CERCLA sites, requirements in these sections may be relevant and appropriate to Superfund cleanup activities when they are sufficiently similar to the site situation and appropriate to the circumstances of the release.	●	●	●	●	●	●
Fugitive Dust Emissions	40 CFR 63	Regulates the generation of fugitive dust emissions during any on-site activity (i.e., not limited to specific sources).	Typically an ARAR as soil will likely be disturbed as part of an ex situ action and dust control is generally required.	●	●	●	●	●	●
Erosion and Sediment Control (NPDES program)	40 CFR 122	Regulates point source discharges of stormwater pollutants to surface water.	Likely an ARAR when soil is disturbed, resulting in potential erosion.	●	●	●	●	●	●
Oil Storage (SPCC)	40 CFR 112	Regulates the on-site management of petroleum and non-petroleum oils.	Only an ARAR if more than 1,320 gallons of oil are stored on-site during the action.	●	○	●	●	●	●
Management of military munitions	40 CFR 266, Subpart M	Describes when military munitions are exempt from being managed as solid or hazardous waste.	Only an ARAR for management of unused military munitions that have been disposed of, or fired/used military munitions that have been removed from a range. There are generally no ARARs for demilitarization.	○	●	○	○	○	○

● Probable ARAR   ● Potential ARAR   ○ Not likely ARAR

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.

**TABLE 4. EXAMPLE FEDERAL ARARs FOR GROUNDWATER CONTAINMENT**

ARAR	Location of Federal Citation*	Description	Comments	Containment		
				Slurry Wall	Sheet Pile	Pump and Treat
<b>Example Technologies</b>				<b>Bentonite, Attapulgate</b>	<b>Physical Barrier</b>	<b>French Drain Collection Trench</b>
<b>Chemical-Specific</b>						
Federal Maximum Contaminant Levels	40 CFR 141	Sets maximum concentrations allowable for contaminants in sources of drinking water.	This is likely an ARAR for setting remedial goals.	●	●	●
Discharge of Effluent (on-site discharge of CERCLA waste only)	40 CFR 122 and state regulations approved under 40 CFR 131; 40 CFR 125; 40 CFR 136	Sets requirements for on-site discharges of treated wastewater to surface water.	This is an ARAR if the action includes on-site wastewater, including groundwater and surface water, discharge.	●	●	●
Land Disposal Restrictions	40 CFR 268	Establishes treatment concentrations that must be met prior to on-site disposal of hazardous wastes.	Not likely an ARAR because land disposal is generally not a component of groundwater actions.	○	○	○
Clean Air Act (CAA) emissions	40 CFR 50, 61	Establishes limits on the amounts of pollutants than can be discharged to the air from specified sources.	Not typically an ARAR as emissions from remediation systems are generally exempt from CAA regulations.	○	○	●
Emissions from hazardous waste processes	40 CFR 264; Subparts AA, BB, and CC	Establishes limits on the amounts of pollutants than can be discharged to the air from hazardous waste processes.	Only an ARAR if an emissions trigger the need for air pollution control.	○	○	●
<b>Location-Specific</b>						
Migratory Bird Treaty Act	16 USC 703	Protects almost all species of native birds in the United States from unregulated taking.	Almost always an ARAR because a migratory species is almost always present.	●	●	●
Coastal Zone Management Act	15 CFR 930	Federal activities must be consistent with, to the maximum extent practicable, state coastal zone management programs.	Only an ARAR if “actions will affect” the coastal zone, as defined by the state. Federal lands are excluded from the definition of “coastal zone.”	●	●	●
Disturbance of Wetlands (CWA)	40 CFR 230, 33 CFR 320	Provides specific requirements for mitigation when an action results in a permanent loss of wetlands. Prohibits certain activities in wetland areas.	Only an ARAR if there is a wetland on-site.	●	●	●
National Historic Preservation Act	16 USC 470	Requires protection of historical and cultural resources to the maximum extent practicable.	Only an ARAR if there are identified historical or cultural resources on-site.	●	●	●
Endangered Species Act	50 CFR 402	Requires protection of threatened and endangered species and habitat.	Only an ARAR if there are identified threatened or endangered species on-site. The federal government is not subject to state laws regarding threatened and endangered species; however, many times, DoD will voluntarily comply. Performing work in accordance with the INRMP at an active installation would constitute compliance.	●	●	●
<b>Action-Specific</b>						
Non-hazardous waste management (RCRA)	40 CFR 258	Provides standards for the management of non-hazardous wastes.	Almost always an ARAR for on-site waste management.	●	●	●
Hazardous waste management (RCRA)	40 CFR 264.171-175 or 40 CFR 262.34(a) incorporating 40 CFR 265.171-174 by reference	Provides standards for the management of hazardous wastes.	Only an ARAR when on-site hazardous waste management is anticipated.	●	●	●
Closure criteria for unregulated dump (RCRA)	40 CFR 258, Subpart A	Indicates prohibited conditions for sites where disposal occurred prior to regulation.	Not likely an ARAR for groundwater actions.	○	○	○
Cap design criteria for non-hazardous waste landfill (RCRA)	40 CFR 258, Subpart F	Indicates performance standards for non-hazardous waste landfill caps.	Not likely an ARAR for groundwater actions.	○	○	○
Cap design criteria for hazardous waste landfill (RCRA)	40 CFR 264.117(c), 228(a) and (b), 310(a) and (b)	Indicates performance standards for hazardous waste landfill caps.	Not likely an ARAR for groundwater actions.	○	○	○
Discharge of dredge and fill to waters of the United States (CWA)	33 CFR 320 - 330	Indicates prohibitions on dredge and fill of waters of the United States, including wetlands.	Only an ARAR if wetlands are disturbed on-site by the action, then this is an action-specific ARAR.	●	●	●

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.

**TABLE 4. EXAMPLE FEDERAL ARARs FOR GROUNDWATER CONTAINMENT (CONTINUED)**

ARAR	Location of Federal Citation*	Description	Comments	Containment		
				Slurry Wall	Sheet Pile	Pump and Treat
<b>Example Technologies</b>				<b>Bentonite, Attapulgite</b>	<b>Physical Barrier</b>	<b>French Drain Collection Trench</b>
Management of an on-site water treatment plant (CWA/SDWA)	40 CFR 125	Requirements for the management of a water treatment plant.	Only an ARAR if an on-site water treatment system is needed to implement the action.	○	○	●
Treatment of hazardous waste (RCRA)	40 CFR 264	Requirements and performance standards for treating and storing hazardous wastes in on-site units.	Only an ARAR for actions with on-site treatment of hazardous waste.	○	○	●
Land disposal restrictions (RCRA)	40 CFR 268	Specifies treatment standards and technologies for specific hazardous wastes. This is only an ARAR if hazardous wastes will undergo on-site treatment.	Not likely an ARAR because land disposal is generally not a component of groundwater actions.	○	○	○
Underground Injection Control (CWA)	40 CFR 144, 146, and 147	Regulates the subsurface emplacement of fluids (including air) with standards for the design and operation of five classes of injection wells.	Only an ARAR if delivering a fluid, including air, into the subsurface via a well or trench.	●	○	○
PCB waste management (TSCA)	40 CFR 761	Regulates the management and disposal of PCB-contaminated articles and remediation wastes.	CERCLA actions are not subject to the remediation requirements of TSCA, although the standards may be integrated at the discretion of the lead agent.	○	○	○
Asbestos	40 CFR 61, Subpart M	Regulates the management and disposal of asbestos or asbestos-containing material.	Only an ARAR if friable asbestos is present on-site. Although not applicable to CERCLA sites, requirements in these sections may be relevant and appropriate to Superfund cleanup activities when they are sufficiently similar to the site situation and appropriate to the circumstances of the release.	○	○	○
Fugitive Dust Emissions	40 CFR 63	Regulates the generation of fugitive dust emissions during any on-site activity (i.e., not limited to specific sources).	Only an ARAR if soil is disturbed as part of the construction.	●	●	●
Erosion and Sediment Control (NPDES program)	40 CFR 122	Regulates point source discharges of stormwater pollutants to surface water.	Only an ARAR if soil is disturbed as part of the construction, resulting in potential erosion.	●	●	●
Oil Storage (SPCC)	40 CFR 112	Regulates the on-site management of petroleum and non-petroleum oils.	Only an ARAR if more than 1,320 gallons of oil are stored on-site during the action.	●	●	●
Management of military munitions	40 CFR 266 Subpart M	Describes when military munitions are exempt from being managed as solid or hazardous waste.	Not anticipated to be an ARAR for groundwater actions.	○	○	○

● Probable ARAR   ● Potential ARAR   ○ Not likely ARAR

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.



**TABLE 5. EXAMPLE FEDERAL ARARS FOR GROUNDWATER IN SITU TREATMENT**

ARAR	Location of Federal Citation*	Description	Comments	In Situ Treatment						
				Air Sparging	Non-oil Chemical Additives	Enhanced Bioremediation	In Situ Heating	Monitored Natural Attenuation	Phytoremediation	
<b>Example Technologies</b>										
<b>Chemical-Specific</b>										
Federal Maximum Contaminant Levels	40 CFR 141	Sets maximum concentrations allowable for contaminants in sources of drinking water.	This is likely an ARAR for setting remedial goals.	●	●	●	●	●	●	●
Discharge of Effluent (on-site discharge of CERCLA waste only)	40 CFR 122 and state regulations approved under 40 CFR 131; 40 CFR 125; 40 CFR 136;	Sets requirements for on-site discharges of treated wastewater to surface water.	Only an ARAR if the action includes on-site wastewater, including groundwater and surface water, discharge.	○	○	○	○	○	○	○
Land Disposal Restrictions	40 CFR 268	Establishes treatment concentrations that must be met prior to on-site disposal of hazardous wastes.	Not likely an ARAR because land disposal is generally not a component of groundwater actions.	○	○	○	○	○	○	○
Clean Air Act (CAA) emissions	40 CFR 50, 61	Establishes limits on the amounts of pollutants that can be discharged to the air from specified sources.	Not typically an ARAR as emissions from remediation systems are generally exempt from CAA regulations.	●	○	○	○	○	○	○
Emissions from hazardous waste processes	40 CFR 264; Subparts AA, BB, and CC	Establishes limits on the amounts of pollutants that can be discharged to the air from hazardous waste processes.	Only an ARAR if an emissions trigger the need for air pollution control.	●	○	○	○	○	○	○
<b>Location-Specific</b>										
Migratory Bird Treaty Act	16 USC 703	Protects almost all species of native birds in the United States from unregulated taking.	Almost always an ARAR because a migratory species is almost always present.	●	●	●	●	●	●	●
Coastal Zone Management Act	15 CFR 930	Federal activities must be consistent with, to the maximum extent practicable, state coastal zone management programs.	Only an ARAR if "actions will affect" the coastal zone, as defined by the state. Federal lands are excluded from the definition of "coastal zone."	●	●	●	●	●	●	●
Disturbance of Wetlands (CWA)	40 CFR 230, 33 CFR 320	Provides specific requirements for mitigation when an action results in a permanent loss of wetlands. Prohibits certain activities in wetland areas.	Only an ARAR if there is a wetland on-site.	○	○	○	○	○	○	○
National Historic Preservation Act	16 USC 470	Requires protection of historical and cultural resources to the maximum extent practicable.	Only an ARAR if there are identified historical or cultural resources on-site.	○	○	○	○	○	○	○
Endangered Species Act	50 CFR 402	Requires protection of threatened and endangered species and habitat.	Only an ARAR if there are identified threatened or endangered species on-site. The federal government is not subject to state laws regarding threatened and endangered species; however, many times, DoD will voluntarily comply. Performing work in accordance with the INRMP at an active installation would constitute compliance.	○	○	○	○	○	○	○
<b>Action-Specific</b>										
Non-hazardous waste management (RCRA)	40 CFR 258	Provides standards for the management of non-hazardous wastes.	Almost always an ARAR for on-site waste management.	●	●	●	●	●	●	●
Hazardous waste management (RCRA)	40 CFR 264.171-175 or 40 CFR 262.34(a) incorporating 40 CFR 265.171-174 by reference	Provides standards for the management of hazardous wastes.	Only an ARAR when on-site hazardous waste management is anticipated.	○	○	○	○	○	○	○

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.

**TABLE 5. EXAMPLE FEDERAL ARARS FOR GROUNDWATER IN SITU TREATMENT (CONTINUED)**

ARAR	Location of Federal Citation*	Description	Comments	In Situ Treatment					
				Air Sparging	Non-oil Chemical Additives	Enhanced Bioremediation	In Situ Heating	Monitored Natural Attenuation	Phytoremediation
<b>Example Technologies</b>						Mulch Wall, Soluble Substrate Injection (molasses, lactate), Insoluble Substrate Injection (emulsified oil)	Electrical Resistive Heating, Steam Injection/ Extraction, Conductive Heating	Long-term Monitoring	Phytoextraction, Rhizodegradation, Phytodegradation, Phytovolatilization
Closure criteria for unregulated dump (RCRA)	40 CFR 258, Subpart A	Indicates prohibited conditions for sites where disposal occurred prior to regulation.	Not likely an ARAR for groundwater actions.	○	○	○	○	○	○
Cap design criteria for non-hazardous waste landfill (RCRA)	40 CFR 258, Subpart F	Indicates performance standards for non-hazardous waste landfill caps.	Not likely an ARAR for groundwater actions.	○	○	○	○	○	○
Cap design criteria for hazardous waste landfill (RCRA)	40 CFR 264.117(c), 228(a) and (b), 310(a) and (b)	Indicates performance standards for hazardous waste landfill caps.	Not likely an ARAR for groundwater actions.	○	○	○	○	○	○
Discharge of dredge and fill to waters of the United States (CWA)	33 CFR 320 - 330	Indicates prohibitions on dredge and fill of waters of the United States, including wetlands.	Not likely an ARAR for in situ groundwater actions.	○	○	○	○	○	○
Management of an on-site water treatment plant (CWA/SDWA)	40 CFR 125	Requirements for the management of a water treatment plant.	Not likely an ARAR for in situ groundwater actions.	○	○	○	○	○	○
Treatment of hazardous waste (RCRA)	40 CFR 264	Requirements and performance standards for treating and storing hazardous wastes in on-site units.	Not likely an ARAR for in situ groundwater actions.	○	○	○	○	○	○
Land disposal restrictions (RCRA)	40 CFR 268	Specifies treatment standards and technologies for specific hazardous wastes. This is only an ARAR if hazardous wastes will undergo on-site treatment.	Not likely an ARAR for in situ groundwater actions.	○	○	○	○	○	○
Underground Injection Control (CWA)	40 CFR 144, 146, and 147	Regulates the subsurface emplacement of fluids (including air) with standards for the design and operation of five classes of injection wells.	This is an ARAR if delivering a fluid, including air, into the subsurface via a well or trench.	●	●	●	●	○	○
PCB waste management (TSCA)	40 CFR 761	Regulates the management and disposal of PCB-contaminated articles and remediation wastes.	CERCLA actions are not subject to the remediation requirements of TSCA, although the standards may be integrated at the discretion of the lead agent.	○	○	○	○	○	○
Asbestos	40 CFR 61, Subpart M	Regulates the management and disposal of asbestos or asbestos-containing material.	Only an ARAR if friable asbestos is present on-site. Although not applicable to CERCLA sites, requirements in these sections may be relevant and appropriate to Superfund cleanup activities when they are sufficiently similar to the site situation and appropriate to the circumstances of the release.	○	○	○	○	○	○
Fugitive Dust Emissions	40 CFR 63	Regulates the generation of fugitive dust emissions during any on-site activity (i.e., not limited to specific sources).	Only an ARAR if soil is disturbed as part of the construction.	●	●	●	●	○	●
Erosion and Sediment Control (NPDES program)	40 CFR 122	Regulates point source discharges of stormwater pollutants to surface water.	Only an ARAR if soil is disturbed as part of the construction, resulting in potential erosion.	●	●	●	●	○	●
Oil Storage (SPCC)	40 CFR 112	Regulates the on-site management of petroleum and non-petroleum oils.	Only an ARAR if more than 1,320 gallons of oil are stored on-site during the action.	●	●	●	●	○	●
Management of military munitions	40 CFR 266 Subpart M	Describes when military munitions are exempt from being managed as solid or hazardous waste.	Not anticipated to be an ARAR for groundwater actions.	○	○	○	○	○	○

● Probable ARAR   ● Potential ARAR   ○ Not likely ARAR

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.

**TABLE 6. EXAMPLE FEDERAL ARARS FOR GROUNDWATER EX SITU TREATMENT**

ARAR	Location of Federal Citation*	Description	Comments	Ex Situ Treatment						
				Air Stripping	Bioreactors	Chemical Oxidation/Reduction	Constructed Wetlands	Granular Activated Carbon	Ion Exchange	Precipitation
<b>Example Technologies</b>										
<b>Chemical-Specific</b>										
Federal Maximum Contaminant Levels	40 CFR 141	Sets maximum concentrations allowable for contaminants in sources of drinking water.	This is likely an ARAR for setting remedial goals.	●	●	●	●	●	●	●
Discharge of Effluent (on-site discharge of CERCLA waste only)	40 CFR 122 and state regulations approved under 40 CFR 131; 40 CFR 125; 40 CFR 136	Sets requirements for on-site discharges of treated wastewater to surface water.	This is likely an ARAR unless discharging off-site and/or to an off-site water treatment plant.	●	●	●	●	●	●	●
Land Disposal Restrictions	40 CFR 268	Establishes treatment concentrations that must be met prior to on-site disposal of hazardous wastes.	Not likely an ARAR because land disposal is generally not a component of groundwater actions.	○	○	○	○	○	○	○
Clean Air Act (CAA) emissions	40 CFR 50, 61	Establishes limits on the amounts of pollutants that can be discharged to the air from specified sources.	Not typically an ARAR as emissions from remediation systems are generally exempt from CAA regulations.	●	●	●	○	●	●	●
Emissions from hazardous waste processes	40 CFR 264; Subparts AA, BB, and CC	Establishes limits on the amounts of pollutants that can be discharged to the air from hazardous waste processes.	Only an ARAR if an emissions trigger the need for air pollution control.	●	●	●	○	●	●	●
<b>Location-Specific</b>										
Migratory Bird Treaty Act	16 USC 703	Protects almost all species of native birds in the United States from unregulated taking.	Almost always an ARAR because a migratory species is almost always present.	●	●	●	●	●	●	●
Coastal Zone Management Act	15 CFR 930	Federal activities must be consistent with, to the maximum extent practicable, state coastal zone management programs.	Only an ARAR if “actions will affect” the coastal zone, as defined by the state. Federal lands are excluded from the definition of “coastal zone.”	●	●	●	●	●	●	●
Disturbance of Wetlands (CWA)	40 CFR 230, 33 CFR 320	Provides specific requirements for mitigation when an action results in a permanent loss of wetlands. Prohibits certain activities in wetland areas.	Only an ARAR if there is a wetland on-site.	○	○	○	○	○	○	○
National Historic Preservation Act	16 USC 470	Requires protection of historical and cultural resources to the maximum extent practicable.	Only an ARAR if there are identified historical or cultural resources on-site.	○	○	○	○	○	○	○
Endangered Species Act	50 CFR 402	Requires protection of threatened and endangered species and habitat.	Only an ARAR if there are identified threatened or endangered species on-site. The federal government is not subject to state laws regarding threatened and endangered species; however, many times, DoD will voluntarily comply. Performing work in accordance with the INRMP at an active installation would constitute compliance.	○	○	○	○	○	○	○
<b>Action-Specific</b>										
Non-hazardous waste management (RCRA)	40 CFR 258	Provides standards for the management of non-hazardous wastes.	Almost always an ARAR for on-site waste management.	●	●	●	●	●	●	●
Hazardous waste management (RCRA)	40 CFR 264.171-175 or 40 CFR 262.34(a) incorporating 40 CFR 265.171-174 by reference	Provides standards for the management of hazardous wastes.	Only an ARAR when on-site hazardous waste management is anticipated.	○	○	○	○	○	○	○
Closure criteria for unregulated dump (RCRA)	40 CFR 258, Subpart A	Indicates prohibited conditions for sites where disposal occurred prior to regulation.	Not anticipated to be an ARAR for groundwater actions.	○	○	○	○	○	○	○
Cap design criteria for non-hazardous waste landfill (RCRA)	40 CFR 258, Subpart F	Indicates performance standards for non-hazardous waste landfill caps.	Not anticipated to be an ARAR for groundwater actions.	○	○	○	○	○	○	○
Cap design criteria for hazardous waste landfill (RCRA)	40 CFR 264.117(c), 228(a) and (b), 310(a) and (b)	Indicates performance standards for hazardous waste landfill caps.	Not anticipated to be an ARAR for groundwater actions.	○	○	○	○	○	○	○

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.



**TABLE 6. EXAMPLE FEDERAL ARARs FOR GROUNDWATER EX SITU TREATMENT (CONTINUED)**

ARAR	Location of Federal Citation*	Description	Comments	Ex Situ Treatment						
				Air Stripping	Bioreactors	Chemical Oxidation/Reduction	Constructed Wetlands	Granular Activated Carbon	Ion Exchange	Precipitation
<b>Example Technologies</b>										
Discharge of dredge and fill to waters of the United States (CWA)	33 CFR 320 - 330	Indicates prohibitions on dredge and fill of waters of the United States, including wetlands.	Only an ARAR if wetlands are disturbed on-site by the action, then this is an action-specific ARAR.	○	○	○	●	○	○	○
Management of an on-site water treatment plant (CWA/SDWA)	40 CFR 125	Requirements for the management of a water treatment plant.	Only an ARAR if an on-site water treatment system is needed to implement the action.	●	●	●	○	●	●	●
Treatment of hazardous waste (RCRA)	40 CFR 264	Requirements and performance standards for treating and storing hazardous wastes in on-site units.	Likely an ARAR for treatment facilities that are constructed on-site.	●	●	●	●	●	●	●
Land disposal restrictions (RCRA)	40 CFR 268	Specifies treatment standards and technologies for specific hazardous wastes. This is only an ARAR if hazardous wastes will undergo on-site treatment.	Only an ARAR for actions where wastes are treated ex situ and are subsequently disposed on-site.	○	○	○	●	○	○	○
Underground Injection Control (CWA)	40 CFR 144, 146, and 147	Regulates the subsurface emplacement of fluids (including air) with standards for the design and operation of five classes of injection wells.	This is an ARAR if reinjecting the treated groundwater into the subsurface via a well or trench.	●	●	●	○	●	●	●
PCB waste management (TSCA)	40 CFR 761	Regulates the management and disposal of PCB articles and remediation wastes.	CERCLA actions are not subject to the remediation requirements of TSCA, although the standards may be integrated at the discretion of the lead agent.	○	○	○	○	○	○	○
Asbestos	40 CFR 61, Subpart M	Regulates the management and disposal of asbestos or asbestos-containing material.	Only an ARAR if friable asbestos is present on-site. Although not applicable to CERCLA sites, requirements in these sections may be relevant and appropriate to Superfund cleanup activities when they are sufficiently similar to the site situation and appropriate to the circumstances of the release.	○	○	○	○	○	○	○
Fugitive Dust Emissions	40 CFR 63	Regulates the generation of fugitive dust emissions during any on-site activity (i.e., not limited to specific sources).	This is an ARAR when soil is disturbed as part of the construction and dust control is generally required.	●	●	●	●	●	●	●
Erosion and Sediment Control (NPDES program)	40 CFR 122	Regulates point source discharges of stormwater pollutants to surface water.	Only an ARAR if soil is disturbed as part of the construction, resulting in potential erosion.	●	●	●	●	●	●	●
Oil Storage (SPCC)	40 CFR 112	Regulates the on-site management of petroleum and non-petroleum oils.	Only an ARAR if more than 1,320 gallons of oil are stored on-site during the action.	●	●	●	●	●	●	●
Management of military munitions	40 CFR 266 Subpart M	Describes when military munitions are exempt from being managed as solid or hazardous waste.	Not anticipated to be an ARAR for groundwater actions.	○	○	○	○	○	○	○

● Probable ARAR   ● Potential ARAR   ○ Not likely ARAR

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.

**TABLE 7. EXAMPLE FEDERAL ARARS FOR SEDIMENT AND MUNITIONS CONTAINMENT**

ARAR	Location of Federal Citation*	Description	Comments	Containment
				In Situ Capping
Example Technologies				Thin Layer Sand Cap
<b>Chemical-Specific</b>				
Federal Maximum Contaminant Levels	40 CFR 141	Sets maximum concentrations allowable for contaminants in sources of drinking water.	Only an ARAR if the action also addresses groundwater.	○
Discharge of Effluent (on-site discharge of CERCLA waste only)	40 CFR 122 and state regulations approved under 40 CFR 131; 40 CFR 125; 40 CFR 136;	Sets requirements for on-site discharges of treated wastewater to surface water.	This is an ARAR if the action requires compliance with surface water quality standards.	●
Land Disposal Restrictions	40 CFR 268	Establishes treatment concentrations that must be met prior to on-site disposal of hazardous wastes.	Not anticipated to be an ARAR for sediment containment actions.	○
Clean Air Act (CAA) emissions	40 CFR 50, 61	Establishes limits on the amounts of pollutants than can be discharged to the air from specified sources.	Not typically an ARAR as emissions from remediation systems are generally exempt from CAA regulations.	○
Emissions from hazardous waste processes	40 CFR 264; Subparts AA, BB, and CC	Establishes limits on the amounts of pollutants than can be discharged to the air from hazardous waste processes.	Only an ARAR if an emissions trigger the need for air pollution control.	○
<b>Location-Specific</b>				
Migratory Bird Treaty Act	16 USC 703	Protects almost all species of native birds in the United States from unregulated taking.	Almost always an ARAR because a migratory species is almost always present.	●
Coastal Zone Management Act	15 CFR 930	Federal activities must be consistent with, to the maximum extent practicable, state coastal zone management programs.	Only an ARAR if “actions will affect” the coastal zone, as defined by the state. Federal lands are excluded from the definition of “coastal zone.”	●
Disturbance of Wetlands (CWA)	40 CFR 230, 33 CFR 320	Provides specific requirements for mitigation when an action results in a permanent loss of wetlands. Prohibits certain activities in wetland areas.	Only an ARAR if there is a wetland on-site.	○
National Historic Preservation Act	16 USC 470	Requires protection of historical and cultural resources to the maximum extent practicable.	Only an ARAR if there are identified historical or cultural resources on-site.	●
Endangered Species Act	50 CFR 402	Requires protection of threatened and endangered species and habitat.	Only an ARAR if there are identified threatened or endangered species on-site. The federal government is not subject to state laws regarding threatened and endangered species; however, many times, DoD will voluntarily comply. Performing work in accordance with the INRMP at an active installation would constitute compliance.	●
<b>Action-Specific</b>				
Non-hazardous waste management (RCRA)	40 CFR 258	Provides standards for the management of non-hazardous wastes.	Almost always an ARAR for on-site waste management.	●
Hazardous waste management (RCRA)	40 CFR 264.171-175 or 40 CFR 262.34(a) incorporating 40 CFR 265.171-174 by reference	Provides standards for the management of hazardous wastes.	Only an ARAR when on-site hazardous waste management is anticipated.	●
Closure criteria for unregulated dump (RCRA)	40 CFR 258, Subpart A	Indicates prohibited conditions for sites where disposal occurred prior to regulation.	Not likely an ARAR.	○
Cap design criteria for non-hazardous waste landfill (RCRA)	40 CFR 258, Subpart F	Indicates performance standards for non-hazardous waste landfill caps.	Not likely an ARAR.	○
Cap design criteria for hazardous waste landfill (RCRA)	40 CFR 264.117(c), 228(a) and (b), 310(a) and (b)	Indicates performance standards for hazardous waste landfill caps.	Not likely an ARAR.	○
Discharge of dredge and fill to waters of the United States (CWA)	33 CFR 320 - 330	Indicates prohibitions on dredge and fill of waters of the United States, including wetlands	This is an action-specific ARAR If wetlands/waters of the United States are disturbed on-site by the action.	●
Management of an on-site water treatment plant (CWA/SDWA)	40 CFR 125	Requirements for the management of a water treatment plant.	Not likely an ARAR.	○

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.

**TABLE 7. EXAMPLE FEDERAL ARARs FOR SEDIMENT AND MUNITIONS CONTAINMENT (CONTINUED)**

ARAR	Location of Federal Citation*	Description	Comments	Containment
				In Situ Capping
Example Technologies				Thin Layer Sand Cap
Treatment of hazardous waste (RCRA)	40 CFR 264	Requirements and performance standards for treating and storing hazardous wastes in on-site units.	Not anticipated to be an ARAR for sediment containment actions.	<input type="radio"/>
Land disposal restrictions (RCRA)	40 CFR 268	Specifies treatment standards and technologies for specific hazardous wastes. This is only an ARAR if hazardous wastes will undergo on-site treatment.	Not anticipated to be an ARAR for sediment containment actions.	<input type="radio"/>
Underground Injection Control (CWA)	40 CFR 144, 146, and 147	Regulates the subsurface emplacement of fluids (including air) with standards for the design and operation of five classes of injection wells.	Not anticipated to be an ARAR for sediment containment actions.	<input type="radio"/>
PCB waste management (TSCA)	40 CFR 761	Regulates the management and disposal of PCB articles and remediation wastes.	Not anticipated to be an ARAR for sediment containment actions.	<input type="radio"/>
Asbestos	40 CFR 61, Subpart M	Regulates the management and disposal of asbestos or asbestos containing material.	Not anticipated to be an ARAR for sediment containment actions.	<input type="radio"/>
Fugitive Dust Emissions	40 CFR 63	Regulates the generation of fugitive dust emissions during any on-site activity (i.e., not limited to specific sources).	Not anticipated to be an ARAR for containment actions.	<input type="radio"/>
Erosion and Sediment Control (NPDES program)	40 CFR 122	Regulates point-source discharges of stormwater pollutants to surface water.	Not anticipated to be an ARAR for containment actions.	<input type="radio"/>
Oil Storage (SPCC)	40 CFR 112	Regulates the on-site management of petroleum and non-petroleum oils.	Only an ARAR if more than 1,320 gallons of oil are stored on-site during the action.	<input type="radio"/>
Management of military munitions	40 CFR 266, Subpart M	Describes when military munitions are exempt from being managed as solid or hazardous waste.	Only an ARAR for management of unused military munitions that have been disposed of, or fired/used military munitions that have been removed from a range.	<input checked="" type="radio"/>

Probable ARAR   
 Potential ARAR   
 Not likely ARAR

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.



**TABLE 8. EXAMPLE FEDERAL ARARs FOR SEDIMENT IN SITU TREATMENT**

ARAR	Location of Federal Citation*	Description	Comments	In Situ Treatment			
				In Situ Capping	In Situ Bioremediation	Natural Recovery	Phyto-remediation
<b>Example Technologies</b>				<b>Single or Multi-Amendment Cap, Reactive Cap</b>	<b>Amendment, Injection, Mixing</b>	<b>Natural Attenuation</b>	<b>Installation of Plant Materials</b>
<b>Chemical-Specific</b>							
Federal Maximum Contaminant Levels	40 CFR 141	Sets maximum concentrations allowable for contaminants in sources of drinking water.	Only an ARAR if the action also addresses groundwater.	○	○	○	○
Discharge of Effluent (on-site discharge of CERCLA waste only)	40 CFR 122 and state regulations approved under 40 CFR 131; 40 CFR 125; 40 CFR 136;	Sets requirements for on-site discharges of treated wastewater to surface water.	This is an ARAR if the action requires compliance with surface water quality standards.	●	●	●	●
Land Disposal Restrictions	40 CFR 268	Establishes treatment concentrations that must be met prior to on-site disposal of hazardous wastes.	Not anticipated to be an ARAR for in situ sediment actions.	○	○	○	○
Clean Air Act (CAA) emissions	40 CFR 50, 61	Establishes limits on the amounts of pollutants than can be discharged to the air from specified sources.	Not typically an ARAR as emissions from remediation systems are generally exempt from CAA regulations.	○	○	○	○
Emissions from hazardous waste processes	40 CFR 264; Subparts AA, BB, and CC	Establishes limits on the amounts of pollutants than can be discharged to the air from hazardous waste processes.	Only an ARAR if an emissions trigger the need for air pollution control.	○	○	○	○
<b>Location-Specific</b>							
Migratory Bird Treaty Act	16 USC 703	Protects almost all species of native birds in the United States from unregulated taking.	Almost always an ARAR because a migratory species is almost always present.	●	●	●	●
Coastal Zone Management Act	15 CFR 930	Federal activities must be consistent with, to the maximum extent practicable, state coastal zone management programs.	Only an ARAR if “actions will affect” the coastal zone, as defined by the state. Federal lands are excluded from the definition of “coastal zone.”	●	●	●	●
Disturbance of Wetlands (CWA)	40 CFR 230, 33 CFR 320	Provides specific requirements for mitigation when an action results in a permanent loss of wetlands. Prohibits certain activities in wetland areas.	Only an ARAR if there is a wetland on-site.	○	○	○	○
National Historic Preservation Act	16 USC 470	Requires protection of historical and cultural resources to the maximum extent practicable.	Only an ARAR if there are identified historical or cultural resources on-site.	●	●	●	●
Endangered Species Act	50 CFR 402	Requires protection of threatened and endangered species and habitat.	Only an ARAR if there are identified threatened or endangered species on-site. The federal government is not subject to state laws regarding threatened and endangered species; however, many times, DoD will voluntarily comply. Performing work in accordance with the INRMP at an active installation would constitute compliance.	●	●	●	●
<b>Action-Specific</b>							
Non-hazardous waste management (RCRA)	40 CFR 258	Provides standards for the management of non-hazardous wastes.	Almost always an ARAR for on-site waste management.	●	●	●	●
Hazardous waste management (RCRA)	40 CFR 264.171-175 or 40 CFR 262.34(a) incorporating 40 CFR 265.171-174 by reference	Provides standards for the management of hazardous wastes.	Only an ARAR when on-site hazardous waste management is anticipated.	●	●	●	●
Closure criteria for unregulated dump (RCRA)	40 CFR 258, Subpart A	Indicates prohibited conditions for sites where disposal occurred prior to regulation.	Not likely an ARAR.	○	○	○	○
Cap design criteria for non-hazardous waste landfill (RCRA)	40 CFR 258, Subpart F	Indicates performance standards for non-hazardous waste landfill caps.	Not likely an ARAR.	○	○	○	○
Cap design criteria for hazardous waste landfill (RCRA)	40 CFR 264.117(c), 228(a) and (b), 310(a) and (b)	Indicates performance standards for hazardous waste landfill caps.	Not likely an ARAR.	○	○	○	○

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.

**TABLE 8. EXAMPLE FEDERAL ARARs FOR SEDIMENT IN SITU TREATMENT (CONTINUED)**

ARAR	Location of Federal Citation*	Description	Comments	In Situ Treatment			
				In Situ Capping	In Situ Bioremediation	Natural Recovery	Phyto-remediation
Example Technologies				Single or Multi-Amendment Cap, Reactive Cap	Amendment, Injection, Mixing	Natural Attenuation	Installation of Plant Materials
Discharge of dredge and fill to waters of the United States (CWA)	33 CFR 320 - 330	Indicates prohibitions on dredge and fill of waters of the United States, including wetlands.	This is an action-specific ARAR If wetlands/waters of the United States are disturbed on-site by the action.	●	●	●	●
Management of an on-site water treatment plant (CWA/SDWA)	40 CFR 125	Requirements for the management of a water treatment plant.	Not likely an ARAR.	○	○	○	○
Treatment of hazardous waste (RCRA)	40 CFR 264	Requirements and performance standards for treating and storing hazardous wastes in on-site units.	Not likely an ARAR.	○	○	○	○
Land disposal restrictions (RCRA)	40 CFR 268	Specifies treatment standards and technologies for specific hazardous wastes. This is only an ARAR if hazardous wastes will undergo on-site treatment.	Not likely an ARAR.	○	○	○	○
Underground Injection Control (CWA)	40 CFR 144, 146, and 147	Regulates the subsurface emplacement of fluids (including air) with standards for the design and operation of five classes of injection wells.	Only an ARAR if delivering a fluid, including air, into the subsurface via a well or trench.	○	●	○	○
PCB waste management (TSCA)	40 CFR 761	Regulates the management and disposal of PCB articles and remediation wastes.	Not likely an ARAR.	○	○	○	○
Asbestos	40 CFR 61, Subpart M	Regulates the management and disposal of asbestos or asbestos-containing material.	Not likely an ARAR.	○	○	○	○
Fugitive Dust Emissions	40 CFR 63	Regulates the generation of fugitive dust emissions during any on-site activity (i.e., not limited to specific sources).	Not likely an ARAR.	○	○	○	○
Erosion and Sediment Control (NPDES program)	40 CFR 122	Regulates point source discharges of stormwater pollutants to surface water.	May be an ARAR related to turbidity controls.	●	●	○	●
Oil Storage (SPCC)	40 CFR 112	Regulates the on-site management of petroleum and non-petroleum oils.	Only an ARAR if more than 1,320 gallons of oil are stored on-site during the action.	●	●	○	○
Management of military munitions	40 CFR 266, Subpart M	Describes when military munitions are exempt from being managed as solid or hazardous waste.	Not anticipated to be an ARAR, as munitions response actions generally require ex situ actions.	○	○	○	○

● Probable ARAR   ● Potential ARAR   ○ Not likely ARAR

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.

**TABLE 9. EXAMPLE FEDERAL ARARs FOR SEDIMENT AND MUNITIONS EX SITU TREATMENT**

ARAR	Location of Federal Citation*	Description	Comments	Dredging and Ex Situ Treatment						
				De-watering	Sediment Washing	On-site Disposal/ Consolidation*	Contained Aquatic Disposal	Stabilization/ Solidification	Vapor Extraction	Thermal Treatment
<b>Example Technologies</b>				<b>Geotube, Polymer Amendment</b>	<b>Surfactant or Cosolvent Washing</b>	<b>Installation Disposal Unit (On-site Landfill)</b>	<b>Underwater Landfill</b>	<b>Amendment, Injection, Mixing</b>	<b>Venting, Vacuum Extraction</b>	<b>Incineration, Open Burn/ Open Detonation, Pyrolysis, Desorption</b>
<b>Chemical-Specific</b>										
Federal Maximum Contaminant Levels	40 CFR 141	Sets maximum concentrations allowable for contaminants in sources of drinking water.	Only an ARAR if the action also addresses groundwater.	○	○	○	○	○	○	○
Discharge of Effluent (on-site discharge of CERCLA waste only)	40 CFR 122 and state regulations approved under 40 CFR 131; 40 CFR 125; 40 CFR 136;	Sets requirements for on-site discharges of treated wastewater to surface water.	This is an ARAR if the action requires compliance with surface water quality standards.	●	●	●	●	●	●	●
Land Disposal Restrictions	40 CFR 268	Establishes treatment concentrations that must be met prior to on-site disposal of hazardous wastes.	Would be an ARAR for all ex situ actions where wastes are treated ex situ and are subsequently disposed on-site.	●	●	●	●	●	●	●
Clean Air Act (CAA) emissions	40 CFR 50, 61	Establishes limits on the amounts of pollutants than can be discharged to the air from specified sources.	Not typically an ARAR as emissions from remediation systems are generally exempt from CAA regulations.	○	○	○	○	○	○	○
Emissions from hazardous waste processes	40 CFR 264; Subparts AA, BB, and CC	Establishes limits on the amounts of pollutants than can be discharged to the air from hazardous waste processes.	Only an ARAR if an emissions trigger the need for air pollution control.	●	●	●	●	●	●	●
<b>Location-Specific</b>										
Migratory Bird Treaty Act	16 USC 703	Protects almost all species of native birds in the United States from unregulated taking.	Almost always an ARAR because a migratory species is almost always present.	●	●	●	●	●	●	●
Coastal Zone Management Act	15 CFR 930	Federal activities must be consistent with, to the maximum extent practicable, state coastal zone management programs.	Only an ARAR if “actions will affect” the coastal zone, as defined by the state. Federal lands are excluded from the definition of “coastal zone.”	●	●	●	●	●	●	●
Disturbance of Wetlands (CWA)	40 CFR 230, 33 CFR 320	Provides specific requirements for mitigation when an action results in a permanent loss of wetlands. Prohibits certain activities in wetland areas.	Only an ARAR if there is a wetland on-site.	○	○	○	○	○	○	○
National Historic Preservation Act	16 USC 470	Requires protection of historical and cultural resources to the maximum extent practicable.	Only an ARAR if there are identified historical or cultural resources on-site.	●	●	●	●	●	●	●
Endangered Species Act	50 CFR 402	Requires protection of threatened and endangered species and habitat.	Only an ARAR if there are identified threatened or endangered species on-site. The federal government is not subject to state laws regarding threatened and endangered species; however, many times, DoD will voluntarily comply. Performing work in accordance with the INRMP at an active installation would constitute compliance.	○	○	○	○	○	○	○
<b>Action-Specific</b>										
Non-hazardous waste management (RCRA)	40 CFR 258	Provides standards for the management of non-hazardous wastes.	Almost always an ARAR for on-site waste management.	●	●	●	●	●	●	●
Hazardous waste management (RCRA)	40 CFR 264.171-175 or 40 CFR 262.34(a) incorporating 40 CFR 265.171-174 by reference	Provides standards for the management of hazardous wastes.	Only an ARAR when on-site hazardous waste management is anticipated.	○	○	○	○	○	○	○

\*Only broad federal citations are listed in the tables; ARAR citations should be listed more specifically for the particular action and site.



**TABLE 9. EXAMPLE FEDERAL ARARS FOR SEDIMENT AND MUNITIONS EX SITU TREATMENT (CONTINUED)**

ARAR	Location of Federal Citation*	Description	Comments	Dredging and Ex Situ Treatment						
				De-watering	Sediment Washing	On-site Disposal/ Consolidation*	Contained Aquatic Disposal	Stabilization/ Solidification	Vapor Extraction	Thermal Treatment
<b>Example Technologies</b>				<b>Geotube, Polymer Amendment</b>	<b>Surfactant or Cosolvent Washing</b>	<b>Installation Disposal Unit (On-site Landfill)</b>	<b>Underwater Landfill</b>	<b>Amendment, Injection, Mixing</b>	<b>Venting, Vacuum Extraction</b>	<b>Incineration, Open Burn/ Open Detonation, Pyrolysis, Desorption</b>
Closure criteria for unregulated dump (RCRA)	40 CFR 258, Subpart A	Indicates prohibited conditions for sites where disposal occurred prior to regulation.	This is an ARAR when waste disposal occurred on-site prior to waste regulation and dredged sediment was consolidated within this area.	○	○	●	○	○	○	○
Cap design criteria for non-hazardous waste landfill (RCRA)	40 CFR 258, Subpart F	Indicates performance standards for non-hazardous waste landfill caps.	Only an ARAR when non-hazardous waste disposal occurred on-site after waste regulation (varies per state).	○	○	●	○	○	○	○
Cap design criteria for hazardous waste landfill (RCRA)	40 CFR 264.117(c), 228(a) and (b), 310(a) and (b)	Indicates performance standards for hazardous waste landfill caps.	Only an ARAR when hazardous waste disposal occurred on-site after waste regulation (varies per state).	○	○	●	○	○	○	○
Discharge of dredge and fill to waters of the United States (CWA)	33 CFR 320 - 330	Indicates prohibitions on dredge and fill of waters of the United States, including wetlands.	This is an action-specific ARAR If wetlands/waters of the United States are disturbed on-site by the action.	●	●	●	●	●	●	●
Management of an on-site water treatment plant (CWA/SDWA)	40 CFR 125	Requirements for the management of a water treatment plant.	This may be an ARAR if an on-site water treatment system is needed to implement the action.	●	●	●	○	●	●	●
Treatment of hazardous waste (RCRA)	40 CFR 264	Requirements and performance standards for treating and storing hazardous wastes in on-site units.	May be an ARAR for treatment facilities that are constructed on-site.	●	●	●	○	●	●	●
Land disposal restrictions (RCRA)	40 CFR 268	Specifies treatment standards and technologies for specific hazardous wastes. This is only an ARAR if hazardous wastes will undergo on-site treatment.	This is an ARAR for all ex situ actions where wastes are treated ex situ and are subsequently disposed on-site.	●	●	●	○	●	●	●
Underground Injection Control (CWA)	40 CFR 144, 146, and 147	Regulates the subsurface emplacement of fluids (including air) with standards for the design and operation of five classes of injection wells.	Not anticipated to be an ARAR for ex situ actions.	○	○	○	○	○	○	○
PCB waste management (TSCA)	40 CFR 761	Regulates the management and disposal of PCB-contaminated articles and remediation wastes.	CERCLA actions are not subject to the remediation requirements of TSCA, although the standards may be integrated at the discretion of the lead agent.	●	●	●	○	●	●	●
Asbestos	40 CFR 61, Subpart M	Regulates the management and disposal of asbestos or asbestos-containing material.	Only an ARAR if friable asbestos is present on-site. Although not applicable to CERCLA sites, requirements in these sections may be relevant and appropriate to Superfund cleanup activities when they are sufficiently similar to the site situation and appropriate to the circumstances of the release.	●	●	●	○	●	●	●
Fugitive Dust Emissions	40 CFR 63	Regulates the generation of fugitive dust emissions during any on-site activity (i.e., not limited to specific sources).	Typically an ARAR as sediment will likely be disturbed as part of an ex situ action and dust control is generally required.	●	○	●	○	●	●	●
Erosion and Sediment Control (NPDES program)	40 CFR 122	Regulates point-source discharges of stormwater pollutants to surface water.	Likely an ARAR when sediment is disturbed, resulting in potential erosion.	●	●	●	○	●	●	●
Oil Storage (SPCC)	40 CFR 112	Regulates the on-site management of petroleum and non-petroleum oils.	Only an ARAR if more than 1,320 gallons of oil are stored on-site during the action.	●	●	●	●	●	●	●
Management of military munitions	40 CFR 266, Subpart M	Describes when military munitions are exempt from being managed as solid or hazardous waste.	Only an ARAR for management of unused military munitions that have been disposed of, or fired/used military munitions that have been removed from a range. There are generally no ARARs for demilitarization.	●	●	●	○	●	●	●

● Probable ARAR   ● Potential ARAR   ○ Not likely ARAR

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