

# Greener Cleanups

## Contracting and Administrative Toolkit



**U.S. Environmental Protection Agency**  
**Office of Solid Waste and Emergency Response**  
**Office of Superfund Remediation and Technology Innovation**



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## Part 1: Overview

The U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation (OSRTI) offers the **Green Response and Remedial Action Contracting and Administrative Toolkit** to EPA remedial project managers (RPMs), on-scene coordinators (OSCs), and procurement offices to help prepare contracts and administrative documents that foster strategies for green response actions and long-term remediation at contaminated sites. The Toolkit:

- Identifies opportunities throughout the contract placement and execution process to incorporate requirements or preferences regarding green cleanup strategies
- Illustrates pertinent language that is already integrated in some contracts, task orders, and work plans or which could be specified in statements of work (SOWs) of future contracting mechanisms
- Highlights language of cleanup administrative documents or specifications in related material issued by EPA or other organizations
- Provides supplemental information such as financing methods, incentives, and key points of contact

Toolkit elements can be adapted to contract or administrative mechanisms used for purposes such as the:

- Emergency and Rapid Response Services (ERRS)
- Environmental Services Assistance Team (ESAT)
- RCRA Enforcement, Permitting, and Assistance (REPA)
- Remedial action contract (RAC)
- Regional oversight contract (ROC)
- Superfund Technical Assessment and Response Team (START)

**Green Remediation:** the practice of considering all environmental effects of remedy implementation and incorporating options to minimize the environmental footprints of cleanup actions

ERRS and START contracts, for example, provide significant opportunities for “greening” strategies that can be initiated during early response actions and carried forward to remedial actions. Approximately 50 major firms currently conduct cleanup activities under these contracts, and approximately half of the total ERRS response work is followed by related work under START contracts.

Specifications regarding green response and remedial actions can be integrated into a range of procurement mechanisms and many primary or secondary administrative documents.

Procurement and Tracking Materials	Administrative Documents
Requests for proposals	Records of decision
Award fee contracts	Consent decrees
Performance based contracts	Administrative orders
Task orders and work assignments	Remedial investigations/feasibility studies
Work plans	Remedial designs (and remedy review board submissions)
Quality assurance plans	Five-year reviews (at project manager discretion)
Site management plans	Interagency agreements
Contractor monthly progress reports	Memoranda of understanding
Brownfields site assessment and job training grants	Federal facility agreements

Greener response and remedial actions involve upfront planning and continuous collaboration among project managers, contract/project officers, and other stakeholders. Early integration of green objectives and criteria into contracts and administrative documents increases the likelihood that best management practices of green remediation will be used throughout a project life. An integrated, “whole-site” approach offers more opportunities for project managers to exchange site-specific information, potentially share infrastructures and innovative technologies, and refine green strategies as a cleanup project moves through the pipeline. Sustainable site re-use options also gain from green remediation (GR) provisions established in early contracts and administrative documents.

*What do we gain from integrated planning?*

Conventional Design Process	Integrated Design Process
Involves team members only when essential	Inclusive from the outset
Less time, energy, and collaboration exhibited in early stages	Front-loaded time and energy invested early
More decisions made by fewer people	Decisions influenced by broad team
Linear process	Iterative process
Systems often considered in isolation	Whole-systems thinking
Limited or constrained optimization	Allows for full optimization
Diminished opportunity for synergies	Maximizes synergies
Emphasis on up-front costs	Life-cycle costing
Typically finished when construction is complete	Process continues through reuse
Higher potential for cost overruns, delays, and change orders	Change orders are minimized due to early planning/iterative process

*Removing Market Barriers to Green Development* (December 2008, EPA Region 5 sponsorship )  
[http://www.deltainstitute.org/marketbarriers/documents/Market\\_Barriers\\_GreenDev-v1-Dec2008.pdf](http://www.deltainstitute.org/marketbarriers/documents/Market_Barriers_GreenDev-v1-Dec2008.pdf)

Planning processes, sample language, and resources provided throughout the Toolkit represent strategic approaches and tools used in EPA’s Office of Solid Waste (OSWER) and regional program offices as well as interagency initiatives. For example, OSRTI’s Technology Innovation Program currently engages in six internal focus groups and three interagency initiatives working to improve environmental outcomes of site cleanups.

**Technology Innovation Program Green Remediation Effort**

- Superfund GR Workgroup and Regional GR Coordinators
- Technical Support Project (TSP) Engineering Forum GR Subcommittee
- Green Remediation, Revitalization, and Reuse (GRRR) Team
- Climate Change Dialogue
- Green Cleanup Standards Initiative
- Re-Powering America’s Land Initiative
- ASTSWMO Greener Cleanups Task Force
- ITRC Green and Sustainable Remediation (GSR) Project
- Federal Remediation Technologies Roundtable (FRTR) Sustainability Committee

*Green remediation strategies offer the potential for reducing the environmental and human health impacts of a cleanup, potentially saving project costs, and expanding opportunities to return sites to productive use **without compromising cleanup goals.***

OSRTI encourages input from regions and program offices on evolving opportunities, other sample language, or alternate mechanisms that help reduce the environmental footprint of remedies while continuing to meet remedial objectives. Frequent updates to the Toolkit are anticipated as new information becomes available; all updates will be announced on OSRTI's green remediation website. To obtain more information or share new developments, contact:

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For more information, visit OSRTI's *Green Remediation Focus* website at [www.cluin.org/greenremediation](http://www.cluin.org/greenremediation) to learn more about:

- Best management practices and core elements of green remediation
- Profiles of sites where innovative green strategies have been used
- Decision making tools to help estimate potential "footprints" of a cleanup
- Related documents compiled by EPA and other agencies or organizations
- Updates on a national standard for green cleanups
- Options for submitting general inquiries or requesting technical assistance

*OSRTI appreciates the many Toolkit contributions from representatives of EPA headquarters and regional offices, other federal agencies, and states:*

Barbara McDonough, Joe Rauscher (OSRTI), Art Wing (Region 1), Deborah Butler, Nicoletta Di Forte, Kristin Giacalone, Fernando Rosado (Region 2),  
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**Cover photos** (left to right from top):

*Wind turbine compressor for oil hydrocarbon skimming during removal actions at Former St. Croix Alumina Plant, St. Croix, VI*

*Recovery along Upper Arkansas River near Leadville, CO, ten years after amending soil with municipal biosolids*

*Gravity irrigation system for phytoremediation during removal actions at fruit orchard near Crozet, VA*

*Microturbines converting landfill gas to electricity for onsite use including remedial systems at Operating Industries, Inc. Landfill in Monterey Park, CA*

*Gradient-driven constructed wetlands and solar-powered ground water recirculation at Apache Powder NPL site near Benson, AZ*

*Annual fishing derby helping to assess environmental improvements after multi-media treatment of adjacent Re-Solve, Inc. NPL site near North Dartmouth, MA*

*Solar energy system on rooftop of ground water treatment building at Frontier Fertilizer NPL site in Davis, CA*

*Contained waste left in place forming base for a high altitude recreational trail in mining country of Lake County, CO*

## Part 2: General Approach for Integrating Green Specifications into Contracts

EPA procurement personnel such as contracting officers, project officers, task order project officers, and contracting officer representatives can work with OSCs and RPMs throughout the contract placement and execution processes to incorporate green project strategies. Upfront specification of green criteria provides: a means for contracted organizations to quickly implement suitable and consistent operating procedures; a structure for regional tracking of improved environmental outcomes achieved by green cleanup strategies; and a mechanism for continuous improvements to national cleanup programs.

Stage of Contract Development		Contract Development, Implementation, or Evaluation Activity
Pre-Award Activities	Planning the Procurement	<ul style="list-style-type: none"> <li>▪ Assemble a group of RPMs, project officers, and contracting officers a year before a request for proposals (RFP) is issued to discuss how to craft a contract that encourages green response actions. Consider brainstorming discussions with states and other agencies such as the U.S. Army Corps of Engineers (USACE), Bureau of Land Management, Department of Transportation, and Department of Interior.</li> <li>▪ Use this team as an advisory group for all pre-award activities [listed below].</li> <li>▪ Review contracts issued by other agencies to identify potential contract structures and language.</li> <li>▪ Prepare new SOW language that recommends or requires best management practices (BMPs) and innovative technologies to be used in various stages of response/remedial activities, including a removal action, remedial investigation/feasibility study (RI/FS), remedial design (RD), remedial assessment (RA), long-term remedial actions, and operations and maintenance (O&amp;M). SOW language may be incorporated at the contract level or task order/work assignment (TO/WA) level.</li> </ul>
	Establishing the Contract Type	<ul style="list-style-type: none"> <li>▪ Consider performance-based (PB) contracts to provide positive (or negative) incentives while enabling the contractor to decide on an approach. Structure incentives that focus on the use of BMPs and provide clear objectives and metrics for outcomes. Consider use of award fee contracts if regional resources are available.</li> <li>▪ Structure multiple, competitive award fee contracts that can generate a higher technical score at WA levels and improved outcomes.</li> <li>▪ Build flexibility into contracts to allow use of different types of TOs, WAs, or delivery orders (DOs). Wherever possible, structure contracts to allow for a WA/TO-specific monetary bonus or award term to seek and implement green approaches.</li> <li>▪ Consider site-specific contracts if such vehicles enable and incentivize innovative approaches. When a PB contract is infeasible due to design considerations, a combination of full-service contracts may be considered to ensure a green approach.</li> </ul>
	Writing the Contract SOW	<ul style="list-style-type: none"> <li>▪ Clearly establish SOW requirements for the contractor to consider or utilize green approaches.</li> <li>▪ Using the work breakdown structure (WBS), identify and specify any greening opportunities within each SOW task (and/or each TO/WA).</li> <li>▪ Provide an attachment describing potential BMPs or innovative technologies to meet the green objectives.</li> </ul>

	<b>Establishing Contract Terms and Conditions</b>	<ul style="list-style-type: none"> <li>▪ Consider ways to lighten the administrative burden (with specific limitations) on contractors using green approaches and objectives, such as providing contractors with brief but concise structures for monthly or annual reports.</li> <li>▪ Relieve contractors from legal liability, if possible and in consultation with the Office of General Counsel, when using a new, untested technology that may offer greater environmental benefits than those generated by conventional technologies.</li> <li>▪ Establish standard reporting requirements for each innovative strategy that is proposed, and include requirements for evaluating success of each new strategy.</li> <li>▪ In award term options, link the contractor’s willingness to use green strategies with future exercising of optional periods of performance or with increased levels of effort.</li> </ul>	
	<b>Developing Evaluation Criteria and Selecting Contractors</b>	<ul style="list-style-type: none"> <li>▪ Request that technical proposals include approaches for evaluating and using green strategies, and provide corresponding evaluation criteria. Assign higher scores to contractors with demonstrated experience in sustainability issues and willingness to pursue green approaches. Base a selection, in part, on the offeror’s corporate commitment to environmental sustainability (including use of environmental management systems such as ISO 14000). Consider potentially higher short-term costs and lower long-term costs that may impact the project as a result of the criteria.</li> <li>▪ Require contractors to submit a completed “Section H SF 330” (architect-engineer qualifications statement) to describe accomplishments and results associated with use of alternative strategies.</li> <li>▪ To gather information about a contractor’s past performance, require specific references from officials with direct knowledge of the offeror’s experience in green approaches.</li> <li>▪ To assess each offeror’s ability to meet green criteria and demonstrate past performance, obtain advisory assistance from RPMs and other specialists serving on the technical expert panel during proposal evaluations.</li> </ul>	
<b>During Contract Performance</b>	<b>Writing a Work Assignment or Task Order</b>	<b>General</b>	<ul style="list-style-type: none"> <li>▪ Clearly establish a preference for contractors who consider or utilize green approaches. Request that a section in the contractor’s work plan demonstrate how the contractor will use green approaches during various project stages. Ensure potential subcontractors or organizations responsible for material recycling are thoroughly vetted to ensure suitable processing and destinations of materials.</li> <li>▪ Consider using the Removal Cost Management System (RCMS) and RCMS Form 1900-55s to track cost and other information supporting removal activities.</li> <li>▪ Use the WBS approach to identify SOW areas where green strategies are feasible, and develop specific language for each suitable task.</li> <li>▪ Request use of life cycle analysis (LCA) to evaluate potential approaches, where appropriate.</li> <li>▪ Be prepared to possibly modify the SOW once an approach is selected.</li> <li>▪ Develop specific monetary bonus/award terms to seek and implement green technologies, if sufficient flexibility is provided in the contract.</li> </ul>



		RI/FS	<ul style="list-style-type: none"> <li>▪ Draft a TO/WA to require use of comprehensive strategies that inherently meet the goals of green response/remedial actions, such as the Triad approach or treatment system optimization.</li> <li>▪ Suggest that remedy screening include sustainability factors such as energy and water consumption, greenhouse gas emissions, and waste generation.</li> <li>▪ Highlight sustainability as an additional factor within evaluation criteria for remedy selection.</li> <li>▪ Require LCA to include cost impacts of sustainability factors such as reduced energy consumption, waste reduction, increased durability, and reduced O&amp;M.</li> </ul>
		RD	<ul style="list-style-type: none"> <li>▪ Require and specify a desired green strategy in the project approach.</li> <li>▪ Include requirements for site reuse planning to ensure long-term protectiveness and sustainability.</li> </ul>
		O&M	<ul style="list-style-type: none"> <li>▪ After evaluating system/project performance and results, require a report on opportunities to include green strategies in any system redesign.</li> <li>▪ Amend a TO/WA, if necessary, when a green strategy would reduce time or cost or be more protective.</li> </ul>
	<b>Reviewing and Approving Work Plan</b>		<ul style="list-style-type: none"> <li>▪ Evaluate the proposed green approach, associated pros/cons, costs, scheduling, and potential contingencies, as specified in the work assignment and presented in the work plan.</li> <li>▪ Before approving a work plan, evaluate any tradeoffs with traditional approaches and ensure that the proposed approach does not compromise remedial objectives.</li> <li>▪ Negotiate with the contractor if the proposed approach is unacceptable due to insufficient environmental benefits, infeasible cost, impracticability, or potential compromising of remedial objectives.</li> <li>▪ Ensure that the final work plan thoroughly documents all agreements and understandings concerning green strategies.</li> </ul>
	<b>Evaluating Performance</b>		<ul style="list-style-type: none"> <li>▪ In any performance evaluations, recognize contractors who effectively use green response/remediation BMPs and innovative technologies. For example, a project office may develop a green category in the NIH Contractor Performance System that could enable a contractor to be placed in the higher scoring bracket if a performance rating falls on the border of two levels.</li> <li>▪ If a PB contract is employed, measure the contractor’s performance and apply any rewards accordingly.</li> <li>▪ If an award fee contract is employed, evaluate the contractor’s performance in accordance with established criteria, which can include the use of green approaches; government agencies are allowed to unilaterally change the award fee criteria for future periods (pursuant to EPAAR 1552.216-70).</li> </ul>
	<b>Recognizing Contractors</b>		<ul style="list-style-type: none"> <li>▪ Exercise contract options contingent upon satisfactory performance, which may include successful use of green strategies.</li> <li>▪ Establish an annual “Contractor’s Green Cleanup Award” for contractors demonstrating exemplary success in implementing green response/remediation strategies.</li> <li>▪ Send letters of commendation to corporate officers of exemplary contractors.</li> <li>▪ Devise and send a “report card” to each response/remediation contractor, describing the contractor’s use of green strategies to improve environmental outcomes of one or more cleanups.</li> </ul>



## Part 3: Sample Contract Language

EPA regions and other government agencies are developing and integrating specific language into contract solicitations, new or amended contracts, and executed task orders or work assignments to ensure that regional goals for improved environmental outcomes of cleanups can be met. This Part provides actual language used in hazardous waste cleanup contracts and procurements and identifies the implementing organization, specific green practice areas addressed, and contract type and contract phase where the language has been used. Often, a provision can be applied to more than one contract type or phase of cleanup. Practice areas are grouped into nine types.

### Nine Green Practice Areas and Strategies:

- General green remediation and sustainability practices
- Clean fuels and related practices
- Energy efficiency and renewable energy
- Environmentally preferable purchases and practices, including waste reduction
- Incentive payments and disincentives
- Water conservation and management
- Innovative technologies
- Tracking and reporting
- Professional qualifications and technical expertise

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
<b>USEPA</b>						
1	<b>Clean and Green Policy:</b> The USACE shall use technologies and practices that are sustainable in accordance with EPA Region 2 Clean and Green policy (March 2009) found at <a href="http://epa.gov/region2/superfund/green_remediation">http://epa.gov/region2/superfund/green_remediation</a> . At the direction of the EPA RPM or EPA Project Officer, the USACE shall incorporate requirements for the appropriate practices into the terms of its contracts consistent with the EPA Region 2 Clean and Green policy. The USACE shall report monthly on the use of these technologies and practices, including the associated quantities of materials reduced, reused, or recycled as a direct result of these practices, for all remedial activities conducted under this IA within its monthly status report submission.	General green remediation & sustainability practices  Tracking & reporting	All USACE contracts with USEPA	All	USEPA Region 2	Monthly reporting
2	<b>Innovative Technologies:</b> Other existing or innovative treatment and disposal technologies may also be required by Task Orders issued under this contract. The transfer and disposal (T&D) coordinator shall provide the following services: Provide the RPM and OSC cost effective treatment options based on a working knowledge of available traditional and innovative treatment technologies.	Innovative technologies	ERRS	Contract SOW; task orders	USEPA Region 2	

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
3	<p><b>Clean and Green Policy:</b> The contractor shall explore and implement green remediation strategies and applications in the performance of the requirements of this work assignment to maximize sustainability, reduce energy and water usage, promote carbon neutrality, promote industrial materials reuse and recycling, and protect and preserve land resources. The contractor shall present green remediation options and approaches in its work plans, provide cost analyses for these options in its work plan budgets, maintain records of “green-related” activities, and report this information to EPA in its monthly progress reports or as requested by the Project Officer. [See Appendix B of this Contracting Toolkit for the complete policy included in each SOW. Develop a uniform green work plan template showing the sustainable practices proposed for the remedial activities and the associated costs. Green work plans must clearly document:</p> <ul style="list-style-type: none"> <li>▪ Green practices, objectives, and goals</li> <li>▪ Planning and implementation of green practices throughout remedial process</li> <li>▪ Identified the data and measurement needs</li> <li>▪ Establish the reporting requirements</li> <li>▪ Identify green project costs and scheduling needs</li> </ul>	<p>General green remediation &amp; sustainability practices</p> <p>Tracking &amp; reporting</p>	RAC II	<p>Procurement;</p> <p>Contract SOW; WA, or task orders</p>	USEPA Region 2	
4	<p><b>Green Remediation:</b> To the extent practicable, the contractor shall explore and implement green remediation strategies and applications in the performance of the requirements of this work assignment to maximize sustainability, reduce energy and water usage, promote carbon neutrality, promote industrial materials reuse and recycling, and protect and preserve land resources. Region 2’s March 2009 “Clean and Green Policy” (see below) calls for the contractor, at a minimum, to purchase 100 percent of the electricity for this project from renewable sources and use clean diesel fuels and technologies during the performance of this work assignment. The contractor shall present green remediation options and approaches in its work plans, provide cost analyses for these options in its work plan budgets, maintain records of “green-related” activities, and report this information to EPA in its monthly progress reports or as requested by the Project Officer.</p> <p>The following guidance documents provide additional information regarding the implementation of “Green Remediation” practices:</p> <ul style="list-style-type: none"> <li>▪ Attachment 2, “Green Remediation Practices”</li> <li>▪ EPA Region 2 “Clean and Green” Policy, dated March 17, 2009, which covers the use of “green remediation” practices and technologies in Region 2 projects (see <a href="http://www.epa.gov/region02/superfund/green_remediation">http://www.epa.gov/region02/superfund/green_remediation</a>)</li> <li>▪ Federal Acquisition Regulation, Part 23, “Environment, Energy and Water Efficiency, Renewable Energy Technologies, Occupational Safety, and Drug-Free Workplace:” FAR Subparts 23.2, 23.4, 23.7, and 23.8 (see <a href="https://www.acquisition.gov/far/html/FARTOCP23.html">https://www.acquisition.gov/far/html/FARTOCP23.html</a>)</li> <li>▪ Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management” (January 2007) (see <a href="http://www.epa.gov/oaintrnt/practices/eo13423.htm">http://www.epa.gov/oaintrnt/practices/eo13423.htm</a>)</li> </ul>	<p>General green remediation &amp; sustainability practices</p> <p>Tracking &amp; reporting</p> <p>Energy efficiency &amp; renewable/alternative energy</p> <p>Clean fuels &amp; related practices</p>	RAC	Work assignment SOW	USEPA Region 2	<p>SOW for Newton Creek, NY Superfund site work assignment for RI/FS oversight.</p> <p>This language is also used in several other work assignments</p>

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
5	<p>"As directed by the OSC/WAM, the contractor shall explore, evaluate and implement (where practicable) green cleanup strategies and applications in the performance of the requirements of this contract to maximize sustainability, reduce energy and water usage, promote carbon neutrality, promote industrial materials reuse and recycling, and protect and preserve land resources. The contractor shall recommend (when feasible) green cleanup options and approaches, including cost analyses for these options, to EPA project leads and maintain records of green cleanup activities. The contractor shall report all green cleanup activities in its monthly progress report to the Project Officer and Contracting Officer. Specific examples of these efforts include, but are not limited to: evaluating renewable energy sources and technologies via a cost analysis that compares the energy costs from renewable sources versus traditional electricity sources provided by local utilities over the expected life of the cleanup; an evaluation of the avoided emissions as a result of using renewable energy sources versus traditional energy sources provided by local utilities shall be performed; and evaluating the cost of purchasing green power from organizations that offer green power within the appropriate state. Refer to EPA's Green Cleanup webpage for additional information on green cleanup practices: <a href="http://clu.in.org/greenremediation/">http://clu.in.org/greenremediation/</a>"</p>	<p>General green remediation &amp; sustainability practices</p> <p>Tracking &amp; reporting</p>	USEPA START	Contract SOW	USEPA Region 3	
6	<p><b>Professional Qualification and Management Ability:</b> Ability to develop innovative management strategy to minimize costs and streamline schedules; effectiveness and accomplishments of firm's Quality Environmental Management System on overall reduction of greenhouse gas emissions.</p>	<p>Professional qualifications and technical expertise</p>	RAC II	Procurement	USEPA Region 4	
7	<p><b>Monthly and Annual Report on Environmentally Preferable Practices:</b> The Contractor shall submit an annual report, no longer than ten (10) pages in length, detailing the environmentally preferable activities accomplished or purchases made within the previous 12-month period [from/to specified dates], and a monthly summary shall be included in the Monthly Progress Report. The format described in [Attachment] shall be used in completing the annual report. The Contractor shall submit the report to the Contracting Officer and Project Officer before [specified date] of each year. [See Appendix A of this Contracting Toolkit for monthly reporting format and content].</p> <p>If the Contractor is awarded more than one START or ERRS contract with the Agency, only one monthly and annual report will be submitted, but distribution will be to all Agency personnel indicated above for each contract. [See Appendix A of this Toolkit for monthly reporting structure/instructions attached to amended contracts.]</p>	<p>Environmentally preferable practices and purchases</p> <p>Tracking &amp; reporting</p>	ERRS	Contract SOW; task orders	USEPA Region 4 & Region 6	

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
8	"Please note that for cleanup and RLF grants, the money you spend analyzing various forms of renewable/alternative energy and/or other greener cleanup measures for use on a cleanup site can be an eligible cost, which can be charged directly or count toward your required cost share for the cleanup grant. Regarding purchase/construction/installation costs for the renewable/alternative energy and/or other greener cleanup measures, the costs would be eligible costs provided that the greener cleanup measures are part of the remedy for the site. For example, if solar panels were used to run a gas collection system for a landfill that was capped as part of the cleanup using the cleanup grant/RLF funds, the money spent purchasing/constructing and installing the solar panels would be an eligible cost. If solar panels were installed on a building that is on the same property but not part of the cleanup action being funded under your cooperative agreement with U.S. EPA, the installation and construction costs for the solar panels would not be an eligible cost. If you intend to purchase equipment and/or materials associated with renewable/alternative energy and/or other greener cleanup measures as part of your grant, your project budget would need to reflect this."	Energy efficiency and renewable/alternative energy  Tracking & reporting  Other greener cleanup measures	Brown-field RLF grants	Work plans/Implementation	USEPA Region 5	Activity must be part of a brownfield cleanup  Not actually contract language, but will influence grant implementation  Not required or recommended
9	<b>Personnel Qualifications:</b> Working knowledge of current innovative treatment technologies.	Professional qualifications and technical expertise	RAC II	Procurement	USEPA Region 5	
10	<b>Amendment 1, Specialized Experience and Technical Competence:</b> Experience in developing innovative technical approaches, tools, and technologies; experience in innovations and ideas relating to energy conservation, pollution prevention, waste reduction, and the use of recovered materials.	Professional qualifications and technical expertise	ROC III	Procurement	USEPA Region 7	
11	<b>Performance Based Task Orders:</b> Some task orders under this contract may be negotiated and issued on a performance based basis. The issuance of a performance based task order means the contractor will have greater flexibility in its approach to accomplish the task order, and that the Government will exert less direction on how the work is to be performed.	General green remediation and sustainability practices	START	Task order; WA	USEPA Region 7	
12	<b>General Technical Support:</b> The contractor shall provide information, analysis, options, and recommendations for implementing emerging technologies and maintaining program currency.	Innovative technologies	START	Contract SOW	USEPA Region 7	

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13	<p><b>Environmentally Preferable Practices:</b> The contractor shall, to the greatest extent practical, utilize environmentally preferable practices in their course of business. "Environmentally Preferable" is defined as products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. Consideration of environmentally preferable practices must be consistent with price, performance, availability, and safety conditions. This includes, but is not limited to, doing those environmentally related activities and purchasing those product listed in Attachment 6 of the solicitation entitled "Environmentally Preferable Practices". <i>Note: The products listed are only examples; EPA does not endorse any of these products or practices.</i> EPA shall make all final determinations as to the acceptability of a contractor's chosen products and practices. At the contractor's option, EPA will encourage the contractor to engage in environmentally preferable practices to the maximum extent practicable. Please report any environmentally preferable practices, however it is merely for information purposes and will not be evaluated by EPA.</p>	Environmentally preferable purchases & practices	START	Procurement; Contract SOW	USEPA Region 7	
14	<p><b>Commitment to Local Community - Local Expenditures:</b> EPA approved "local" contract expenditures will be considered "allowable local expenditures" for the purpose of this incentive. The following are considered eligible expenditures: 1) subcontracts with locally owned businesses located within a fifty (50) mile radius of the ASARCO facility...2) Salaries and wages paid to employees residing within a fifty (50) mile radius... 3) miscellaneous goods &amp; services purchased from local vendors within a fifty (50) mile radius... The contract shall provide supporting documentation to EPA that may include invoices, receipts, or other proof of expenditures which clearly demonstrates eligibility of claimed local expenditures. ... EPA will review documentation... (and) may ask for additional supporting information to determine eligibility of Contract expenditures toward incentive criteria...Allowable local expenditures of 50% or more of the total amount paid by EPA to Contractor earns 100% of incentive...40-49% earns 75% of incentive...30-39% earns 50% of incentive... 20-29% earns 25% of incentive... expenditures of less than 20% earn no incentive.</p>	<p>Incentive payments and disincentives</p> <p>Environmentally preferable purchases &amp; practices</p>	RAC	Contract	USEPA Region 7	<p>Included in Quality Assurance Surveillance Plan</p> <p>Incentive for hiring and buying locally</p>

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
15	<p><b>Diesel Chemical and Particulate Emissions:</b> The following information is provided to assist the contractor with achieving the required use of alternative fuel such as bio-diesel and in the use of no-idle practices when operating 100% of all diesel-powered equipment in performance of work under this contract.</p> <p><u>Alternative Fuel Use:</u> The Contractor is strongly encouraged to utilize alternative fuel, such as bio-diesel, in all of the diesel-powered equipment construction equipment. The Contractor shall identify all equipment and vehicles that will use clean or alternative fuels, such as bio-diesel, and report the amount of fuel usage on a monthly basis in the Diesel Chemical and Particulate Emissions Report. The following performance standard ranges correspond to the amount of negative incentive which will be applied for differing fuel mixes. The applicable funding pool from which amounts will be withheld are percentages of CLIN 0001, 1001, and 2001 (depending on contract year) no matter if work is being performed under the Base Quantity, and Option Quantity, or work being performed on Non-routine Properties under any other CLIN. ...less than 5% alternative fuel used earns a deduction of 100% from the funding pool...5% thru 9% alternative fuel used earns a deduction of 75%...10% thru 14% alternative fuel used earns a deduction of 50%...15% thru 19% alternative fuel used earns a deduction of 25%.. 20% or more alternative fuel used earns NO deduction from the funding pool.</p> <p><u>No-Idle Practices:</u> In addition to using alternative fuel, the contractor shall use methods to control nuisance odors association with diesel emissions from construction equipment including without limitation the following: (1) turning off diesel combustion engines on construction equipment no in active use, and on trucks that are idling while waiting to load or unload material for five minutes or more: and (2) locating diesel equipment away from the general public and sensitive receptors. No incentive or negative incentive is established for complying with the no-idle practices required above, however, non-compliance will be taken into consideration by the EPA COR when assessing the Customer Satisfaction Incentive.</p>	<p>Incentive payments and disincentives</p> <p>Clean fuel and related practices</p>	RAC	Contract	USEPA Region 7	<p>Included in Quality Assurance Surveillance Plan</p> <p>Negative incentives</p>
16	<p><b>Tracking of Removal Action Energy Consumption:</b> The contractor shall report the quantities of energy used on-site at Removal action project operations. Energy includes, but is not limited to, electrical power for on-site equipment, liquid fuels (diesel, gasoline, biofuels) for on-site equipment and vehicles, and natural gas, propane or other gas for any on-site operations. The contractor shall report energy used terms of commonly used units of measure (or the units of measure employed by the vendor), as well as the estimated total energy costs.</p>	Tracking & reporting	ERRS	Contract SOW	USEPA Region 8	Tracking & reporting of energy use

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
17	<p><b>Clean Diesel:</b> Contractor shall develop and implement a plan for using clean diesel practices for all on-road and off-road vehicles and equipment. At a minimum the plan must incorporate the first two bullets below and the other bullets to the extent practicable.</p> <ul style="list-style-type: none"> <li>▪ Reduce unnecessary idling through the use of auxiliary power units, electric equipment, and strict enforcement of idling limits</li> <li>▪ Practice good engine maintenance to meet original standards, and properly train operators to run equipment efficiently</li> <li>▪ Use verified diesel emission control technology ("VDEC"), including verified diesel particulate filters ("DPFs") or diesel oxidation catalysts ("DOCs")</li> <li>▪ Use cleaner fuels, such as ultra low sulfur diesel (ULDS), biodiesel, liquid petroleum gas, or compressed natural gas</li> <li>▪ Replace older engines with newer, cleaner models, when practical and economically feasible</li> </ul>	Clean fuel and related practices	ERRS	Contract SOW	USEPA Region 8	
18	<p><b>Clean Air:</b> In the performance of all activities performed under this contract, the contractor shall where directed by EPA use cleaner engines, cleaner fuel and cleaner diesel control technology on diesel powered equipment with engines greater than 50 horsepower whether the equipment is owned or rented. Direction will be provided on a task order by task order basis. The contractor shall provide a break-out cost for each task order in accordance with the instruction in contract clause addressing task orders.</p> <p>Cleaner engines include non-road engines meeting Tier I or cleaner standards and on-road engines meeting 2004 On-Highway Heavy Duty Engine Emissions Standards or cleaner, whether the equipment is owned or rented. Cleaner fuels include biodiesel blends or ultra low sulfur diesel. Cleaner diesel control technology includes EPA or California Air Resources Board ("CARB") verified diesel particulate filters ("DPFs") or diesel oxidation catalysts ("DOCs"). The contractor shall track emissions reduced (i.e., tons of diesel particulate matter reduced) associated with using cleaner diesel equipment and fuels.</p>	Clean fuel and related practices  Tracking and reporting	RAC II	Contract SOW  Task orders	USEPA Region 9	Costs to be broken out  Tracking and reporting of emission reduction and cost
19	<p><b>Renewable Energy:</b> The contractor shall evaluate all reasonably feasible renewable energy sources when conducting work related to selecting a cleanup remedy, constructing a cleanup remedy, and when optimizing an existing cleanup remedy. Sources of renewable energy include solar, wind, and biomass and biogas. Examples of renewable energy technologies include photovoltaic panels, wind turbines, digesters, gasifiers, and micro turbines. Part of evaluating renewable energy sources and technologies will involve a cost analysis, comparing the energy costs from renewable sources versus traditional electricity sources provided by local utilities, over the expected life of the cleanup remedy. Similarly, an evaluation of the avoided emissions as a result of using renewable energy sources versus traditional energy sources provided by local utilities shall be performed. The contractor shall also evaluate the cost of purchasing green power from organizations that offer green power within the appropriate state.</p>	Energy efficiency and renewable/ alternative energy	RAC II	Contract SOW  Task orders	USEPA Region 9	Includes analysis of cost and emissions



#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
20	<p><b>Clean Technologies:</b> The contractor shall use clean technologies and/or fuels on all diesel equipment to the extent practicable and/or feasible. The preference is for clean diesel technologies, but alternative fuels, such as biodiesel or natural gas-powered vehicles are also acceptable. These alternative fuels will be used where they are available within a reasonable distance to sites. For equipment retrofits, the contractor will employ the Best Available Control Technology (BACT) on non-road and on-road diesel powered equipment used at a site. Examples of clean diesel technologies include diesel particulate filters (DPFs), and diesel oxidation catalysis (DOCs). For alternative fuels usage, the contract will use at least a B20 blend (i.e., 20% biodiesel and 80% petrodiesel) or higher in the equipment engines that are used at a site.</p> <p>For every TO cost proposal, the contractor shall provide the breakout cost for Cleanup-Clean Air Initiative as outlined in Statement of Work. The Cost proposal for each TO shall have two estimates: (1) Cleanup-Clean Air Initiative if available and/or applicable, and (2) conventional method. The Government will make the final determination to incorporate the Cleanup-Clean Air Initiatives or not on a TO-by-TO basis.</p>	Clean fuel and related practices	ERRS	Contract SOW  Task order	USEPA Region 9 & Region 10	Includes analysis of costs and emissions in task order cost proposal
21	<p><b>Idling &amp; Alternative Fuel Negative Incentive:</b> Diesel emissions for all of the on-site diesel-powered equipment are reduced during construction through the use of selected percentages of alternative fuels, such as biodiesel, in conjunction with idle-reduction practices. Fuel usage, including the type and percentage of alternate fuel utilized, shall be included in progress reports as necessary. The following performance standard ranges correspond to varying disincentives for differing fuel mixtures: (a) 5-9% alternative fuel, (b) 10-14% alternative fuel, (c) 15-19% alternative fuel, and (d) &gt;19% alternative fuel. [Idle reduction practices consist of turning off vehicles while waiting to load or unload materials if the idling time exceeds five minutes. All equipment and vehicles that utilize alternative fuels will be identified in the progress reports and alternative fuel usage (filling of onsite storage tanks or fuel deliveries) will be reported as necessary.]</p> <p>An amount equal to 1% of CLIN 0001 will be deducted from contractor invoice if all diesel-powered equipment does not utilize a minimum of 4% alternative fuel in conjunction with idle-reduction practices. The following deductions correspond to the performance standard ranges for use of alternative fuels: (a) 0.75% withheld, (b) 0.50% withheld, (c) 0.25% withheld, and (d) 0% withheld.</p>	Clean fuel and related practices  Tracking & reporting  General green remediation & sustainability practices	ERRS RAC ROC	Contract SOW  WA SOW	USEPA Region 10	energy use reporting  Disincentive - Idle reduction practices

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
22	<p><b>The following green remediation-related language is from the Remedial Action Plan Submittal, Shallow Excavation Design, Well 12A Superfund Site, Tacoma Washington.</b></p> <p><b>Equipment</b></p> <p><b>B.</b> The Contractor shall use cleaner engines, cleaner fuel and cleaner diesel control technology on diesel powered equipment with engines greater than 50 horsepower where practicable. The preference is for clean diesel technologies, but alternative fuels, such as biodiesel or natural gas-powered vehicles are also acceptable. Cleaner engines include non-road engines meeting Tier I or cleaner standards and for using on-road engines meeting 2004 On-Highway Heavy Duty Engine Emissions Standards or cleaner, whether the equipment is owned or rented. Cleaner fuels include biodiesel blends (e.g. B5 or B20) or ultra-low sulfur diesel (15ppm cap of sulfur). These alternative fuels shall be used where they are available locally. Sources of biodiesel made from recycled cleaner fuels, such as recycled oil waste from restaurants, shall be used in a minimum of 50% of fuel throughput for vehicles, if available. Contractor shall track fuel throughput and equipment hour meter readings, and submit usage on a weekly basis. The Contractor must provide reasonable justification for not meeting the minimum requirement for cleaner fuels, if impractical. Cleaner diesel control technology includes EPA or California Air Resources board (CARB) verified diesel particulate filters (DPFs) or diesel oxidation catalysts (DOCs). If the Contractor can't meet these preferences, they must submit the reasons in writing to the Government. The Contractor shall document use of all Cleaner or Green Technologies during the course of the whole project which will be submitted to the Government at project completion. As part of this documentation, the contractor shall estimate emissions reduced (i.e., tons of diesel particulate matter reduced) associated with using cleaner diesel equipment and fuels.</p> <p><b>C.</b> The Contractor shall minimize idling to control air pollution and reduce fuel usage. This shall include turning off all diesel engines on construction equipment greater than 50 horsepower when not in active use (e.g., on standby for greater than five minutes). The Contractor shall use, to the extent practicable, CARB Section 2485 Airborne Toxic Control Measures to limit diesel-fueled commercial motor vehicle idling, including use of machines with automatic idle-shutdown devices and auxiliary power systems that meet CARB equipment specifications to power cab heating and air conditioning when equipment is unengaged. The Contractor shall submit an equipment inventory listing which air pollution control devices have been installed on each piece of equipment used on site greater than 50 horsepower (including make, model, and serial number). Exceptions to allowing operation of diesel equipment for more than five consecutive minutes when not in use, occupied by an operator, or otherwise in motion shall be:</p> <ol style="list-style-type: none"> <li>1. When the equipment is forced to remain motionless due to traffic conditions or mechanical difficulties outside of the operator's control.</li> <li>2. When it is necessary to operate auxiliary systems installed or attached to the equipment.</li> <li>3. To bring the equipment to the manufacturer's recommended operating temperature, particularly in winter weather.</li> <li>4. When idling is necessary to ensure safe operation of the vehicle.</li> <li>5. When the equipment is being repaired.</li> </ol> <p><b>D.</b> The Contractor shall purchase and use local materials (such as backfill materials) to the extent practicable and/or feasible.</p>	<p>General green remediation &amp; sustainability practices</p> <p>Clean fuel and related practices</p> <p>Clean fuel and related practices</p> <p>Environmentally</p>	RAC	Task order remedial action plan	USEPA Region 10 and USACE	Well 12A Superfund site, Tacoma Washington, November 12, 2010

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
22	<p><b>Well 12A Superfund Site (Continued)</b></p> <p><b>Project Meetings:</b> Pre-Construction Meeting: suggested agenda to include: Green Remediation Requirements Progress Meetings: suggested agenda to include: Progress in Meeting Green Remediation Objectives</p> <p><b>Contractor Submittals</b></p> <p>E. The Contractor shall manage construction related documentation, including but not limited to document submittals, Requests for Information (RFIs), correspondence, schedules, and drawings, using a web-based electronic data management software such as EADOC, Autodesk Constructware, or similar. The Contractor shall set up the electronic data management structure and submit it for approval by the Government prior to initiation of construction. Training of Government-selected personnel will be the responsibility of the Contractor. Implementation of this system will reduce the number of paper copies of working drawings required to be submitted. For bid purposes assume that two (2) paper copies would be required for each submittal. Where paper submittals are necessitated, submittals will be printed on double-sided recycled paper when possible. Print paper copy submittals on recycled and bleach-free paper and print double sided. Make electronic submissions when possible.</p> <p><b>Handling, Testing, Loading, Transportation, and Disposal Of Contaminated Soil and Other Materials</b></p> <p><b>Green Remediation Plan</b></p> <p>A. The Green Remediation Plan shall describe the green remediation elements of the shallow soil excavation work.</p> <p>B. The Contractor's Green Remediation Plan shall include a description of all of the green remediation elements incorporated into the Contractor's approach whether required by the contract documents or independently proposed by the Contractor, including but not limited to the following:</p> <ol style="list-style-type: none"> <li>1. Emission reduction controls and policies</li> <li>2. Transportation minimization and green transportation evaluation</li> <li>3. Recycling, reuse, and waste minimization</li> <li>4. Use of local materials and facilities</li> <li>5. Approach to tracking emissions reductions and other green remediation metrics</li> <li>6. Justification for any proposed approach that does not meet the minimum green remediation requirements and/or preferences included in the contract documents</li> </ol> <p><b>Waste Management Plan</b></p> <ol style="list-style-type: none"> <li>6. Identify materials that cannot be recycled or reused. Provide an explanation or justification</li> <li>7. Identify materials to be reused, recycled and salvaged and identify the licensed disposal facility</li> </ol> <p><b>Environmental Controls</b></p> <p>If employed, street sweepers shall utilize green fuels and emissions controls specified in Section 01136 General Project and Equipment Requirements to the extent practicable.</p> <p><b>Material and Equipment Delivery, Storage and Handling</b></p> <p>Unless otherwise specified, recycled materials such as concrete and asphalt shall be incorporated into the Work to the maximum extent practicable.</p>	<p>preferable purchases &amp; practices</p> <p>General green remediation &amp; sustainability practices</p> <p>Environmentally preferable purchases &amp; practices</p> <p>Environmentally preferable purchases and practices, including waste reduction</p>				

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
22	<p><b>Well 12A Superfund Site (Continued)</b></p> <p><b>Demolition and Modifications</b></p> <ol style="list-style-type: none"> <li>5. Segregation and recycling of concrete, rebar, and miscellaneous demolition materials.</li> <li>2. Identify materials that cannot be recycled or reused. Provide an explanation or justification.</li> <li>3. Identify materials to be reused, recycled and salvaged and identify the licensed disposal facility.</li> </ol> <p><b>Disposal Of Material</b></p> <p><b>E.</b> To the greatest extent possible, Contractor shall minimize the amount of waste disposal in landfills by seeking opportunities to reduce, reuse or recycle demolition materials that are not contaminated by hazardous substances. Contractor shall dispose of uncontaminated recyclable or salvable demolition materials by a combination of salvage, reuse, or recycling at a facility approved by the Government. Contractor shall submit receipts, scale tickets, and/or waybills to the Government documenting disposal and/or recycling. Recyclable materials may include concrete, rebar, piping, and asphalt, but shall not include materials impacted by contaminated soils.</p> <p><b>B.</b> Recycle the removed concrete and other recyclable materials.</p> <p><b>Earthwork</b></p> <p><b>Classification Of Fill</b></p> <p><b>C.</b> Recycled Materials: Select Fill material and Crushed Rock material shall be comprised of a minimum of 50 percent post-consumer recycled materials by weight, or minimum 75 percent pre-consumer recycled content at Contractor’s option. Where practicable, recycled materials shall be obtained from local sources. Contractor shall submit documentation, including receipts, sale tickets, or waybills, showing the quantities and sources of recycled materials used for fill. Contractor shall follow the requirements of WSDOT Specification Section 9-03.21 for Recycled Materials. Temporary Erosion and Sediment Control measures for stormwater runoff and erosion control shall be in place when recycled concrete fill material surfaces are exposed in stockpiles and areas where backfill is being placed (see Section 02270 Erosion Control).</p> <p><b>Cleaning</b></p> <p><b>A.</b> At the end of construction work, thoroughly clean all manholes, curb inlets, drop inlets, trench drains, gratings, and frames of construction debris, dirt, and trash.</p> <p><b>B.</b> Use plant-based and biodegradable cleaners and detergents to the extent practicable, including but not limited to:</p> <ol style="list-style-type: none"> <li>1. General cleaners: select detergents that bear either a Green Seal Certification Label and/or an EPA Design for the Environment (DfE) label.</li> <li>2. Abrasive cleaners: substitute ½ lemon dipped in borax.</li> <li>3. Ammonia: substitute</li> </ol> <p><b>Transport</b></p> <p><b>A.</b> The Contractor shall transport material from the site by truck, rail, or a combination of both to an approved Subtitle C receiving facility in accordance with all DOT, USEPA, State, and other applicable regulations and any permits required as part of this Contract.</p>	<p>Fuel</p> <p>Environmentally preferable purchases and practices, including waste reduction</p> <p>Environmentally preferable purchases and practices, including waste reduction</p> <p>Environmentally preferable purchases and practices, including waste reduction</p>				

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
22	<p><b>Well 12A Superfund Site (Continued)</b></p> <p>B. Rail shall be considered as the preferred alternative for the transportation of excavated materials to the disposal facility to minimize greenhouse gas emissions. Contractor may propose another method for transport but shall justify the alternative method by comparing tradeoffs of the environmental footprint with costs. The environmental footprint shall include at a minimum, a comparison of greenhouse gas emissions and primary air pollutants generated (e.g., particulate matter (PM), PM10, PM2.5, CO, NOx, SO2 and lead). Contractor shall submit to the Government a recommendation for the transportation plan considering tradeoffs between economic constraints and environmental impacts.</p>	Environmentally preferable purchases and practices, including waste reduction				
23	<p><b>Environmental Benefits from Infrastructure Reuse/Sustainable Reuse:</b> [5-10 points] Describe any anticipated environmental benefits, beyond the remediation of contaminants, associated with the sustainable redevelopment of the site cleaned up under this grant, including the use of existing infrastructure, such as utilities and public transit, green buildings, energy efficiency, water management, green remediation, construction and demolition materials recycling, diesel emissions reductions, and renewable energy on brownfields.</p>	General green remediation & sustainability practices	Assessment, cleanup, and RLF grants	RFP	OBLR	<p>2011 grant award guidelines</p> <p>Potentially 5-10 points of score, depending on type of grant</p>
<b>Other Federal Agencies</b>						
24	<p><b>(Draft) 8.7. Sustainability Analysis:</b> The contractor shall evaluate the current carbon footprint and other resource impacts of the current remedial or corrective actions at the installations. The RSE evaluation shall consider sustainability (relative to this baseline) in developing the recommended changes to the actions at the site. The potential use of alternative energy sources or energy recovery shall be evaluated and appropriate recommendations shall be included in the RSE report. The evaluation may require the use of tools such as the Air Force Sustainable Remediation Tool spreadsheet or the Battelle SiteWise software.</p>	General green remediation & sustainability practices	Remedial System Evaluation	Task order	USACE	Includes environmental & energy footprint analysis

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
25	<p><b>Base Contract - Section C - Statement of Work:</b></p> <p>“The contractor will be required to incorporate sustainability into its execution of the specific project(s) as identified in the individual Task Order Statements of Work. Potential green and sustainable enhancements that may be included, but is not limited to, the following list identified below. Specific green and sustainable enhancements will be identified in each task order statement of work:</p> <p><b>Water Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Minimize use of potable water and maximize use of non-potable water during daily operations and treatment processes.</li> <li>▪ Use of native vegetation to reduce watering/irrigation needs.</li> </ul> <p><b>Energy Usage</b></p> <ul style="list-style-type: none"> <li>▪ Use of alternative energy sources such as solar energy, wind energy, and landfill gas energy.</li> <li>▪ Use of alternative fuels to operate machinery and equipment.</li> <li>▪ Reducing energy consumption through optimization of treatment systems.</li> </ul> <p><b>Waste minimization</b></p> <ul style="list-style-type: none"> <li>▪ Recycling, reusing and reclaiming materials in order to reduce resulting debris disposal.</li> </ul> <p><b>Other</b></p> <ul style="list-style-type: none"> <li>▪ Minimize dust export of contaminants.</li> <li>▪ Use of minimally invasive remediation technologies, where possible and effective.”</li> </ul>	General green remediation & sustainability practices	Environmental Restoration	Base Contract	USACE	<p>Interim guidance on “possible sustainability language”</p> <p>For FUDS and certain other USACE environmental restoration projects</p>
26	<p><b>Special Contract Requirements: Base Contract and Task Orders</b></p> <p>“The proposed sustainability solutions provided by the offeror, at the proposed price, will be incorporated into each resulting task order of this contract upon Government acceptance and award of the task order.”</p> <p>“Any changes to the sustainability technical solutions of each resulting task order executed under this contract will be approved in writing by the Contracting Officer based upon appropriate justification(s) from the Contractor.”</p>	General green remediation & sustainability practices	Environmental Restoration	Base Contract	USACE	Interim guidance

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
27	<b>“Reporting:</b> The contractor will provide a “green” section on reuse, recycling, waste streams reduction, and resource conservation as part of the periodic progress report for each task order. The intent is to show what is being done to keep wastes out of landfills or disposal facilities and to conserve energy or other natural resources, thereby reducing negative impacts of a removal action. The report should also document estimated cost savings from implementing the action, if applicable, and the estimated environmental benefit from implementing the action. Alternatives considered but not executed due to cost, time, or other factors also may be reported. A comment section of the monthly report may describe factors interfering with these efforts, such as unavailability of a local recycling process/facility, prohibitive cost, or inability to ensure items are “clean” enough to be re-used by others.”	Tracking and reporting	Environmental Restoration	Base Contract Task Orders	USACE	Interim guidance
28	<b>Life-cycle analysis:</b> “All proposed sustainability enhancements in each individual task order must be supported with a life-cycle analysis to the project and/or the environment, i.e., water/energy consumption reduction, impacts of waste minimization, etc. The life-cycle cost analyses should include the net cost or net savings to the project by implementing that particular element into the project. For example, the net cost or savings of implementing a wind energy system to reduce energy consumption versus the overall energy cost savings for the life of the project.”	General green remediation & sustainability practices	Environmental Restoration	Base Contract Task Orders	USACE	Interim guidance Life cycle analysis
29	<b>Best value” tradeoff selection process:</b> “All proposed sustainability solutions will be separately priced in each individual task order although the overall price for the entire remediation effort will be evaluated using a best value” tradeoff selection process, using both technical evaluation factors along with price.”	General green remediation & sustainability practices	Environmental Restoration	Base Contract Task Orders	USACE	Interim guidance Best value analysis
30	<b>“Clean Air:</b> The contractor will use cleaner technology and engines, cleaner fuel and cleaner diesel control technology on all diesel equipment used the site during the execution of the cleanup remedy to the maximum extent practicable. Clean diesel technologies are preferred, and alternative fuels such as biodiesel or natural gas-powered vehicles should also be considered. The contractor will use alternative fuels, of at least a B20 blend or higher, on all on-site diesel equipment where these fuels are available within a reasonable distance from the site. The contractor will employ the most efficient emission control technology for reducing particulate matter (PM) emissions on non-road and on-road diesel powered equipment used at a site.	Clean fuel and related practices	Environmental Restoration	Task Orders	USACE	Interim guidance



#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
31	<b>“Green Landscaping:</b> The contractor will use cost effective and environmental friendly landscaping solutions to minimize environmental impacts at the site. Green landscaping practices include protecting and preserving natural resources by reducing or eliminating the amount of waste materials involved in grounds keeping and by reducing or eliminating the amount of water, pesticides, fuels, oils, and other materials used in landscaping. The contractor will incorporate green landscaping practices to the maximum extent practicable by using native vegetation whenever feasible; by reducing the production of waste to promote more efficient use of materials; by reusing materials in order to prolong their useful life and delay their recycling and/or final disposal; by recycling to minimize waste generation by recovering and reprocessing usable products that might otherwise be disposed of ; and by making purchases that meet project needs but have a better overall effect on the environment, such as biobased, recycled content, and other environmentally preferable elements.”	General green remediation & sustainability practices	Environmental Restoration	Task Orders	USACE	Interim guidance
32	<b>“Industrial Materials Reuse (IMR):</b> The contractor will incorporate IMR, i.e., reusing or recycling byproduct materials generated from industrial processes that can be used as substitutions for raw materials in the manufacture of consumer products, roads, bridges, buildings, and other construction projects, whenever practicable.	Environmentally preferable purchases and practices, including waste reduction	Environmental Restoration	Task Orders	USACE	Interim guidance
33	<b>General Contract Language:</b> “The proposed sustainability solutions provided by the offeror, at the proposed price, will be incorporated into this TO upon Government acceptance and award of the TO.”	General green remediation & sustainability practices	Environmental Restoration	Task Orders	USAF	
34	<b>Evaluation Factors:</b> “All proposed sustainability solutions in this TO should be separately priced although the overall price for the entire remediation effort will be evaluated using a “best value” tradeoff selection process, using both technical evaluation factors along with price.”	General green remediation & sustainability practices	Environmental Restoration	Task Orders	USAF	Includes “best value” analysis

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
35	<p><b>Model Language for Energy-Efficient Product Contracts:</b> Federal agencies must insert specific contract language for Energy Efficiency in Energy-Consuming Products as defined in Federal Acquisition Regulation (FAR) <a href="#">Section 52.223-15</a> in solicitations and contracts when ENERGY STAR®-qualified or FEMP-designated energy-consuming products are:</p> <ul style="list-style-type: none"> <li>▪ Delivered</li> <li>▪ Acquired by the contractor for use in performing services at a Federally-controlled facility</li> <li>▪ Furnished by the contractor for use by the Government</li> <li>▪ Specified in the design of a building or work, or incorporated during its construction, renovation, or maintenance</li> </ul> <p>This is true unless the agency is exempt as defined in <a href="#">FAR Section 23.205</a>.</p> <p><b>Model Language</b> The following model language is defined in <a href="#">FAR Section 52.233-15</a>: ENERGY EFFICIENCY IN ENERGY-CONSUMING PRODUCTS (DEC 2007)</p> <p><i>(a) Definition.</i> As used in this clause— "Energy-efficient product"— (1) Means a product that— (i) Meets Department of Energy and Environmental Protection Agency criteria for use of the Energy Star trademark label; or (ii) Is in the upper 25 percent of efficiency for all similar products as designated by the Department of Energy's Federal Energy Management Program. (2) The term "product" does not include any energy-consuming product or system designed or procured for combat or combat-related missions (<a href="#">42 U.S.C. 8259b</a>).</p> <p>(b) The Contractor shall ensure that energy-consuming products are energy efficient products (i.e., ENERGY STAR® products or FEMP-designated products) at the time of contract award, for products that are— (1) Delivered; (2) Acquired by the Contractor for use in performing services at a Federally-controlled facility; (3) Furnished by the Contractor for use by the Government; or (4) Specified in the design of a building or work, or incorporated during its construction, renovation, or maintenance.</p> <p>(c) The requirements of paragraph (b) apply to the Contractor (including any subcontractor) unless— (1) The energy-consuming product is not listed in the ENERGY STAR® Program or FEMP; or (2) Otherwise approved in writing by the Contracting Officer.</p> <p>(d) Information about these products is available for— (1) ENERGY STAR® at <a href="http://www.energystar.gov/products">http://www.energystar.gov/products</a>; and (2) FEMP at <a href="http://www1.eere.energy.gov/femp/technologies/eep_purchasingspecs.html">http://www1.eere.energy.gov/femp/technologies/eep_purchasingspecs.html</a>.</p>	Environmentally preferable purchases & practices	All federal contracts	All	DOE, FEMP	

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
36	<p><b>H.18 Sustainable Engineering:</b> NASA will make available 1% of the contract award amount for incentive payments to the Contractor to encourage sustainable engineering efforts that support the goals of Executive Order (EO) 13423. EO 13423 establishes policy of the United States that Federal Agencies, including NASA, conduct their environmental, transportation, and energy-related activities in an environmentally, economically, and fiscally sound, integrated, continuously improving, efficient, and sustainable manner. The Contractor is encouraged to develop, prepare, and submit sustainable engineering change proposals (SECP's) voluntarily during execution of this contract that support the goals of EO 13423. Each SECP must identify specific actions to be taken, provide an explanation of how those actions support the goals of EO 13423, propose metrics for evaluating the success of the actions, and propose a value for the incentive payment. The Contracting Officer will review, negotiate modifications as appropriate, and provide approval to proceed with implementation of approved SECP's. The Contractor shall receive the approved incentive payment following successful implementation of the SECP. Partial payment may be awarded, at the discretion of the Contracting Officer, if the metrics for evaluating success of the action are not fully achieved.</p>	Incentive payments and disincentives	Cleanup	Statement of Work  Anytime during contract execution	NASA	<p>Prime contractor passing clause through to subs</p> <p>Encouraged to propose metrics for evaluating actions</p> <p>incentives for Sustainable engineering</p>
<b>States</b>						
37	<p><b>Experience and Capabilities:</b> The relevant management experience and the technical experience capabilities of the proposer and team member (firms) shall be defined with respect to the following activities:</p> <p>Project Experience</p> <ul style="list-style-type: none"> <li>▪ Experience planning and executing "green" site assessments and cleanups that incorporate resources reductions in:</li> <li>▪ Energy requirements,</li> <li>▪ Air emissions,</li> <li>▪ Water requirements and associated impacts on water resources,</li> <li>▪ Impacts on land and ecosystems,</li> <li>▪ Material consumption and waste generation, and</li> <li>▪ Impacts on long-term stewardship of a site.</li> </ul>	Professional qualifications & technical experience	Technical Services Contract	Procurement	ID DEQ - Division of Purchasing	
38	<p><b>Preference for Acquisition of Energy Efficient and Sustainable Equipment Products:</b> Prior to selection of an equipment item(s), the contractor shall evaluate the availability and potential for using equipment that is energy efficient (i.e., electricity, gasoline, diesel, etc.) and/or has been produced using sustainable products; and equipment products that reduce or eliminate the production of hazardous and toxic substances either through operation, or potential releases after disposal. The Department will require the Contractor to report their evaluation and findings when submitting their request for acquisition. The Department will consider approval for purchasing/renting equipment that has a higher purchase price than its counterparts that are not as energy efficient or compatible with the Department's sustainability goals.</p>	Environmentally preferable purchases & practices	Remediation	RFP  Contract SOW	MA DEP	

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
39	<p>Future work plans under this Contract may be required to comply with the requirements of the Green Practices Reference List, <b>Attachment 7</b>, and the Green Practices Work Plan Attachment, <b>Attachment 8</b>, which are incorporated herein and made a part of this Contract. The State reserves the right to update said instructions at any point. Once the State has distributed any revised instructions to the Contractors, the Contractors are required to implement all changes based on the revision date of Attachments 7 and 8. *</p> <p><a href="http://www.pca.state.mn.us/index.php/about-mpca/assistance/financial-assistance/american-recovery-and-reinvestment-act-arra-of-2009-lust-prp-guidance.html">http://www.pca.state.mn.us/index.php/about-mpca/assistance/financial-assistance/american-recovery-and-reinvestment-act-arra-of-2009-lust-prp-guidance.html</a></p> <p>* [in the above link, Attachment 7 is labeled "prp-arra-04" and Attachment 8 is labeled "prp-arra-09"]</p>	General green remediation & sustainability practices	Multi-site contract on all fund-financed LUST sites	Master contract amendment SOW	MN PCA Green Sustainable Remediation and Redevelopment (GSR2)	<p>MPCA petroleum remediation program</p> <p>As of 7/1/10, All LUST fund-financed sites affected</p>
40	<p>The use of Green Remediation concepts as part of remedial activities at sites will be considered a mitigating condition. Green Remediation is defined by the United States Environmental Protection Agency (USEPA) as "the practice of considering all environmental effects of remedy implementation and incorporating options to maximize the net environmental benefit of cleanup actions." Additional information concerning green remediation can be found on the USEPA Region 2 web site at: <a href="http://www.epa.gov/region2/superfund/green_remediation/">http://www.epa.gov/region2/superfund/green_remediation/</a></p>	General green remediation & sustainability practices	Remediation	Evaluation of cleanup options  Implementation	NJ DEP	"Mitigating factor" can result in less state oversight
41	<p><b>Use of Best Available Retrofit Technology (BART) and Ultra Low Sulphur Diesel (ULSD):</b> The Contractor certifies and warrants that all heavy duty vehicles, as defined in new York State Environmental Law (ECL) section 19-0323, to be used under this Contract, will comply with the specifications and provisions of ECL section 19-0323 and any regulations promulgated pursuant thereto, which requires the use of Best Available Retrofit Technology (BART) and Ultra Low Sulphur Diesel (ULSD), unless specifically waived by the Department. Qualification for a waiver under this law will be the responsibility of the Contractor.</p>	<p>Clean fuel and related practices</p> <p>Environmentally preferable purchases &amp; practices</p>	Remediation	RFP SOW  Subcontract	NY DEC Contracts Section	e.g., ULSD

#	Procurement or Contract Language	Green Practice Area	Contract Type	Contract Phase	Implementing Entity	Notes
42	<ul style="list-style-type: none"> <li>▪ All services required under this Contract shall be performed in accordance with the standard practices, subject to all applicable Federal and State laws, regulations, and legal policies, <i>as well as any other standard practices that the Department may from time to time direct the Contractor to follow.</i></li> <li>▪ ARTICLE 2 - <i>General Description of Services</i> - These actions must be consistent with the most current version of the Department's Division of Environmental Remediation's (DER) Technical Guidance for Site Investigation and Remediation (<b>DER-10</b>) <ul style="list-style-type: none"> <li>• DER 10 (section on green remediation)</li> </ul> <p><b>1.14 Sustainability and Green Remediation</b></p> <p>(a) Role of green remediation in remedial programs. Green remediation seeks to minimize ancillary environmental impacts such as green house gas emissions (GHGs) from remedial programs. Applying green remediation concepts, such as minimizing energy consumption, maximizing the reuse of land and the recycling of materials, and conserving natural resources helps to achieve that objective.</p> <ol style="list-style-type: none"> <li>1. Green remediation concepts will be applied to the cleanup of contaminated properties such that the remedies are protective of public health and the environment, economically sound, and as sustainable as possible.</li> <li>2. Green remediation is not intended to encourage, and does not justify, implementation of a no action or lesser remedy when a more comprehensive remedy is called for, appropriate, and feasible. concepts will be expected and encouraged in all phases of the remedial program. These efforts will provide for a more sustainable cleanup by: <ol style="list-style-type: none"> <li>i. reducing direct and indirect emissions of carbon dioxide (CO2) and other Gs;</li> <li>ii. conserving natural resources; iii. reducing waste; and iv. maximizing habitat value.</li> </ol> </li> </ol> <p>(b) Role of sustainability in remedial programs. Opportunities to increase sustainability exist throughout the investigation, design, construction and site management phases of site remediation regardless of the selected cleanup remedy.</p> <ol style="list-style-type: none"> <li>1. DER will emphasize and encourage the use of green strategies and approaches at every stage of the remedial program by remedial parties and will also foster the use of green remediation best management practices as they are identified by DEC.</li> <li>2. While sustainability will be a consideration in remedy selection, it will not change any existing statute, regulation or guidance.</li> </ol> <p>(c) Additional guidance relative to green remediation and sustainability in DER remedial programs is available on DEC's website identified in the table of contents.</p> <p><b>Section 1.15 Electronic Submissions</b></p> <p>(a) DER supports and encourages the use of electronic submissions by the remedial party to the greatest degree appropriate for the site-specific remedial program. The electronic submission approach for a given activity may vary and should be defined in the appropriate work plan or by consultation with the DER project manager.</p> <ol style="list-style-type: none"> <li>1. The remedial party will deliver to the DER preliminary or final reports in an electronic format that complies with DEC's Electronic Document Standards (EDS) or as otherwise directed by DER.</li> <li>2. All data generated will be submitted in an electronic data deliverable (EDD) that complies with the DEC's Electronic Data Warehouse Standards (EDWS) or as otherwise directed by DER.</li> <li>3. Additional information relative to the EDS, EDD and EDWS is available on the DEC website identified in the table of contents.</li> </ol> <p>(b) DER will also seek to maximize its use of electronic responses and document distributions in all reviews, approvals or other DER initiated actions required in accordance with this guidance.</p> </li> </ul>	General green remediation & sustainability practices	Emergency response	Contract SOW	NY DEC  Contracts Section	Language similar to many federal green and sustainable programs

### Acronyms

BACT	Best Available Control Technology	OSRTI	Office of Superfund Remediation and Technology Innovation
BART	Best Available Retrofit Technology	RAC	Remedial Action Contract
DOCs	Diesel Oxidation Catalysts	RFP	Request for Proposal
DPF	Diesel Particulate Filters	RLF	Revolving Loan Fund
ERRS	Emergency and Rapid Response Services	ROC	Regional Oversight Contract
FEMP	Federal Emergency Management Program	RPM	Remedial Program Manager
GHG	Greenhouse Gas	RSE	Remedial System Evaluation
IA	Interagency Agreement	SECP	Sustainable Engineering Change Proposal
ID DEQ	Idaho Department of Environmental Quality	SOW	Statement of Work
MA DEP	Massachusetts Department of Environmental Protection	START	Superfund Technical Assessment Response Team
MN PCA	Minnesota Pollution Control Agency	T&D	Transfer and Disposal
NASA	National Aeronautic and Space Agency	TO	Task Order
NJ DEP	New Jersey Department of Environmental Protection	ULSD	Ultra Low Sulfur Diesel
NY DEC	New York Department of Environmental Conservation	USACE	United States Army Corps of Engineers
NY DER	New York Division of Environmental Remediation	VDEC	Verified Diesel Emission Control Technology
OBLR	Office of Brownfields and Land Revitalization	WA	Work Assignment
OSC	On-scene Coordinator	WAM	Work Assignment Manager

#### Sample Approach Used by Private Industry: Procurement of Remedial Action Construction Subcontractor:

Respondents were evaluated on their approach for complying with EPA Region 2's "Clean & Green" policy and implementing additional green remediation strategies. The green remediation evaluation criteria were weighted 20 out of 100 total points.

*as reported by CDM at the "Green Remediation: Environment ~ Energy ~ Economics" International Conference, June 15-17, 2010*

Green Remediation Practice	Portion of Financial Incentive Pool
Use 100% of electricity for groundwater treatment facility operation, maintenance, and monitoring from renewable source	13%
Use of ultra-low sulfur diesel fuel for at least 75 % of fuel purchased or use air exhaust cleaning devices (diesel particulate filters and diesel oxidation catalysts) on at least 75 % of vehicles used for construction	7%
Use of coal combustion products (CCP) in at least 75 % of concrete poured	3%
Use of recycled concrete in place of crushed stone for 100 % of material placed for access roads/parking	3%
Use of recycled steel in the pre-engineered metal building	3%
Use of re-usable concrete forms for at least 50 % of formwork	3%
Use of recycled materials in 100 % of pavement restored	3%

View project profiles about sites where best management practices were used to improve environmental performance and outcomes of cleanups ([http://www.cluin.org/greenremediation/tab\\_d.cfm](http://www.cluin.org/greenremediation/tab_d.cfm)). Projects include cleanups at the:

- Barksdale Air Force Base, where construction plans under a fixed price contract were modified for "greening the government" goals aligned with EO 13423
- NASA Jet Propulsion Laboratory (JPL), which took advantage of a 1% contractor award for meeting goals of EO 13423

## Part 4: Related Federal or State Mandates and Guidance

Green cleanup provisions build in part on recent federal and state legislative actions, regulations, and guidance related to conservation of energy and other natural resources. These drivers include:

- **American Recovery and Reinvestment Act of 2009 (ARRA)**  
<http://www.recovery.gov/>
- **Energy Independence and Security Act of 2007**  
[http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110\\_cong\\_public\\_laws&docid=f:publ140.110.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_public_laws&docid=f:publ140.110.pdf)
- **Energy Policy Act of 2005**  
[http://www.fedcenter.gov/Documents/index.cfm?id=2969&pge\\_prg\\_id=8752&pge\\_id=1857](http://www.fedcenter.gov/Documents/index.cfm?id=2969&pge_prg_id=8752&pge_id=1857)
- **Executive Order (EO) 13423: Strengthening Federal Environmental, Energy, and Transportation Management**  
<http://www.epa.gov/oaintrnt/practices/eo13423.htm>
- **Executive Order 13514: Strengthening Federal Environmental, Energy, and Transportation Management**  
<http://edocket.access.gpo.gov/2009/pdf/E9-24518.pdf>
- **Executive Order 13514 Section 13: Recommendations for Vendor and Contractor Emissions, General Services Administration**  
[http://www.gsa.gov/graphics/admin/GSA\\_Section13\\_FinalReport\\_040510\\_v2.pdf](http://www.gsa.gov/graphics/admin/GSA_Section13_FinalReport_040510_v2.pdf)
- **FedCenter policies on acquisition of goods and services** pursuant to Executive Orders 13423 and 13514  
<http://www.fedcenter.gov/programs/buygreen/>
- **U.S. General Services Administration *Strategically Sustainable Solutions***  
<http://www.gsa.gov/portal/category/26433>

Rules, regulations, and policies for renewable energy and energy efficiency in each state are available and frequently updated in the:

- **Database of State Incentives for Renewables & Efficiency (DSIRE)**  
<http://www.dsireusa.org/summarytables/index.cfm?ee=1&RE=1>.

*EPA's hazardous waste programs are working to reduce the energy use and environmental footprint during the investigation and remediation of sites. As part of this effort, EPA's Superfund program will implement its green remediation strategy to reduce the energy, water, and materials used during site cleanups while ensuring that protective remedies are implemented.*

**Fiscal Year 2011-2015 EPA Strategic Plan: Achieving Our Mission**  
Goal 3: Cleaning Up Communities and Advancing Sustainable Development

Both EO 13423, Section 2(d) and EO 13514, Section 2(h) support the agency acquisition of goods and services through the use of sustainable environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products. EO 13514 further mandates that 95 percent of new contract actions, including task and delivery orders, for products and services with the exception of acquisition of weapon systems, meet the requirement for use of sustainable environmental practices. EO 13514 also includes products which are non-ozone depleting or are non-toxic or less toxic alternatives where such products and services meet agency performance requirements.

Both EOs also specifically require that agencies acquire paper of at least 30 percent post-consumer fiber content. EO 13514 further stipulates that uncoated printing and writing paper be used. EO 13514 also specifically requires that there be procurement preference for EPEAT-registered electronic products and that, for electronic equipment, Energy Star and FEMP designated electronic equipment be procured.

*Federal Facilities Environmental Stewardship & Compliance Assistance Center (FedCenter)*



## Part 5: Administrative Language for Green Cleanups

Green specifications are becoming part of regional and state administrative records such as records of decision and corrective action orders. EPA regions and OSWER also include green specifications in IAGs or memoranda of understanding with other federal agencies and oftentimes request states to include green remediation language in material supporting federally funded grants.

Superfund Program	
Interagency Agreements	
<p><b>U.S. Army Corps of Engineers (USACE); Greening Terms and Conditions:</b> The USACE shall use technologies and practices that are sustainable in accordance with EPA Region 2 “Clean and Green” policy (March 2009) found at <a href="http://epa.gov/region2/superfund/green_remediation/">http://epa.gov/region2/superfund/green_remediation/</a>.</p> <p>At the direction of the EPA RPM or EPA Project Officer, the USACE shall incorporate requirements for the appropriate practices into the terms of its contracts consistent with the EPA Region 2 Clean and Green policy. The USACE shall report monthly on the use of these technologies and practices, including the associated quantities of materials reduced, reused, or recycled as a direct result of these practices, for all remedial activities conducted under this IA within its monthly status report submission.</p>	Region 2
<p><b>USACE; Green Remediation Terms and Conditions:</b> “Green Remediation” is the practice of considering all environmental effects of the implementation of a remedy and incorporating options to maximize the net environmental benefit of cleanup actions. In accordance with EPA’s strategic plan for compliance and environmental stewardship, the Agency strives for cleanup programs that use natural resources and energy efficiently, reduce negative impacts on the environment, minimize or eliminate pollution at its source, and reduce waste to the maximum extent possible. In addition, it has been demonstrated that diesel emissions are the factor in airborne pollutant cancer risk in most major U.S. cities (EPA, 2002). It is EPA Region 10’s goal to substantially mitigate the generation of such air toxics during the cleanup process. The EPA Superfund program supports the adoption of green site assessment and remediation, which is defined as the practice of considering all environmental impacts of studies, selection, and implementation of a given remedy, and incorporating strategies to maximize the net environmental benefit of cleanup actions (see <a href="http://www.clu-in.org/greenremediation/">http://www.clu-in.org/greenremediation/</a>).</p> <p>Examples of green remediation technologies include</p> <ul style="list-style-type: none"> <li>• Use of 100% of electricity from renewable sources</li> <li>• Use of green concrete (concrete with recycled content) for a portion of concrete materials</li> <li>• Clean diesel technologies, such as retrofits of vehicles with diesel particulate filters and use of cleaner fuels.</li> <li>• Use of idle minimization practices and technologies.</li> <li>• Methane capture at landfill sites</li> <li>• Recycling of building materials and purchase of materials with recycled content</li> <li>• Recycling of materials generated at the project site (i.e. paper and other recyclables generated at the site) targeting at least 80% of waste produced.</li> </ul> <p>The Corps of Engineers shall explore and implement green remediation strategies and applications in the performance of the requirements of this Interagency Agreement to maximize sustainability, reduce energy and water usage, promote carbon neutrality, promote industrial materials reuse and recycling, mitigate air toxics generation from diesel engines in some manner with a preference for retrofits ideally, but use of cleaner fuels for on and off road vehicles at a minimum, and protect and preserve land resources. The Corps shall present green remediation options and approaches in its work plans, provide cost analyses for these options in its work plan budgets, maintain records of</p>	Region 10

<p>“green-related” activities, and report this information to EPA in its monthly progress reports or as requested by the Project Officer.</p> <p>The following guidance documents and references provide additional information regarding the implementation of “Green Remediation” practices:</p> <ul style="list-style-type: none"> <li>• OSWER Green Remediation Primer <a href="http://clu.in.org/download/remed/Green-Remediation-Primer.pdf">http://clu.in.org/download/remed/Green-Remediation-Primer.pdf</a></li> <li>• Region 9 Smart Energy Use Guide (SERG) <a href="http://www.epa.gov/nrmrl/pubs/600r08049/600r08049.htm">http://www.epa.gov/nrmrl/pubs/600r08049/600r08049.htm</a></li> <li>• Region 9 Clean Diesel Technologies and Alternative Fuels <a href="http://epa.gov/region09/cleanup-clean-air/cleandiesel.html">http://epa.gov/region09/cleanup-clean-air/cleandiesel.html</a></li> <li>• Federal Acquisition Regulation, Part 23, “Environment, Energy and Water Efficiency, Renewable Energy Technologies, Occupational Safety, and Drug-Free Workplace:” FAR Subparts 23.2, 23.4, and 23.7 (see <a href="https://www.acquisition.gov/far/html/Subpart%2023_2.html">https://www.acquisition.gov/far/html/Subpart%2023_2.html</a>)</li> <li>• Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management” (January 2007) (see <a href="http://www.epa.gov/oaintrnt/practices/eo13423.htm">http://www.epa.gov/oaintrnt/practices/eo13423.htm</a>)</li> </ul>	
<b>Administrative Orders</b>	
<p><b>Work to Be Performed:</b> <i>Green Strategy Plan for Implementing the Work.</i> The strategy should follow EPA Region 2’s <i>Clean and Green Policy</i> which may be found at <a href="http://www.epa.gov/region02/superfund/green_remediation/policy.html">http://www.epa.gov/region02/superfund/green_remediation/policy.html</a> . [language corresponding to a “Green Remediation Strategy” document to be added to the list of Work Plan deliverables, such as Quality Assurance Project Plan, Health and Safety Plan]</p> <p><b>Compliance with Other Laws:</b> Respondent shall conduct the Work required hereunder in accordance with CERCLA, the NCP, as well as applicable provisions of the following guidance documents, and of other guidance documents referenced in the following guidance documents: EPA Region 2’s “<i>Clean and Green Policy</i>” which may be found at: <a href="http://www.epa.gov/region02/superfund/green_remediation/">http://www.epa.gov/region02/superfund/green_remediation/</a>... as they may be amended or modified by EPA.</p> <p><b>Statement of Work:</b> [general changes corresponding to “Work to be Performed” and “Compliance with Other Laws” sections of the Administrative Order]</p>	Region 2
<b>Consent Decrees: Remedial Designs/Remedial Actions</b>	
<p><b>Statement of Work</b> [general language]: The Work shall follow EPA Region 2’s <i>Clean and Green Policy</i> which may be found at <a href="http://www.epa.gov/region02/superfund/green_remediation/policy.html">http://www.epa.gov/region02/superfund/green_remediation/policy.html</a>.</p>	Region 2
<b>Records of Decision</b>	
<p>Consistent with EPA Region 2’s <i>Clean and Green</i> policy, EPA will evaluate the use of sustainable technologies and practices with respect to any remedial alternative selected for the site.</p> <p><b>Description of the Selected Remedy</b> [Example: <i>Hopewell Precision Site OU1</i>]: <i>Green Remediation Considerations:</i> Under this alternative, green remediation objectives can be implemented by planning field activities that minimize fuel usage and impact to the environment. Planning that can minimize environmental impact includes, but would not be limited to:</p> <ul style="list-style-type: none"> <li>- Minimize number of field mobilizations</li> <li>- Use ultra low sulfur diesel or fuel-grade biodiesel as fuel (drillers)</li> <li>- Use non-phosphate detergents for decontamination</li> <li>- Schedule sampling to minimize shipping</li> </ul>	Region 2

<ul style="list-style-type: none"> <li>- Use of in-situ treatment and natural degradation processes to minimize energy usage and generation of greenhouse gas (GHG)</li> </ul>	
<p><b>Description of the Selected Remedy</b> [Example: Cortland Remote Holder Site]: To maximize the net environmental benefit, green remediation and sustainability efforts will be considered in the design and implementation of the remedy to the extent practicable, including:</p> <ul style="list-style-type: none"> <li>- Using renewable energy sources</li> <li>- Reducing greenhouse gas emissions</li> <li>- Encouraging low carbon technologies</li> <li>- Increase recycling and reuse of clean materials.</li> </ul> <p>The environmental benefits of the selected remedy may be enhanced by consideration, during the remedial design, of technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green policy. This will include consideration of green remediation technologies and practices.</p> <p><b>Elements of the Selected Remedy</b> [Example: Cortland Remote Holder Site]: To maximize the net environmental benefit, green remediation and sustainability efforts are considered in the design and implementation of the remedy to the extent practicable, including;</p> <ul style="list-style-type: none"> <li>- Using renewable energy sources</li> <li>- Reducing green house gas emissions</li> <li>- Encouraging low carbon technologies</li> <li>- Fostering green and healthy communities</li> <li>- Conserving natural resources</li> <li>- Increasing recycling and reuse of clean materials</li> <li>- Preserving open space and working landscapes</li> <li>- Enhancing recreational use of natural resources</li> <li>- Designing cover systems to be usable for habitat or recreation</li> <li>- Designing storm water management systems to recharge aquifers</li> </ul>	<p>NY Department of Environmental Conservation</p>
<p><b>CERCLA Subpart O Grants to States</b></p>	
<p><b>“Green Cleanup” specifications for Core Program grants</b> [pursuant to verbal EPA Region 10 request to all states in Region 10]: Sample language in work plan submitted by Idaho Department of Environmental Quality for work performed January 1, 2011, through December 31, 2010:</p> <p>Objective 3. Green Remediation: Initiate and Implement ‘Green Remediation’ activities to (1) reduce greenhouse gas emissions; (2) reduce landfill waste loads; and (3) expand Green Remediation benchmarks to include all contracted work performed for LUST Program (and continue Brownfields and VCP efforts).</p> <p>(Estimated Time Period: One Year)  (Estimated Cost: \$ 28,684)  (Estimated FTE: .21)</p> <p>Task 3A: For remediation activities being conducted by contractors at the Bunker Hill Superfund Site in North Idaho: (1) Survey/Audit current Green Remediation policies/practices and solicit additional contractor-recommended policies/practices to implement at the Site; and (2) Produce a Report summarizing the current practices and additional recommendations. Based on the results in (1) and (2), draft and provide to the Trustee managing the \$400 Million Remediation Trust Fund (funded by ASARCO settlement) a list of Green Remediation Policies and Practices together with a request that the Trustee incorporate the Policies and Practices into future contracts and assistance agreements executed between the Trustee and remediation contractors thereby ensuring the Green Remediation Policies and Procedures are</p>	<p>Region 10</p>

<p>implemented throughout the \$400 Million in remediation activities.</p> <p>Milestone:</p> <ul style="list-style-type: none"> <li>▪ Forward Green Remediation Policies and Practices document to Trustee with request that the Trustee incorporate into all future contracts and assistance agreements for remediation activities funded by the \$400 Million Trust – Fourth Quarter of 2011.</li> </ul> <p>Task 3B: Continue and expand current Green Remediation efforts to include LUST remediation activities (currently Brownfield and VCP Program contracts/services) by including Green Remediation benchmarks in all LUST, Brownfields, VCP work orders IDEQ issues to private contractors for LUST assessment and cleanup activities and by annually documenting our Green Remediation activities.</p> <p>Milestones:</p> <ul style="list-style-type: none"> <li>▪ New LUST Program Work Orders contain Green Remediation requirements (activities and reporting) – 1<sup>st</sup> Quarter.</li> <li>▪ Compile Report highlighting Green Remediation efforts and results – 4<sup>th</sup> Quarter.</li> </ul>	
<b>RCRA Program</b>	
<b>Corrective Measures Study</b> [RCRA Program Oversight of Engineering Analysis/Cost Analysis Work Plan]	
<p>It is EPA policy to enhance the environmental benefits of federal cleanup programs by promoting technologies and practices that are sustainable. Expectations for green cleanup and the policy itself are posted at: <a href="http://yosemite.epa.gov/R10/extaff.nsf/programs/greencleanups">http://yosemite.epa.gov/R10/extaff.nsf/programs/greencleanups</a>.</p> <p>Each remedial alternative should be revised to incorporate green remediation technologies. The Work Plan should also be revised to include green remediation factors for each alternative, including such factors as reporting and tracking specific quantities of materials reduced, reused, or recycled; carbon or greenhouse gas reductions; and water conserved or replenished. Use of these and other green remediation technologies will be standard unless a site-specific evaluation demonstrates impracticability or favors an alternative green approach. This policy does not fundamentally change how and why cleanup decisions are made, but calls for more sustainable methods of implementing cleanups. A comprehensive set of greener approaches to site cleanup may be found at <a href="http://www.clu-in.org/greenremediation">www.clu-in.org/greenremediation</a> and <a href="http://www.epa.gov/region09/cleanup-clean-air">www.epa.gov/region09/cleanup-clean-air</a>. Most emphatically, this policy is not intended to trade off environmental protectiveness for other benefits such as fewer carbon emissions. The Work Plan should include an analysis of how efficiently each alternative can be implemented or how “green” it can be. The policy is not an invitation to state or argue the self-evident fact that doing less uses less energy or has a smaller carbon footprint, that no action uses the least energy, [or that capping is less energy intensive than dredging].</p>	Region 10
<b>RCRA Corrective Action Orders and Permits</b>	
<p>In the identification, screening and development of corrective measure alternatives, the Facility is encouraged to consider, to the extent practicable, practices and technologies that will create ecological enhancements, reduce water consumption, recycle and/or reuse treated ground water, use energy efficient technologies, use renewable sources of energy (e.g., solar or wind), reuse existing infrastructure and consider the beneficial reuse of the site following cleanup.</p>	Region 7
<b>Grants</b>	
<p><b>Green Remediation Terms and Conditions:</b> The goal of Region 10's Office Clean and Green Policy is to enhance the environmental benefits of federal cleanup programs by promoting technologies and practices that are sustainable. The objectives of this Green Remediation policy are to:</p>	Region 10

- Protect human health and the environment by achieving remedial action goals;
- Support sustainable human and ecological use and reuse of remediated land;
- Minimize impacts to water quality and water resources;
- Reduce air toxics emissions and greenhouse gas production;
- Minimize material use and waste production; and
- Conserve natural resources and energy.

The required aspects of work performed under this grant will include:

- Employ 100% use of renewable energy, and energy conservation and efficiency approaches including EnergyStar equipment;
- Use cleaner fuels, diesel emissions controls and retrofits, and emission reduction strategies;
- Utilize water conservation and efficiency approaches including WaterSense products;
- Incorporate sustainable site design;
- Utilize reused or recycled industrial materials within regulatory requirements;
- Require recycling or reuse of materials generated at or removed from the site;
- Use environmentally preferable purchasing;
- Use "green concrete" (coal combustion products in place of Portland Cement);
- Ensure methane recovery from landfills;
- Support greenhouse gas emission reduction technologies; and
- Use Environmental Management System (EMS) practices such as reducing the use of paper by moving to fully electronic transmittal of project documents and implementation of waste reduction and recycling programs at all work sites.

For more information, see: <http://yosemite.epa.gov/R10/extaff.nsf/programs/greencleanups>

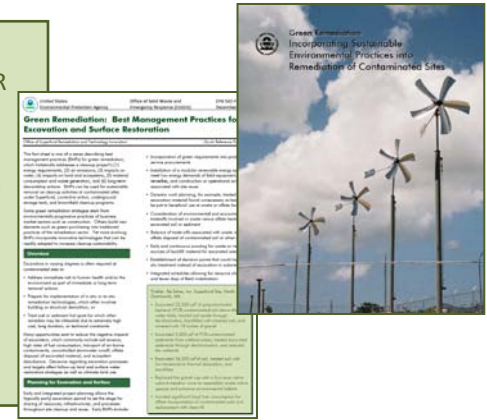
Meeting and Plan: The grantee will schedule a meeting to discuss the manners in which how the above may be accomplished and the associated costs and benefits within 30 days of award. Within 90 days of award, the grantee will submit a plan on how to accomplish the above, and a schedule for how these required measures might be phased into site work.

Reporting: The grantee will be required to submit an annual report on tasks accomplished relative to the plan, including quantifying benefits obtained. For example, for cleaner fuels and retrofits, the dollars spent, measures performed/cleaner fuel purchased (e.g. gallons of ULSD mixed with 20% biodiesel, gallons of ultra low sulfur diesel (ULSD) burned in conjunction with a diesel multistage filter (DMF)) and air toxics reduced (e.g. pounds SOx reduced) from the air would be reported.

Learn more about core elements of green remediation in the technology primer, *Incorporating Sustainable Environmental Practices in Remediation of Contaminated Sites* (EPA 542-R-08-002, April 2008). Download copies of GR quick-reference fact sheets as potential materials to “bring to the table” during cleanup negotiations, such as:

- *Incorporating Sustainable Practices into Site Remediation* (EPA 542-F-08-002, April 2008)
- *Green Remediation: Best Management Practices for Excavation and Surface Restoration* (EPA 542-F-08-012, December 2008)
- *Green Remediation: Site Investigation* (EPA 542-F-09-004, December 2009)
- *Green Remediation: Pump and Treat Technologies* (EPA 542-F-09-005, December 2009)
- *Green Remediation: Bioremediation* (EPA 542-F-10-006, March 2010)
- *Green Remediation: Soil Vapor Extraction & Air Sparging* (EPA 542-F-10-007, March 2010)
- *Green Remediation: Clean Fuel & Emission Technologies for Site Cleanup* (EPA 542-F-10-008, August 2010)

<http://www.cluin.org/greenremediation>



## Part 6: Green Cleanup Policies Developed by EPA Program and Regional Offices

OSWER cleanup programs should consider the *Principles for Greener Cleanups* during any phase of work, including site investigation, evaluation of cleanup options, and optimization of the design, implementation, and operation of new or existing cleanups. All cleanup approaches, and all elements of the cleanup process, can be optimized to enhance their overall environmental outcome; therefore, green remediation involves more than merely adopting a specific technology or technique. Stakeholders can learn about the Principles at: <http://www.epa.gov/oswer/greencleanups/principles.html>

Each of EPA's 10 regional offices has established a policy dedicated to improving the environmental performance and outcome of contaminated site cleanups (accessible at <http://clu.in.org/greenremediation/regions/index.cfm>).

- Region 1 Clean and Green Policy for Contaminated Sites
- Region 2 Clean & Green Policy (see Appendix B for supporting materials and related checklist)
- Region 3 Greener Cleanup and Sustainable Reuse Policy
- Region 4 Clean and Green Policy
- Region 5 Greener Cleanup Interim Policy
- Region 6 Clean and Green Policy
- Region 7 Interim Green Cleanup Policy
- Region 8 Green Remediation Policy
- Region 9 Greener Cleanups Policy
- Region 10 Clean & Green Policy

OSWER's Office of Superfund Remediation and Technology Innovation developed the *Superfund Green Remediation Strategy* as a program management tool designed to describe current plans of the Superfund Remedial Program to reduce greenhouse gas (GHG) emissions and other negative environmental effects that might occur during site assessment and remediation or non-time critical removal actions. The Strategy is publically available from EPA's *Superfund & Green Remediation* website (<http://www.epa.gov/superfund/greenremediation/>).

*In context of EO 13514, EPA activities include government remediation of Superfund sites. Draft guidance on federal greenhouse gas (GHG) accounting and reporting indicates that emissions associated with this activity are subject to "scope 3" voluntary reporting. EO 13514 defines scope 3 GHG as "emissions from sources not owned or directly controlled by a Federal agency but related to agency activities such as vendor supply chains, delivery services, and employee travel and commuting.*

Superfund Green Remediation Strategy, September 2010

*EPA Region 10 Superfund Division management requires all Superfund decision documents to be supported by a description of methods used to further implement the region's Clean and Green Policy.*

*Subscribe to CLU-IN's "TechDirect" monthly announcements to learn about upcoming GR technical webinars or view archived GR presentations such as:*

- Energy for the Future: Exploring Methane Gas-to-Energy Projects at Superfund Sites (May 6, 2010)
- Green Remediation Voluntary Standards Initiative (March 4, 2009)
- Tackling the Carbon Footprint at Pump and Treat Projects: A Case Study in Energy Efficiency (March 10, 2009)

<http://www.clu.in.org/newsletters/>

[www.clu.in.org/training/](http://www.clu.in.org/training/)

## Part 7: Procurement or Administrative Language of Related EPA Programs

Project procurement and administrative teams also may wish to adapt green criteria and language used in contracts or funding materials of related EPA programs.

Program Topic	Website	EPA Program Office
<b>Construction air quality language</b> for reduction of diesel emissions from equipment and vehicles used in the construction sector	<a href="http://www.epa.gov/cleandiesel/construction/contract-lang.htm">http://www.epa.gov/cleandiesel/construction/contract-lang.htm</a>	Office of Air and Radiation, Clean Construction USA
<b>NEDC Model Construction Contract Specification</b> for emission controls in the construction sector	<a href="http://northeastdiesel.org/pdf/NEDC-Construction-Contract-Spec.pdf">http://northeastdiesel.org/pdf/NEDC-Construction-Contract-Spec.pdf</a>	National Clean Diesel Campaign; Northeast Diesel Collaborative
<b>Federal Green Construction Guide for Specifiers</b> , including sample specification language	<a href="http://www.wbdg.org/design/greenspec.php">http://www.wbdg.org/design/greenspec.php</a>	EPA partnership with the Federal Environmental Executive
<b>Integrating Green Purchasing into Your Environmental Management System (EMS)</b> ; ISO 14001 elements in context of green purchasing	<a href="http://www.epa.gov/epp/pubs/grn-pur/green-pur-ems2.htm#enviropol-epa-esc">http://www.epa.gov/epp/pubs/grn-pur/green-pur-ems2.htm#enviropol-epa-esc</a>	Environmentally Preferable Purchasing Team
<b>Settlement agreements with supplemental environmental projects</b> to promote energy efficiency and renewable energy [Appendix D of “A Toolkit for States: Using SEPs to Promote Energy Efficiency (EE) and Renewable Energy (RE)”]	<a href="http://www.epa.gov/statelocalclimate/documents/pdf/sep_toolkit.pdf">http://www.epa.gov/statelocalclimate/documents/pdf/sep_toolkit.pdf</a>	Office of Enforcement and Compliance; Office of Air and Radiation
Proposed guidelines for <b>brownfields assessment, revolving loan fund, and cleanup grants</b> ; project benefits that include environmental benefits from infrastructure reuse/sustainable reuse and incorporation of sustainable practices	<a href="http://www.epa.gov/brownfields/applicat.htm">http://www.epa.gov/brownfields/applicat.htm</a>	Office of Brownfields and Land Revitalization

*EPA’s Database of Environmental Information for Products and Services includes contract language and policies developed by local, state, and federal governments as well as private organizations (<http://yosemite1.epa.gov/oppt/eppstand2.nsf/Pages/Contracts.html?Open>).*



## Part 8: Green Financing Mechanisms and Leverage

EPA and other agencies offer services to help government agencies and community stakeholders plan and implement innovative projects. Federal and state agencies also provide funding and/or direct services for pilot or grant projects that can demonstrate green project approaches and gather information for effective national or regional cleanup programs.

Information Resource	Sponsor
<b>Financial assistance</b> opportunities available to federal energy managers, business, industry, universities, inventors, and consumers for development and demonstration of renewable energy and energy efficiency technologies. <a href="http://www1.eere.energy.gov/financing/">http://www1.eere.energy.gov/financing/</a>	U.S. DOE Energy Efficiency and Renewable Energy (EERE)
<b>TAP for pollution prevention (P2)</b> provides businesses with environmental management assistance and helps implement measures for reducing or eliminating pollution at its source. <a href="http://www.epa.gov/p2/pubs/assist/index.htm">http://www.epa.gov/p2/pubs/assist/index.htm</a>	EPA Office of Pollution Prevention and Toxics
<b>Database of State Incentives for Renewables &amp; Efficiency (DSIRE)</b> lists current state-specific financial incentives for renewable energy and energy efficiency. <a href="http://www.dsireusa.org/summarytables/index.cfm?ee=1&amp;RE=1">http://www.dsireusa.org/summarytables/index.cfm?ee=1&amp;RE=1</a>	U.S. DOE EERE/National Renewable Energy Laboratory (NREL) (operated by North Carolina Solar Center and Interstate Renewable Energy Council)
<b>RE-Powering America's Land</b> describes federal and state-specific incentives, opportunities, and mapping for renewable energy generation on contaminated lands and mining sites; covered energy sources include wind, concentrating solar power, photovoltaics, and biomass. <a href="http://www.epa.gov/oswer/ocpa/maps_incentives.htm">http://www.epa.gov/oswer/ocpa/maps_incentives.htm</a>	EPA OSWER Center for Program Analysis
<b>Energy Savings Performance Contracts</b> enable partnerships between federal agencies and energy service companies to conduct energy audits for a specific federal facility and identify facility improvements. <a href="http://www1.eere.energy.gov/femp/financing/espcs.html">http://www1.eere.energy.gov/femp/financing/espcs.html</a>	U.S. DOE EERE Federal Energy Management Program

For an example of innovative financial leveraging and resource sharing that accommodates site reuse plans, see: Appendix C: **Cost Justification** for Greening Response Actions, Camilla Wood Preserving Site, Region 4.

EPA Region 9 will use **Superfund "special account funds"** reserved from CERCLA settlement agreement to install a large-scale renewable energy system at the Stringfellow NPL site in southern California, where long-term groundwater treatment is underway. Production of electricity from onsite solar resources is expected to reduce remedial operating costs through **net metering incentives** under the California Solar Initiative.

EPA Pilot Project or Grant Opportunities	Sponsor and Point of Contact
<b>OSRTI Green Remediation Pilot Projects:</b> support for scoping, planning, or designing greener cleanups, as part of EPA implementation of the <i>Superfund Green Remediation Strategy</i>	EPA Office of Solid Waste and Emergency Response, OSRTI (Dan Powell, <a href="mailto:powell.dan@epa.gov">powell.dan@epa.gov</a> )
<b>RE-Powering America's Land:</b> technical support to regions for assisting communities in assessment and/or demonstration of the potential for renewable energy development on contaminated lands	EPA Office of Solid Waste and Emergency Response, Center for Program Analysis (Lura Matthews, <a href="mailto:matthews.lura@epa.gov">matthews.lura@epa.gov</a> )
<b>OSWER Innovation:</b> technical support to EPA Innovation Workgroup members for use by regions and program offices to foster innovative practices; priorities include energy recovery, waste minimization, and recycling	EPA Office of Solid Waste and Emergency Response (Jeff Kohn, <a href="mailto:kohn.jeffrey@epa.gov">kohn.jeffrey@epa.gov</a> ) <a href="http://www.epa.gov/swerrims/iwg/pilots/priority_area.htm">http://www.epa.gov/swerrims/iwg/pilots/priority_area.htm</a>
<b>Land Revitalization Program:</b> an EPA program or interagency “bridge” for greener cleanup projects supporting EPA’s land revitalization national priorities, including sustainable development, energy efficiency, and effective institutional/engineering controls	EPA Office of Solid Waste and Emergency Response, Office of Brownfields and Land Revitalization (Patricia Overmeyer, <a href="mailto:overmeyer.patricia@epa.gov">overmeyer.patricia@epa.gov</a> )
<b>Superfund Redevelopment Initiative:</b> seed funding to explore future land use scenarios at NPL sites, with pilot projects such as feasibility studies to assess potential for using onsite renewable energy resources to power remediation activities or supplement the utility grid	EPA Office of Solid Waste and Emergency Response, OSRTI (Melissa Friedland, <a href="mailto:Friedland.melissa@epa.gov">Friedland.melissa@epa.gov</a> )
<b>Brownfields Program:</b> incorporation of greener cleanup terms into grants involving direct EPA funding for brownfields assessment, cleanup, revolving loans, and environmental job training	EPA Office of Solid Waste and Emergency Response, Office of Brownfields and Land Revitalization (Patricia Overmeyer, <a href="mailto:overmeyer.patricia@epa.gov">overmeyer.patricia@epa.gov</a> ) <a href="http://www.epa.gov/brownfields/grant_info">http://www.epa.gov/brownfields/grant_info</a>

*EPA’s Brownfields Program and Region 10 recently partnered with state counterparts in Idaho in obtaining E<sup>2</sup>-funded technical assistance to evaluate the technical and economic feasibility of using photovoltaic energy to power a soil vapor treatment system.*

## Part 9: Green Incentives

EPA program offices and regions as well as other government agencies are investigating or using incentives that foster green approaches by cleanup contractors, site owners, and other stakeholders.

Task Provision	Deviation from Performance Standard	Quality Assurance Surveillance	Financial Incentive/Disincentive	EPA Region Incorporating Incentive
<b>Alternative Fuel Negative Incentive</b>				
Diesel emissions for all of the on-site diesel-powered equipment are reduced during construction through the use of selected percentages of alternative fuels, such as bio-diesel, in conjunction with idle-reduction practices. Fuel usage, including the type and percentage of alternate fuel utilized, shall be included in progress reports as necessary. The following performance standard ranges correspond to varying disincentives for differing fuel mixtures: (a) 5% to 9% alternative fuel (b) 10% to 14% alternative fuel (c) 15% to 19% (d) >19% alternative fuel	None allowed	On-site surveillance by project officer (PO) or designee and review of progress reports	An amount equal to 1% of CLIN 0001 will be deducted from contractor invoice if all diesel-powered equipment does not utilize a minimum of 4% alternative fuel in conjunction with idle-reduction practices. The following deductions correspond to the performance standard ranges for use of alternative fuels: (a) 0.75% withheld (b) 0.50% withheld (c) 0.25% withheld (d) 0 % withheld	EPA Region 4 EPA Region 9
<i>Note: Idle reduction practices consist of turning off vehicles while waiting to load or unload materials if the idling time exceeds five minutes. All equipment and vehicles that utilize alternative fuels will be identified in the progress reports and alternative fuel usage (filling of onsite storage tanks or fuel deliveries) will be reported as necessary.</i>				
<b>Local Buy Incentive</b>				
(a) Expenditures of 50% or greater than the project price. (b) Expenditures of 40-49% but less than 50% of the project price (c) Expenditures of 30 -39% but less than 40% of the project price (d) Expenditures of 20-29% but less than 30% of the project price	None allowed	PO review of supporting documentation	(a) 100% of the funding pool (b) 75% of the funding pool (c) 50% of the funding pool (d) 25% of the funding pool	EPA Region 4 EPA Region 9
<i>Note: The funding pool is equal to 2.5% of the project price. Only EPA-approved expenditures will be considered allowable expenditures for the purpose of the Local Buy Incentive. The following are considered eligible expenditures: subcontracts awarded to small business (SB) firms headquartered or located in the local area; hiring laborers who are residents of the local area; purchase of other goods and services from SB vendors located within the local area. The "local area" is defined as the following counties: [to be specified].</i>				

*The Greener Cleanups Task Force of the Association of State and Territorial Solid Waste Management Officials outlined a variety of incentives that states could use to promote greener cleanups ([http://www.astswmo.org/programs\\_sustainability.htm](http://www.astswmo.org/programs_sustainability.htm)).*

## Part 10: Decision Making Tools

OSRTI provides a summary of tools to help decision-makers evaluate the environmental footprints of current or proposed remediation activities at contaminated sites. Users can quickly sort through different categories to identify resources for developing cleanup approaches or creating hypothetical “what-if?” scenarios at specific locations.

- Forms of Tools:**
- Simple Web-based calculators
  - Government or commercial software models
  - Checklists, tables, or process diagrams integral to electronic tools

Access more than 50 decision tools and learn about cleanup footprint assessments at: [http://www.cluin.org/greenremediation/subtab\\_b3.cfm](http://www.cluin.org/greenremediation/subtab_b3.cfm)

Sample of Tools Applicable to Core Elements of Green Remediation													
Title or Common Name	Sponsor	General Description and Access Information											
			Web Calculator	Decision Software	Decision Matrix	Policy/Industry Tool	Site-Specific	Energy Efficiency	Renewable Energy	Water	Air Emission	Land & Ecosystem	Materials & Waste
Beneficial Reuse Model	University of Toledo	The Beneficial Reuse Model is a suite of modules for comparing different materials for road construction. Modules address life cycle assessment, eco toxicity potential, and fresh water sediment systems. <a href="http://benremod.eng.utoledo.edu/BenReMod/">http://benremod.eng.utoledo.edu/BenReMod/</a>		•			•	•		•	•	•	•
EMFACT™	NEWMOA	EMFACT is designed to be used within companies for systematically tracking materials and energy use; releases, discharges, and wastes; and associated costs. <a href="http://www.newmoa.org/prevention/emfact/about.cfm">http://www.newmoa.org/prevention/emfact/about.cfm</a>		•			•	•		•	•		•
Fan System Assessment Tool (FSAT)	U.S. DOE EERE	FSAT quantifies potential benefits of optimizing fan system configurations in industrial processes. <a href="http://www1.eere.energy.gov/industry/bestpractices/software_fsat.html">http://www1.eere.energy.gov/industry/bestpractices/software_fsat.html</a>		•			•	•					
PVWatts	U.S. DOE NREL	The PVWatts calculator determines energy production and cost savings for hypothetical grid-connected PV systems. <a href="http://www.nrel.gov/rredc/pvwatts/">http://www.nrel.gov/rredc/pvwatts/</a>		•					•				
RETScreen	Natural Resources Canada	RETScreen evaluates energy production and savings, costs, emission reductions, financial viability, and risk for various types of renewable-energy and energy-efficient technologies (RETs). <a href="http://www.retscreen.net/">http://www.retscreen.net/</a>		•			•	•	•				
Waste Reduction Model (WARM)	U.S. EPA	WARM is used to assess specific benefits of reusing material such as fly ash, municipal solid waste recycling matter, and yard trimming compost, and helps convey estimates of GHG reductions. <a href="http://epa.gov/climatechange/wycd/waste/calculators/Warm_home.html">http://epa.gov/climatechange/wycd/waste/calculators/Warm_home.html</a>	•			•					•		•
Water Evaluation And Planning (WEAP)	Stockholm Environment Institute-U.S.	The WEAP system provides a framework for water assessment and planning. WEAP software is used to represent water conditions in a given area and explore demand and supply options for balancing environmental issues with land development. <a href="http://www.weap21.org/index.asp?doc=01">http://www.weap21.org/index.asp?doc=01</a>		•		•	•			•			

## Part 11: Contracting Points of Contact

More information about planning and executing contracts that foster strategies for green response actions and long-term remediation can be obtained from the following EPA personnel.

Contracting Area	Individual and Contact Information
Program Management and Regional Coordination Service Center	Jeanne Poovey, Service Center Manager, <a href="mailto:poovey.jeanne@epa.gov">poovey.jeanne@epa.gov</a> Superfund/RCRA Regional Procurement Operation Division Office of Acquisition Management Office of Administration and Resources Management
Emergency Response Service Center	Keith Stewart, Service Center Manager, <a href="mailto:stewart.keith@epa.gov">stewart.keith@epa.gov</a> Superfund/RCRA Regional Procurement Operations Division Office of Acquisition Management Office of Administration and Resources Management
Emergency Response Team (ERT)	ERT East: Harry Compton, Deputy Branch Chief, <a href="mailto:compton.harry@epa.gov">compton.harry@epa.gov</a> ERT West: Dennisses Valdes, Deputy Branch Chief, <a href="mailto:valdes.dennisses@epa.gov">valdes.dennisses@epa.gov</a> Technology Innovation and Field Services Division Office of Superfund Remediation and Technology Innovation Office of Solid Waste and Emergency Response
Emergency and Rapid Response Services (ERRS)	Tim Grier, <a href="mailto:grier.tim@epa.gov">grier.tim@epa.gov</a> Office of Emergency Management Office of Solid Waste and Emergency Response
Environmental Services Assistance Team (ESAT)	Angela Edwards, <a href="mailto:edwards.angela@epa.gov">edwards.angela@epa.gov</a> Resources Management Division Office of Superfund Remediation and Technology Innovation Office of Solid Waste and Emergency Response
Superfund Technical Assessment Response Team (START)	Eugene Lee, <a href="mailto:lee.eugene@epa.gov">lee.eugene@epa.gov</a> Office of Emergency Management Office of Solid Waste and Emergency Response
OSRTI contracts	Barbara McDonough, Contracts Management Branch Chief, <a href="mailto:mcdonough.barbara@epa.gov">mcdonough.barbara@epa.gov</a> Resources Management Division Office of Superfund Remediation and Technology Innovation Office of Solid Waste and Emergency Response
Remedial action contracts (RAC)	Tiffany Moreland, <a href="mailto:moreland.tiffany@epa.gov">moreland.tiffany@epa.gov</a> Resources Management Division Office of Superfund Remediation and Technology Innovation Office of Solid Waste and Emergency Response
Regional oversight contracts (ROC)	Marie Bell, <a href="mailto:bell.marie@epa.gov">bell.marie@epa.gov</a> Federal Facilities Restoration and Reuse Office Office of Solid Waste and Emergency Response

## Appendix A: Sample Report Structure for Environmentally Preferred Practices Deployed by ERRS Contractor in Regions 5, 6, 9, and 10

### ERRS Contract Attachment on Environmentally Preferable Practices

The contractor shall provide a “green report” on reuse, recycling, waste streams reduction, and resource conservation as part of the monthly progress report. The intent is to show what is being done to keep wastes out of landfills or disposal facilities and to conserve energy or other natural resources, thereby reducing negative impacts of a removal action. Alternatives considered but discarded due to costs, time, or other factors also may be reported. A comment section of the monthly report may describe factors interfering with these efforts, such as unavailability of a local recycling process/facility, prohibitive cost, or inability to ensure items are “clean” enough to be re-used by others. Examples could include:

- Reuse: Borrowing onsite water for purposes such as dust suppression; re-using (instead of scrapping) emptied equipment such as cylinders or tanks
- Recycling: Salvaging and selling scrap metals; re-using bricks extracted during demolition
- Waste Stream Reduction: Treating wastes onsite versus transfer for offsite disposal; carefully managing wastes streams to segregate wastes into lesser categories (determined on a case-by-case basis); using alternative energy sources
- Resource Conservation: Using cleaner energy; reducing the volume of clean water needed

The report should capture the following fields; examples are by no means exhaustive or complete:

Site	Period	Action	Volume	Estimated Cost Savings	Estimate Environmental Benefit	Comments or Cost Estimate
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### Sample of Annual Summary Information Submitted to EPA Regions

Site	Period	Action	Volume	Estimated Cost Savings	Estimated Environmental Benefit	Comments or Cost Estimate
Site A	10/08	Salvaged and sold scrap metals	5,000 lbs	Received \$300 from sale; saved \$400 in transfer and disposal (T&D) costs	Reduced burden on landfill; avoided T&D-related greenhouse gas emissions	
Site B	11/08, ongoing	Used solar-powered vents	3 vents	\$8/vent each month	Reduced ongoing project costs; grid electricity available to alternate consumers	
Site C	11/08-12/08	Used onsite water for dust suppression	10,000 gal	Saved \$100 for water; saved \$1,000 in T&D	Reduced consumption of utility-supplied water	
Site D	1/09	Treated water onsite to meet cleanup standards	50,000 gal	Saved \$5,000 in T&D	Reduced burden on publicly owned treatment works	

## Appendix B: Region 2 “Clean & Green Policy” and Supporting Documents

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### Clean & Green Policy

“Green Remediation” is the practice of considering all environmental effects of the implementation of a remedy and incorporating options to maximize the net environmental benefit of cleanup actions. In accordance with EPA’s strategic plan for compliance and environmental stewardship, the Agency strives for cleanup programs that use natural resources and energy efficiently, reduce negative impacts on the environment, minimize or eliminate pollution at its source, and reduce waste to the maximum extent possible. The EPA Region 2 Superfund program supports the adoption of “green site assessment and remediation,” which is defined as the practice of considering all environmental impacts of studies, selection and implementation of a given remedy, and incorporating strategies to maximize the net environmental benefit of cleanup actions (see <http://www.clu-in.org/greenremediation>).

EPA Region 2 has established a "Clean & Green" policy to enhance the environmental benefits of Superfund cleanups by promoting technologies and practices that are sustainable. The policy applies to all Superfund cleanups. Under this policy, certain green remediation technologies will serve as touchstones for Region 2 response actions. The Region 2 Touchstone Technologies include:

- Use of 100% of electricity from renewable sources
- Concrete made with Coal Combustion Products (CCP) replacing a portion of traditional cement
- Clean diesel fuels and technologies
- Methane capture at landfill sites

[http://www.epa.gov/region02/superfund/green\\_remediation/policy.html](http://www.epa.gov/region02/superfund/green_remediation/policy.html)

The contractor shall explore and implement green remediation strategies and applications in the performance of the requirements of this work assignment to maximize sustainability, reduce energy and water usage, promote carbon neutrality, promote industrial materials reuse and recycling, and protect and preserve land resources. The contractor shall present green remediation options and approaches in its work plans, provide cost analyses for these options in its work plan budgets, maintain records of “green-related” activities, and report this information to EPA in its monthly progress reports or as requested by the Project Officer.

The following guidance documents and references provide additional information regarding the implementation of “Green Remediation” practices:

- “Green Remediation Practices” – Attachment A
- “Region 2 Green Checklist” – Attachment B
- Federal Acquisition Regulation, Part 23, “Environment, Energy and Water Efficiency, Renewable Energy Technologies, Occupational Safety, and Drug-Free Workplace:” FAR Subparts 23.2, 23.4, and 23.7 (see <http://www.arnet.gov/far/05-23-1/html/FARTOCP23.html>)
- Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management” (January 2007) (see <http://www.epa.gov/ointrnt/practices/eo13423.htm>)

## Appendix B (Region 2 Supporting Documents)

### Attachment A: “Green Remediation Practices”

This attachment describes EPA Region 2’s current basic guidelines for the contractor’s evaluation and implementation of “Green Remediation” practices in the performance of remedial activities under work assignments issued for this contract. In the performance of these remedial activities, the contractor shall, to the extent practicable, explore and evaluate the use of:

**Clean Air**, through the use of cleaner technology and engines, cleaner fuel and cleaner diesel control technology on all diesel equipment used at sites during the remedial work. Clean diesel technologies are preferred, and alternative fuels such as biodiesel or natural gas-powered vehicles should also be considered. The contractor shall use alternative fuels, of at least a B20 blend or higher, on all on-site diesel equipment where these fuels are available within a reasonable distance from the site. The contractor shall employ the most efficient emission control technology for reducing particulate matter (PM) emissions on non-road and on-road diesel powered equipment used at a site. The contractor shall use cleaner engines, which include non-road engines meeting Tier II or cleaner standards and on-road engines meeting 2004 “On-Highway Heavy Duty Engine Emissions Standards” or cleaner.

**Renewable Energy Sources**, when conducting work related to selection of a cleanup remedy, constructing a cleanup remedy, and upgrading or otherwise improving an existing cleanup remedy. These sources of renewable energy can include solar, wind, and biofuels. Examples of renewable energy technologies include photovoltaic panels, wind turbines, digesters, gasifiers, and microturbines. As part of evaluating renewable energy sources and technologies, the contractor shall perform cost analyses that compare the energy costs from renewable sources to costs from traditional electricity sources provided by local utilities, over the expected life of the cleanup remedy. The contractor shall also perform evaluations of the emissions prevented as a result of using renewable energy sources versus traditional energy sources provided by local utilities. Finally, the contractor shall evaluate the costs of purchasing “green power” from organizations that offer such green power within the state where the site is located.

**“GreenScapes,”** as a cost-efficient and environmentally friendly solution for site landscaping. The “Greenscapes” concept has been designed to help preserve natural resources and prevent waste and pollution, and encourages practitioners to make more comprehensive decisions regarding waste generation and disposal and their associated cost and environmental effects on land, water, air, and energy use. “GreenScaping” encompasses a set of landscaping practices that can improve the health and appearance of the landscape at a site while protecting and preserving natural resources by reducing or eliminating the amount of waste materials involved in groundskeeping and the amount of water, pesticides, fuels, oils, and other materials used in landscaping. The practices involved in “GreenScaping” to reduce landscaping costs include: 1) **Reducing** the production of waste to promote more efficient use of materials; 2) **Reusing** materials in order to prolong their useful life and delay their recycling and/or final disposal; 3) **Recycling** to minimize waste generation by recovering and reprocessing usable products that might otherwise be disposed of ; and 4) **“Rebuying”** by making purchases that meet project needs but have a better overall effect on the environment, such as biobased, recycled content, and other environmentally preferable elements. (For more information on “GreenScapes,” see [www.epa.gov/osw/partnerships/greenscapes/index.htm](http://www.epa.gov/osw/partnerships/greenscapes/index.htm).)

**Industrial Materials Reuse (IMR)**, involving reusing or recycling byproduct materials generated from industrial processes that can be used as substitutions for raw materials in the manufacture of consumer products, roads, bridges, buildings, and other construction projects. For example, nonhazardous industrial materials, such as coal ash, foundry sand, construction and demolition materials, slag, and gypsum, are valuable products of industrial processes that can be recycled in a variety of diverse applications. These materials have many of the same chemical and physical properties as the virgin materials they replace, and in many cases can even improve the quality of a product. Putting these commodities into productive use can save resources and energy and reduce greenhouse gas emissions. As such, the reuse and recycling of industrial materials is preferred when applicable, and may even present opportunities for revenue generation to offset remedial costs. (For more information on Industrial Materials Reuse, see [www.epa.gov/osw/conserve/rrr/imr/index.htm](http://www.epa.gov/osw/conserve/rrr/imr/index.htm).)



## Appendix B (Region 2 Supporting Documents)

### Attachment B: Region 2 “Green Checklist”

#### EPA REGION 2 GREEN SITE ASSESSMENT CHECKLIST

In accordance with EPA’s strategic plan for compliance and environmental stewardship, the Agency strives for cleanup programs that use natural resources and energy efficiently, reduce negative impacts on the environment, minimize or eliminate pollution at its source, and reduce waste to the greatest extent possible. The EPA Region 2 Superfund Program supports the adoption of “green site assessment ” which can be defined as the practice of considering all environmental effects of the site assessment program including:

- Water Use
- Land Use
- Energy Use
- Air Emissions, Including Greenhouse Gas Emissions
- Land Use/Ecosystem Impact
- Materials Use and Waste Produced
- Long-term Maintenance

This checklist has been developed for CERCLA remedial investigation/feasibility study projects. Since the activities performed for site assessment assessments are similar to RI/FS activities, the contractor shall make use of these guidelines in performing these similar activities under this work assignment, to the extent feasible. Best practices can be incorporated throughout the site assessment program, and to maximize sustainability, all options should be considered early during the planning process, enabling best practices to carry forward to assessment activities. Incorporation of green remediation strategies into site assessment procurement documents and site management plans helps to open the door for best practices in the field. In accordance with federal procurement policy, selection of equipment and services must meet a project’s performance and cost requirements, while giving preference to green products and providers.[3](#), [4](#)

Best practices of green remediation help ensure that day-to-day operations during all assessment phases maximize opportunities to preserve and conserve natural resources, while achieving the assessment’s mission of protecting human health and the environment. Each site should incorporate practices addressing core elements of green remediation, with periodic review and update as new opportunities arise. An adaptive approach to managing all phases of a site assessment enables the site to transition directly into long-term stewardship status. Each site should outline site-specific procedures to (among other things):

- Reduce air emissions (including greenhouse gas emissions) and energy use,
- Demonstrate water-quality preservation and resource conservation,
- Establish near-term improvements to the ecosystem that carry forward into site revitalization, and
- Reduce material consumption and waste generation.

This checklist is designed to assist EPA contractors and work assignment managers in planning for and implementing green practices during CERCLA site assessments.

## ADMINISTRATIVE

- **Incorporate green remediation practices into the contracting process, as possible**
  - Require contractors follow Region 2's Clean and Green Policy
  - Suggest contractors consider green remediation best practices
  - Require contractors to follow guidelines found in the NEDC Model Contract Specification for Diesel Emission Controls in Construction Projects [5](#)
  - The evaluation of laboratory sub-contractors should include their commitment to green chemistry. The purpose is to reduce the amount and toxicity of chemicals used and required to be disposed. [40](#), [41](#)
- **Consider future use at beginning of project to guide investigation and remedy selection**
  - Future use may guide type of sampling required; ensure that it is most efficient and green method
  - Encourage development of renewable energy production facilities on contaminated lands
- **Reporting and Communication**
  - Interim and final documents should be submitted in digital rather than hardcopy format, unless otherwise requested by EPA, in an effort to save paper. This is especially applicable to voluminous data reports, such as the validation metadata for laboratory analyses.

## GENERAL ON-SITE OPERATIONS

- **Encourage sustainable practices in trailers/buildings**
  - Utilize existing building for field office if possible
  - Situate trailer to benefit from existing vegetation
  - Utilize "green" trailers if possible [6](#), [7](#)
  - Maintain heating and cooling systems
  - Enhance indoor environmental quality [8](#)
  - Optimize operational and maintenance practices to increase efficiency [9](#)
- **Minimize non-renewable energy consumption** [10](#), [11](#), [12](#), [13](#), [14](#)
  - Purchase renewable energy supply through local utility programs
  - Purchase Renewable Energy Credits/Certificates (RECs or Green Tags)
  - Research potential for Green Pricing Programs and Power Purchase agreements
  - Utilize renewable Onsite Generation Systems, e.g., solar photovoltaic (PV), wind turbines, and biomass combustion
- **Use environmentally preferable products**
  - Compact Fluorescent Lights (CFL) or LED
  - Environmentally friendly electronics (e.g., ENERGY STAR) [15](#)
  - Recycled products
  - Avoid use of pesticides where feasible and follow EPA's Integrated Pest Management Practices [16](#)
- **Encourage sustainable practices by individuals**

- Minimize waste [17](#)
- Reuse or recycle waste
- Protect and conserve water
- Use alternative fuel vehicles (hybrid-electric, biodiesel, ultra-low sulfur diesel) [18](#)
- Carpool [19](#)
- Schedule activities efficiently so as to minimize travel to and from the site

## FIELD INVESTIGATIONS

- **Mobilization**

- Use fuel-efficient / alternative fuel vehicles and equipment [18](#)
- Use existing roadways where available
- Provide for erosion and sediment control to minimize runoff into environmentally sensitive areas
- Use recycled material for building roadways [21, 22, 23](#)
- Revegetate areas if necessary
- Avoid environmentally sensitive areas and cutting native trees/vegetation when placing trailers and storage areas, and while building access roads
- Use diesel engines that meet the most stringent EPA on-road emissions standards available upon time of project's implementation or utilize EPA or CARB verified emission control technology to reduce PM emissions by a minimum of 85% when technologically feasible on all on-road diesel engines. [20](#)

- **Demolition of on-site structures**

- Minimize demolition of structures and buildings
- Recycle demolition and construction material as possible [21, 22, 23](#)

- **Field Screening**

- Use non-invasive technologies where possible for subsurface characterization to minimize wastes (Electrical Resistivity Tomography, Borehole Radar Tomography, Ground Penetrating Radar, Seismic Refraction/Reflection, Electromagnetic Survey). [24, 25, 26](#)
- Incorporate systematic planning, dynamic work strategies, and real-time measurements into work plans (TRIAD) to promote efficiency in investigations. [27](#)
- Minimize number of field mobilizations
- Minimize number of samples sent to laboratories
- Use of mobile laboratories
- Use of alternate fuel sources

- **Drilling**

- Have idle reduction policy and idle reduction devices installed on machinery [28](#)
- Use ultra-low sulfur diesel and/or fuel-grade biodiesel as fuel [29, 30, 31, 32, 33, 34](#)
- Use diesel engines that meet the most stringent EPA Tier non-road emissions standards available upon time of project's implementation or utilize EPA or CARB verified emissions by a minimum of 85% when technologically feasible on all non-road diesel vehicles. [35](#)
- Engine Maintenance [36](#)

- Perform routine inspections
  - Conduct preventative maintenance
  - Give problems immediate attention
  - Perform routine cleaning
  - Use environmentally friendly lubricants if applicable
- Decontamination
  - Place decon station away from environmentally sensitive areas
  - Use secondary containment to avoid cross contamination
  - Use steam cleaning where allowed by federal/state/or local regulations
  - Use non-phosphate detergents
- Well Installation
  - Use recycled well materials where possible (well caps, etc.)
  - Manage use of cement/grout to minimize waste produced
  - Ensure wells are properly developed to increase efficiency
- Waste Management
  - Use direct-push rig if applicable to minimize drill cuttings
  - Place drill cuttings back in boring if applicable
  - Store drill cuttings away from surface water bodies to prevent cross-contamination
  - Dispose of drill cuttings at recycling facility if possible
- **Sampling**
  - General practices
    - Use environmentally friendly PPE if applicable
    - Use recycled laboratory containers if applicable
    - Use laboratories which promote green chemistry
    - Schedule sampling to minimize field visits and shipping
    - Consider all data needs for any potential future uses
  - Soil Sampling
    - Use sampling methods that require smaller amounts of soil to minimize waste
    - Dispose of waste properly to avoid cross contamination
    - Recycle soil waste if available
  - Groundwater sampling
    - Use passive groundwater samplers where applicable [37](#), [38](#)
    - Use eco-friendly bailers [39](#)
    - Use dedicated equipment to minimize waste and cross-contamination
    - Use remote data collection to minimize mobilizations
    - Treat and recycle purged water on-site
  - Surface Water sampling
    - Choose sampling locations that minimize ecological disturbance
    - Use dedicated sampling equipment to minimize waste and cross-contamination
    - Decontaminate equipment away from surface water body to avoid contamination due to runoff

**REFERENCES:**

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2. <http://www.clu-in.org/download/remed/Green-Remediation-Primer.pdf>
3. <http://www.arnet.gov/far/current/html/FARTOCP23.html#wp227606>
4. <http://www.epa.gov/opptintr/epp/>
5. <http://www.epa.gov/otaq/diesel/construction/documents/cl-nedc-model.pdf>
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7. [http://www.theboldtcompany.com/mrc/sustainability/case\\_studies/index.htm](http://www.theboldtcompany.com/mrc/sustainability/case_studies/index.htm)
8. <http://www.epa.gov/greeningepa/projects/index.htm>
9. <http://www.clu-in.org/techfocus/default.focus/sec/Remediation%5FOptimization/cat/Overview/>
10. <http://www.epa.gov/greeningepa/greenpower/basics.htm>
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12. <http://www.dsireusa.org/>
13. [http://www.epa.gov/oswer/ocpa/maps\\_incentives.htm](http://www.epa.gov/oswer/ocpa/maps_incentives.htm)
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16. <http://www.epa.gov/pesticides/factsheets/ipm.htm>
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18. <http://www.epa.gov/oms/consumer/fuels/altfuels/altfuels.htm>
19. <http://www.epa.gov/rtp/transportation/carpooling/carpooling.htm>
20. <http://www.epa.gov/oms/hwy.htm>
21. <http://www.epa.gov/epawaste/conserves/rrr/imr/index.htm>
22. <http://www.fhwa.dot.gov/pavement/recycling/>
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24. [http://clu-in.org/char1\\_tech.cfm#tech\\_sele](http://clu-in.org/char1_tech.cfm#tech_sele)
25. [http://toxics.usgs.gov/highlights/geophysical\\_methods.html](http://toxics.usgs.gov/highlights/geophysical_methods.html)
26. [http://pubs.usgs.gov/circ/2007/1310/pdf/C1310\\_508.pdf](http://pubs.usgs.gov/circ/2007/1310/pdf/C1310_508.pdf)
27. <http://www.triadcentral.org/over/index.cfm>
28. <http://www.epa.gov/otaq/smartway/transport/what-smartway/idling-reduction.htm>
29. <http://epa.gov/cleandiesel>
30. <http://epa.gov/otaq/diesel/>
31. <http://www.northeastdiesel.org>
32. <http://www.clean-diesel.org>
33. <http://www.biodiesel.org>
34. <http://epa.gov/cleandiesel/construction/strategies.htm#tech-table>
35. <http://www.epa.gov/nonroad-diesel/regulations.htm>
36. <http://epa.gov/cleandiesel/construction/whatyoucando.htm>
37. <http://diffusionsampler.itrcweb.org/homepage.asp>
38. <http://www.hydrasleeve.com/>
39. [http://www.waterra.com/pages/Product\\_Line/other\\_products/bailers.html#gpm1\\_2](http://www.waterra.com/pages/Product_Line/other_products/bailers.html#gpm1_2)
40. <http://www.dtsc.ca.gov/PollutionPrevention/GreenChemistryInitiative/index.cfm>[http://www.epa.gov/green\\_chemistry/](http://www.epa.gov/green_chemistry/)
41. <http://www.epa.gov/gcc/>
42. <http://www.epa.gov/nrmrl/pubs/600r08049/600r08049.pdf>
43. <http://www.lid-stormwater.net/background.htm>
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**GENERAL REFERENCES:**

- <http://www.clu-in.org/greenremediation>  
[http://www.green-technology.org/green\\_tech.htm](http://www.green-technology.org/green_tech.htm)

**Appendix B (Region 2 Supporting Documents): Sample Report for Cornell-Dubilier Electronics Superfund Site,  
South Plainfield, NJ**

Green Technology and Practice Implemented	Date Implemented	Cost/Unit	Total Green Usage	Percentage of Equipment Meeting Green Practice (If not 100%, Explain In Comment Field)
1. Met-One air monitors	10/31/08	\$15,000		100 %
2. Recycled copy paper Regular paper cost \$42.99 / 5,000 sheets	10/31/08	\$49.99 / 5,000 sheets		100%
3. Tier III vehicle with ultra low sulfur diesel fuel	4/02/09	\$2.15 / gallon	16,227 gallon	100%
4. Electrical – meter	10/31/08	\$317.66 at 0.14 kw/h	2,269 kw/h as of June 30, 09	100%
5. Electrical – meter Sterling Planet from Norcross, GA, serving as clean power supplier	7/1/09	\$148.12 at 0.14 kw/h	1,057 kw/h as of October 31, 09	100%
6. Catalytic converter on PC 300	05/15/09	\$2,559.00		100%
7. Catalytic converter on WA380 loader	05/27/09	\$1,512.00		100%
8. Catalytic converter on Kenworth T800 dump truck	05/27/09	\$1,146.00		100%
9. Catalytic converter on PC-220	06/16/09	\$1,853.00		100%

## Appendix C: Region 4 Sample Cost Justification for Greening Response Actions

### Camilla Wood Preserving Site

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#### Project Description

From 1947 until 1991, the Camilla Wood Treating Superfund site operated as a facility at which a creosote wood preserving process was used for treating railroad ties and poles. The 54-acre site, which is in a former cypress swamp in the southeast portion of Camilla, GA, was contaminated with polynuclear aromatic hydrocarbons, pentachlorophenol, and dioxins. The city of Camilla used Superfund Redevelopment Initiative (SRI) funding to commission a reuse planning process and to share the results with EPA. Working with a community-based Land Use Committee and a consultant team, the City developed a conceptual reuse framework plan that included a community park, recreation and community facilities, a fire and rescue training area, a stormwater management area, and ecological areas.

In October 2006, Region 4 began a time-critical removal action at the site to address contamination, primarily in soils on one-half of the site. Removal activities over the following two years included:

- Excavating 10,000 cubic yards of contaminated soil
- Constructing a low-profile soil cap for waste left in place
- Installing native grasses and non-invasive plants
- Recycling 280 tons of scrap steel and 58 tons of tin
- Relocating wildlife such as alligators and turtles, and

In late 2006 the SRI also provided additional resources to enable the City to work with Region 4 in updating the conceptual reuse framework plan to both inform and reflect the removal action's future land use implications. The Land Use Committee determined that the site would be an ideal location for a soccer complex, given its close proximity to major access roads, athletic fields, a high school, and residential neighborhoods. The Committee also identified need for basketball courts, walking trails, a flexible open space area, a small RV park, and the potential for using the existing office building as the Mitchell County Parks and Recreation Department Headquarters.

Collaboration with community officials led to resource sharing for construction of utilities needed for the anticipated recreational and municipal areas. Region 4 agreed to construct the utility trenches during later stages of response actions, and the City of Camilla then provided and installed the utility lines. Another cooperative strategy was used for installing ground cover; Region 4 ERRS contractors backfilled excavated areas and created topographic mounds mimicking the local landscape, and Mitchell County workers then installed the sod. Due to successful negotiations and willingness of a local vendor, sod was purchased and delivered at a cost no higher than hydroseeding.

#### Incurring Costs to Support Future Site Use

The specific question posted was "what is the maximum additional cost that can be incurred to support future site reuse as part of the time critical removal action at the Camilla site?" This question raises several issues:

**1) Under CERCLA, can any additional cost be incurred to support future site use and, if additional costs can be incurred, is there a specific limit?**

EPA has not issued guidance on this point. Several Regions evaluate this on a site-by-site basis, appearing to follow language in several technical reports on reuse of Superfund sites. For example, the following language is taken from "Reusing Superfund Sites: Commercial Use Where Waste Is Left On Site" (EPA 540-K-01-008, p. 5-6).

Because the effectiveness of a remedy can be compromised if it is not consistent with the eventual use of a redeveloped site, EPA chooses remedies that are consistent with anticipated use, and implements them, insofar as possible, in ways that accommodate that use. The Agency will not, for example, leave a site with no means, short of modifying the remedy, to support structures that will be required for anticipated use. The remedy will allow reasonable areas for them. As a part of the remedy, EPA may provide clean corridors for future utility access when anticipated use makes it likely that they will be needed. EPA may also, for example, move wastes to a location other than the one that might otherwise have been chosen, in order to avoid blocking an access to the site that will be needed for its anticipated future use. In another example, EPA may take future use into account in deciding on placement of structures needed for the redevelopment of a site. EPA may fund, or require a potentially responsible party (PRP) to fund, such actions as are necessary to ensure that the site is capable of accommodating the reasonably anticipated future land uses, so that the remedy will remain protective.

Activities like those in the examples above, which are necessary to accommodate the remedy to the anticipated future use, are remedial activities because they contribute to the long-term protectiveness of the remedy. They are not “enhancements” or “betterments.” An enhancement or is not a remedial feature or activity. It is not necessary for the effectiveness of the remedy, even though it might make some contribution to its effectiveness. Enhancements include such things as building roads, foundations, or parking lots.

However, similar language was stricken from recent drafts of a new reuse directive at the request of the General Counsel’s Office and replaced with a cost-neutral test. This issue is currently being discussed at high levels in the Agency and the outcome is uncertain. The Regions that allow some additional costs to accommodate future site use do so on the basis of a reasonableness test. There are no specific quantitative or qualitative criteria. Several times it has been suggested that the test might be “no more than 10%” but that appears to never have been adopted by any Region.

**2) *Are the rules the same for time critical removals as for remedial actions and what is the specific authority for considering future site use at time critical removal actions?***

A limited amount of research has uncovered no analysis of or guidance on authority to consider future site use when conducting time critical removal actions. For remedial actions such authority is well documented, for example in the Land Use Guidance of 1995. However, when that guidance was extended to cover non-time critical removals in the Reuse Assessment Guidance, no additional authorities were cited.

A policy or logic analysis would suggest that the rationale for considering future site use in removal actions is the same as for remedial actions. Knowing how a site is likely to be used in the future allows, where practicable, EPA to choose and implement response actions that will be protective for those uses. In addition, there would be no obvious reason to apply a different cost test for removals than for remedial actions. It also appears that one or two Regions that allow some additional costs to accommodate future site use have done so at time critical removal sites.

**3) *Are the rules the same for a time critical removal action on an NPL site?***

Again, this is an issue of first impression, as our limited research has uncovered no prior cases of EPA addressing this issue. However, a reasonable case can be made that there may be special rules for removal actions on NPL sites. Section 300.415(d) of the NCP states: “Removal actions shall, to the extent practicable, contribute to the efficient performance of any anticipated long-term remedial action with respect to the release concerned.” This suggests that the consideration of future use for the remedial action provides an umbrella authority for considering future use in the removal action on the site. In addition, it suggests that an evaluation of costs and other issues for the removal action should be done in the context of the final remedial action.

**What Does This Mean for Camilla?**

At Camilla, considerable site reuse planning has been conducted in support of the remedial action. That planning process has resulted in an improved working relationship with the community and a realistic vision of potential site reuses. This has affected the range for remedial alternatives under consideration, with an expectation that the cost of the alternative finally selected will be significantly lower than what was anticipated before the planning was undertaken. This “savings” of millions of dollars is a part of the context for evaluating costs of all removal and remedial actions at the site. For example, if an increase in cost of the removal action is supporting a final remedial action that is expected to garner community support and consequently lower remedial costs by a much greater amount, then the net savings on the project suggest that those removal costs were necessary for the final remedy and are not an enhancement. This means that the evaluation of individual components of the removal action should not be conducted in isolation. Instead they should be evaluated on the basis of what they contribute to the final remedial action. In other words, if spending additional dollars on crusher rock is part of an overall site remedial plan that gets community acceptance and saves on total cost, the expenditure is not an enhancement.

Long-term remedial actions will also be needed at the site. Because the removal action will leave waste in place, preventing unlimited use and unlimited exposure, the long-term remedial actions will include the selection and implementation of appropriate and effective institutional controls for the entire site, including that portion with the removal action. The acquisition and subsequent reuse of the removal property by the local government will play a key role in the successful implementation of institutional controls. Failure to consider reuse during the removal action could jeopardize the acquisition, and subsequently the long-term protectiveness, of the remedy.