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FINAL REPORT:

**GREEN REMEDIATION AT FEDERAL
FACILITY CLEANUPS**

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ASTSWMO's mission is to enhance and promote effective State and Territorial programs for waste and materials management, to encourage environmentally sustainable practices and to affect relevant national waste and materials management policies.

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The Association of State and Territorial Solid Waste Management Officials (ASTSWMO) is an organization supporting the environmental agencies of the States and Territories (States). ASTSWMO's mission is to enhance and promote effective State and Territorial programs for waste and materials management, to encourage environmentally sustainable practices and to affect relevant national waste and materials management policies. This document was prepared by the ASTSWMO Federal Facilities Research Center's Remediation and Reuse Focus Group. The mission of the Focus Group is to identify and investigate issues arising from the remediation, reuse, and long term management of federal facilities. This includes researching and developing resource documents, issue papers, and other tools on the implementation of alternative or innovative remediation policies and strategies; site closeout and transfer; reuse and redevelopment of federal facilities; and long term stewardship. ASTSWMO thanks the following Focus Group members for their participation in the development of this report:

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1.0 INTRODUCTION

The Association of State and Territorial Solid Waste Management Officials (ASTSWMO) Federal Facilities Research Center's Remediation and Reuse Focus Group developed this document to assist State and Territories (hereafter referred to collectively as States) in incorporating green remediation into the site cleanup and management efforts under federal cleanup programs. Green remediation reduces the overall environmental footprint of characterization and cleanup activities. Due to the large number of Federal and State agencies, contractors, and other parties involved in the cleanup programs, there is a wide range of policies, guidance and perspectives on just what green remediation is and how it should be implemented.

Green remediation concepts can be incorporated throughout the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) cleanup process. These concepts have thus far been included in the site characterization process and incorporated into the design and implementation of the selected remedy. Remedies should be chosen based on the nine criteria in the National Contingency Plan (NCP) and other regulatory criteria; however there may be opportunities to assess the environmental footprint within the nine criteria analysis.

Adopting appropriate strategies to minimize adverse environmental impacts associated with site cleanup efforts while ensuring protection of human health and the environment is logical and should benefit everyone. However, agreeing on how and when to incorporate green remediation concepts is a challenge, especially during the course of federal facilities cleanups. Presently there is no consensus regarding when to factor green remediation into the remediation process. For example, in some cases, responsible parties or contractors have argued that no action is the preferred remedy based on a carbon footprint evaluation even though it would not meet regulatory requirements. In other cases, monitored natural attenuation (MNA) has been identified as the preferred alternative because it is "greener" than active cleanup even though it may not have ranked as the best alternative under the nine criteria in the NCP. Both examples represent a misuse of green remediation.

Overall, it makes sense to consider how work can be done in ways to minimize the overall environmental footprint. With the long term nature of some cleanups, it may also make sense to integrate green remediation concepts into long term site management, including remedy reviews and optimization, and future land use decisions. Common understandings, good communication, and working together effectively are essential to successfully incorporating green remediation into our collective goal of addressing contaminated federal sites.

This report provides current policies and strategies implemented by federal agencies that may impact federal facilities cleanups, and compiles definitions, policies, guidance, and implementation strategies from various agencies. It is important to note that this paper focuses strictly on issues that State managers overseeing CERCLA federal facility cleanups may

encounter, and perspectives and opinions may differ from those of managers overseeing other cleanup programs. As a result, the report touches mainly on how federal agencies and federal cleanup programs are implementing green remediation into remedy selection, remedy implementation, operations and maintenance (O&M), and remedy optimization.

For additional information on incorporating green remediation strategies into other components of the CERCLA cleanup process and other State cleanup programs, the Focus Group recommends visiting the ASTSWMO Greener Cleanups Information Resources webpage at http://astswmo.org/resources_sustainability_greenercleanups.html.

2.0 GREEN REMEDIATION OVERVIEW

Green remediation is a relatively new concept in the world of CERCLA remediation. As such, it currently lacks a standard definition. At this stage in its evolution, green remediation is a topic that has been defined in varying ways by a range of stakeholders, industry representatives, government, and other involved parties. Examples of green remediation definitions include:

- “Consideration of sustainability principles in all phases of remediation in order to maximize the net environmental benefit of a cleanup” (ASTSWMO Greener Cleanups Task Force).
- “The practice of considering all environmental effects of remedy implementation and incorporating options to minimize the environmental footprints of cleanup actions” (U.S. Environmental Protection Agency (EPA)).
- “The application of technologies and approaches that enhance a cleanup project’s environmental, social, and economic footprints. It is a holistic approach that incorporates sustainability concepts and life-cycle thinking over a broad scope and time horizon” (California Department of Toxic Substances Control).
- “A remedy or combination of remedies whose net benefit on human health and the environment is maximized through the judicious use of limited resources” (Sustainable Remediation Forum).
- “‘Green and sustainable remediation’ expands upon the Department’s current environmental practices and employs strategies for cleanups that use natural resources and energy efficiently, reduce negative impacts on the environment, minimize or eliminate pollution at its source, protect and benefit the community at large, and reduce waste to the greatest extent possible. Green and sustainable remediation uses strategies that consider all environmental effects of remedy implementation and operation and incorporates options to maximize the overall environmental benefit of cleanup actions (Department of Defense (DoD)).

In concept, green remediation is discussed as a framework for minimizing the environmental footprint during the course of any given remediation project. Currently there seems to be varying interpretations between practitioners regarding how to define the concept overall, especially between parties involved with federal facilities cleanups. The crux of the issue at these cleanups pertains to whether or not the concept “green remediation” should extend to affect all phases of CERCLA remediation (site investigation, remedy selection, remedy implementation, operations and maintenance, and remedy optimization).

U.S. EPA’s September 2010 Superfund Green Remediation Strategy states that green remediation “comprises a range of best practices that may be applied throughout the Superfund cleanup process, beginning with site assessment and investigation and extending through remedy operations.” U.S. EPA is currently developing guidance to address how green

remediation can be used and be consistent with CERCLA requirements and NCP provisions. The Strategy Document adds that “green remediation is viewed as a means to enhance remedy protectiveness, not as a disincentive to active remediation processes or an approach that reduces remedy protectiveness.” DoD’s policy on considering green remediation focuses on remedy implementation and long-term O&M, and adds that opportunities may arise where green remediation can be incorporated in all phases of remediation. As discussed later in Section 4.0, each service has its own policy and implementation for incorporating green remediation into the remedial process.

When applied after remedy selection, green remediation provides for the opportunity to design remedies such that they have a smaller environmental footprint. For example, anti-idling strategies, or clean diesel technologies (particulate traps, filters, etc.) could be required for diesel engines on the heavy equipment used for the physical construction work. Ecological timing or construction projects/mitigation strategies may be employed so as to create minimum disturbance of ecological services/animal habitat during breeding season. Remedial action and optimization of long-term O&M at CERCLA sites is another aspect of green remediation. As an example, the majority of groundwater plumes associated with federal facilities are extensive and will require long-term O&M in order to clean up an existing plume or to contain any further groundwater contamination from a source that has been left in place. Long term costs and the carbon footprint associated with long-term O&M of these systems can sometimes be staggering. Renewable energy generation can go a long way toward mitigating these costs while reducing many tons of carbon emissions. Many of these green remediation projects are implemented on existing sites that have been in O&M for awhile and there is a need to evaluate the energy demands of running those systems indefinitely.

At this time, green remediation in *practice* at federal facilities has primarily been applied to achieve cost and energy savings at currently operating remedies and/or CERCLA cleanups entering long-term operations and maintenance phases. To date, the green remediation concept has been employed in few cases as a weighted decision-making factor in the actual selection of any given CERCLA remedy at federal facilities. Among State federal facilities managers associated with regulatory agencies there has been some discomfort with the concept of employing green remediation as a weighting factor in remedy selection as there is a belief that the energy expenditures involved in a ‘no action’ selection may lead to fewer active site cleanups.

3.0 FEDERAL GREEN REMEDIATION POLICIES

Executive Order (EO) 13423, “Strengthening Federal Environment, Energy, and Transportation Management”, dated January 24, 2007, and codified into law February 17, 2009 (2009 Omnibus Appropriations Act), mandates all federal agencies to operate in an environmentally sound and sustainable manner. This EO establishes goals for all agencies to improve energy efficiency, reduce greenhouse gas emissions, utilize renewable energy sources, reduce water consumption, employ sustainable procurement practices, reduce use of hazardous chemicals, employ sustainable building construction and renovation practices, reduce petroleum consumption, improve energy efficiency of electronic components and dispose of electronics in an environmentally sound manner. Oversight and coordination of this EO will be provided by the Council on Environmental Quality, Office of Management and Budget and the Environmental Protection Agency.¹

EO 13514, “Federal Leadership in Environmental, Energy, and Economic Performance,” dated October 8, 2009, supplements EO 13423. It sets goals for energy efficiency, waste reduction, water use efficiency, greenhouse gas reduction by increasing renewable energy use, reducing the use of fossil fuels, using water efficient products, preventing pollution, recycling, building “green” and sustainable buildings, and incorporating green clauses into contracts.

Federal agencies have developed several policies and initiatives for implementation of these EOs within their agency, as shown in the table below.

¹ <http://www.epa.gov/oaintrnt/practices/eo13423.htm>

FEDERAL GOVERNMENT POLICIES AND INITIATIVES ON GREEN REMEDIATION AND RELATED TOPICS

Federal Agency	Policy Document	Description of Policy
U.S. Environmental Protection Agency (EPA)	<u>Superfund Green Remediation Strategy</u> , September 2010	<p>The <i>Superfund Green Remediation Strategy</i> is a program management tool designed to describe current plans of the Superfund Remedial Program to reduce greenhouse gas emissions and other negative environmental effects that might occur during site assessment and remediation or non-time critical removal actions. The strategy document outlines 9 recommended “key” actions and 40 specific action items, each falling within three overarching categories: policy and guidance development; resource development and program implementation; and program evaluation.</p>
	<u>Principles of Greener Cleanups</u> , Dated August 27, 2009	<p>The <i>Principles of Greener Cleanups</i>, provides U.S. EPA Office of Solid Waste and Emergency Response (OSWER) managers with principles and recommendations for reducing the environmental footprint of cleanup activities in a manner consistent with U.S. EPA statutes and regulations. According to the document, cleanup managers should consider these Principles or elements during all phases of cleanup work: total energy use and renewable energy use; air pollutants and greenhouse gas emissions; water use and impacts to water resources; materials management and waste reduction; and land management and ecosystems protection.</p>
Department of Defense (DoD)	Memorandum “Consideration of Green and Sustainable Remediation Practices in the Defense Environmental Restoration Program,” from Deputy Undersecretary of Defense for Installation and Environment Dorothy Robyn, dated August 10, 2009	<p>This DoD policy defines “Green and Sustainable Remediation” as:</p> <ul style="list-style-type: none"> • Using natural resources and energy efficiently, reducing negative impacts on the environment, minimizing or eliminating pollution at its source, protecting and benefiting the community at large, and reducing waste to the greatest extent possible. • Strategies that consider all environmental effects of remedy implementation and operation • A remediation approach intended to maximize the overall environmental benefit of cleanup actions <p>The policy does not require components to reopen existing Records of Decision (RODs) or</p>

Federal Agency	Policy Document	Description of Policy
		<p>other cleanup decision documents. Previous remedy selection criteria will continue to be used, but sustainability considerations are to be incorporated into the cost effectiveness, long-term effectiveness, reuse, and community acceptance criteria.</p> <p>The memorandum established that DoD components prepare progress briefings for the Office of the Secretary of Defense in December 2009 and June 2010.</p>
DoD – Air Force	None	The Air Force does not currently have a written policy specific to green remediation but follows DoD’s policy on green and sustainable remediation.
DoD - Army	Army Environmental Cleanup Strategic Plan, Fiscal Year 2010 - 2011	The Army Environmental Cleanup Strategic Plan for Fiscal Year 2010 – 2011 includes green remediation by incorporating best management practices that assist in reducing the demand placed on the environment during operation of the remedial action, and minimize the potential for collateral environmental damage.
DoD – Navy	Sustainable Environmental Restoration (SER), Dated August 2009	Naval Facilities Engineering Command’s (NAVFAC’s) Optimization Workgroup is taking the lead to engage Navy and Marine Corps Remedial Project Managers (RPMs) and Base Realignment and Closure (BRAC) Environmental Coordinators (BECs) in minimizing the environmental footprint of cleanups. The SER Factsheet summarizes key sustainability metrics for remediation sites and outlines methodologies for environmental footprint assessment and reduction. SER will be implemented by the Navy and considered in all phases of the cleanup process, including remedy selection, to complement current optimization approaches. The use of SER metrics in remedy selection and operations is expected to increase at Navy sites as a part of this initiative, which complements already ongoing efforts in remedial action optimization and long term management optimization.
Department of Energy (DOE)	DOE Order 450.1 Environmental Protection Program	DOE does not have an official policy on green remediation; however, it does have its own executive order in response to Executive Order (EO) 13423 which does not speak directly to green remediation but could indirectly support green remediation projects. This order requires DOE to establish Environmental Management Systems (EMSs) or to update EMSs to incorporate requirements set forth in EO 13423.

Federal Agency	Policy Document	Description of Policy
	Federal Register Volume 74, Number 48, Pages 10830 - 10836	In March 2009, DOE published a final rule to promote federal procurement of energy-efficient products. The rule establishes guidelines for federal agencies to purchase Energy Star qualified and Federal Energy Management Program (FEMP)-designated products when they purchase energy consuming products and systems.
Department of the Interior (DOI)	Memorandum from the Secretary of the Interior regarding EO 13423 , April 4, 2007	In the memorandum, the Secretary of the Interior reiterates the importance of complying with EO 13423.
	DOI Order 3285 , <i>Renewable Energy Development</i> , March 11, 2009	This Order issued by the Secretary of the Interior establishes the development of renewable energy as a priority, establishes a task force on renewable energy and global climate change, and amends and clarifies the DOI's roles in accomplishing the goals of the Order.
National Aeronautics and Space Administration (NASA)	Green Initiatives , March 2009	Green Initiatives is a fact sheet that details NASA's efforts in researching and implementing "ways to produce and use renewable energy, conserve energy and water, and utilize environmental friendly materials." The driver of these initiatives, which include green remediation (using renewable energy to power remediation systems), is EO 13423. In complying with EO 13423, NASA has developed contract language that includes an "innovative incentive clause" to encourage the use of alternative energy sources and to explore the use of energy efficiencies and to encourage the purchase of green goods and services.

Federal Agency	Policy Document	Description of Policy
Department of Agriculture (USDA)	Secretary's Memorandum (SM) 5500-002 , Implementing Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management, September 17, 2007	<p>USDA's Secretary issued SM 5500-002 – Implementing Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management, which created the USDA Sustainable Operations Council. The Council is tasked with reducing USDA's environmental footprint by developing new policies and procedures that will insure it conducts activities in an environmentally, fiscally sound, and sustainable manner in accordance with EO 13423.</p> <p>The USDA Sustainable Operations Work Groups identify, analyze, and propose policies and practices that allow USDA to meet the goals of EO 13423 and accomplish the Secretary's objective of operating the Department in a sustainable manner.</p>
Department of Homeland Security - U.S. Coast Guard (USCG)	None	<p>According to the USCG Elizabeth City Support Center, sustainable remediation practices are those that include at least some of the following criteria, consistent with U.S. EPA green remediation initiatives:</p> <ul style="list-style-type: none"> • Improvements to soil, water, sediment, and/or air quality; • Improvements in energy efficiency (e.g., water and electric consumption) as compared to previous remedial systems and/or prior strategies; • Minimize wastes and/or byproducts; • Reduce emissions of air pollutants and greenhouse gases; and • Don't result in eventual transfer of contaminants to other environmental media.

4.0 FEDERAL AGENCIES IMPLEMENTATION OF GREEN REMEDIATION

It is important that States become familiar with the multitude of policies, strategies, tools and implementation plans federal agencies have developed specific to implementing green remediation at federal facilities. This section provides information on these items for U.S. EPA, DoD and DoD Components. State guidance, policies and tools can be located on the ASTSWMO Greener Cleanups Information Page at:

http://astswmo.org/resources_sustainability_greenercleanups.html

4.1 U.S. EPA Implementation

U.S. EPA has developed several guidance documents, implementation tools and supplemental policies specific to green remediation and consistent with its Green Remediation Strategy. The U.S. EPA CLU-IN website [<http://www.clu-in.org/greenremediation/>] houses a Green Remediation Focus webpage that contains many of these resources, including:

- U.S. EPA Headquarter and Regional Policies and Strategies
- Green Remediation Best Management Practices
- Green Remediation Technology Guides and Updates
- Green Remediation Case Studies

For the most part, U.S. EPA Regional policies and implementation plans mirror U.S. EPA OSWER's Green Remediation Strategy and Principles of Greener Cleanups. As previously stated, U.S. EPA's strategy indicates that green remediation concepts may be applied throughout all phases of the Superfund process to enhance remedy protectiveness without deterring active remediation or reducing protectiveness. It is important and this Focus Group recommends that States review the policies specific to its U.S. EPA Region as in some cases their Regional policy may require additional reporting requirements, assessments, performance measures and technologies that could affect traditional remediation practices.

4.2 Department of Defense Implementation

Each DoD Component implements green remediation activities differently and has developed specific strategies, guidance, and tools to assist their project managers and contractors. It is important that State federal facilities managers are familiar with these products. This section provides brief summaries of important implementation strategies and tools for the Army, Air Force and Navy. Summaries on the green remediation programs for each component are provided in May 2010 briefings to the Society of American Military Engineers and the May 2010 Federal Remediation Technologies Roundtable meeting summary:

- www.same.org/files/public/JETC2010-Session3-Track5.pdf
- http://www.frtr.gov/pdf/meetings/may10/SP_2010_FRTR_Mtg_Summary.pdf

4.2.1 U.S. Air Force Implementation

In implementing green remediation during restoration, the Air Force focuses on minimizing energy use, air emissions, water use, impacts on land and water resources, waste generation and material consumption, and impacts from long-term stewardship. The Air Force implements green remediation mainly through its remedy optimization process (i.e., environmental remedial process optimization, long-term monitoring optimization and groundwater monitoring), and is beginning to evaluate green remediation in its remedy selection criteria. The Air Force objective is to incorporate green remediation technologies as part of a “holistic approach to optimize cleanup.”

The Air Force has for several years promoted and researched treatment technologies that it now considers green and sustainable. These include monitored natural attenuation (MNA), enhanced in situ bioremediation, phytoremediation, bioslurping and bioventing. The Air Force has also developed a number of tools to assist in designing green remedies. These include:

- **Sustainable Remediation Tool (SRT)**: An optimization tool for green remediation technology selection used in future planning and optimization. The tool provides a “lifetime sustainability assessment” and provides metrics for eight specific technologies.
- **Performance Tracking Tool (PTT)**: A tracking tool to “analyze performance sustainability of existing remediation systems.” The tool works in conjunction with the SRT and tracks cost performance of green technologies.
- **Renewable Energy Tool**: Currently under development, the product will serve as a decision and design tool for the Air Force and contractors. The tool will work in conjunction with the SRT and help to determine if remediation systems can be powered by alternative energy sources.

To access the resources and tools listed above and to review Air Force case studies on incorporating green and sustainable remediation during existing cleanup sites, visit the Air Force Center for Engineering and the Environment (AFCEE) Sustainable Remediation Website at:

<http://www.afcee.af.mil/resources/technologytransfer/programsandinitiatives/sustainableremediation/index.asp>

4.2.2 U.S. Army Implementation

U.S. Army

The U.S. Army is currently researching and testing green remediation tools and technologies, and has conducted pilot studies at Army Base Realignment and Closure (BRAC) and Active sites and with other federal agencies. At these sites, the most widely used green and sustainable

remedies by the Army were natural attenuation, bioremediation, in-situ soil and groundwater treatment.

In the future, the Army will be incorporating green remediation guidance into the Army Defense Environmental Restoration Program (DERP) Manual. It will continue to conduct pilot studies to evaluate on-going green remedies and the applicability of using the U.S. Army Corps of Engineers (USACE) Decision Framework (discussed below). The Army will also develop a comprehensive website and educational products that will include training and other resources.

U.S. Army Corps of Engineers

In 1995, USACE created a systematic framework for use in optimization of ongoing remedial actions at its sites. Under the framework called “Remediation System Evaluation” (or RSE), an independent group of experts evaluates each remediation system and the site exit strategy for its ability to meet remediation goals. The group then makes recommendations on the basis of the remedy’s protectiveness, cost-effectiveness, technical viability or need for improvements, and long-term sustainability.

In March 2010, the Army published the *Decision Framework for Incorporation of Sustainability into Army Environmental Remediation*, which applies to Formerly Used Defense Sites (FUDS). In addition to documenting several existing federal regulations, policies and decision processes, it provides the USACE with guidelines documenting how green remediation can be incorporated into the entire FUDS cleanup process, including remedy selection, best management practices and contractual language for performance-based contracts. The Decision Framework is available at: http://www.environmental.usace.army.mil/pdf/IG%2010-01%2003_05_10%20doc.pdf

USACE recommends the Air Force SRT and Navy SiteWise Sustainable Environmental Remediation (SER) tool (discussed below) for green remediation.

4.2.3 U.S. Navy Implementation

The Navy believes the most “effective stage” to apply green remediation is during remedy selection and implementation of exit strategies. It is currently implementing green remediation as part of its optimization program and recommends evaluating green remedies during optimization reviews. The Navy also recommends considering green remediation throughout the entire cleanup process and when developing performance objectives.

Several Navy sites have already implemented passive, low-impact remediation technologies such as MNA, passive biowalls, phytoremediation, and more. Soil excavation has been optimized at several Navy sites through the use of retrofitted equipment, clean and ultra-low sulfur diesel technologies, and rail transportation of excavated contaminated soils. The Navy Optimization Workgroup is currently developing sustainability metrics, evaluating sustainability calculators/tools at Navy sites, and working to increase awareness of these concepts among the

Navy and Marine Corps Environmental Restoration community. It also strongly recommends the use of SiteWise, which is described below.

The Navy has developed the SiteWise SER tool for green remediation. The SiteWise tool was developed jointly by USACE, Navy and Battelle and assesses the environmental footprint of alternative technologies using sustainability metrics. According to its objectives, SiteWise should be used during remedy selection to identify the aspects of a particular remedy that cause the greatest footprint so that users can “focus on footprint reduction methods on those aspects of the remedy that can have the greatest impact.”

In May 2010, the Navy launched the Green and Sustainable Remediation Portal, which contains several resources and tools from DoD and other agencies and organizations specific to green remediation, including its SiteWise SER tool. In the future, the Navy plans to conduct several training modules, draft new green remediation guidance, and will develop additional case studies documenting lessons learned.

The Remediation and Reuse Focus Group recommends visiting the Green and Sustainable Remediation Portal at <http://www.ert2.org/t2gsrportal/default.aspx> for additional information on Navy and DoD implementation.

5.0 SUMMARIES AND RECOMMENDATIONS

In response to federal executive orders, a wide range of green remediation policies, guidance and tools have evolved over the past few years. This rapid development of green remediation concepts has led to a renewed focus on how to implement environmental cleanups in ways that will provide the most overall environmental benefit. However, it has also led to confusion over how to incorporate these concepts into cleanup programs in a manner that provides compliance with applicable laws and regulations, ensures protection of human health and the environment and mitigates the adverse affects of pollution. It is important that environmental managers be familiar with the various federal and State agencies policies and guidance.

To State federal facilities managers, concern remains that some responsible parties or their contractors have been or will inappropriately attempt to use green remediation principles as a rationale to support no-further-action or limited remedial action. The Remediation and Reuse Focus Group suggests that additional guidance and training on the implementation of specific State and Federal green remediation principles and tools at federal facilities would help alleviate this concern. The Focus Group also recommends that further EPA guidance be developed in the near future on how green remediation concepts should be considered during feasibility studies and the CERCLA remedy selection process.

APPENDIX A: ACRONYMS

AFCEE	Air Force Center for Environmental Excellence
ASTSWMO	Association of State and Territorial Solid Waste Management Officials
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DOE	Department of Energy
DOI	Department of Interior
EO	Executive Order
EPA	Environmental Protection Agency
FEMP	Federal Energy Management Program
FUDS	Formerly Used Defense Sites
MNA	monitored natural attenuation
NASA	National Aeronautics and Space Administration
NCP	National Contingency Plan
OSWER	Office of Solid Waste and Emergency Response
PTT	Performance Tracking Tool
RSE	Remediation System Evaluation
SER	Sustainable Environmental Remediation
SRT	Sustainable Remediation Tool
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture