



# Green and Sustainable Remediation

## Petroleum Remediation Program

### Introduction

Green and Sustainable Remediation (GSR) is the site-specific employment of methods and technologies to reduce the environmental, social, and economic impacts of contaminant investigation and remedial tasks. This guidance is intended for use by the Petroleum Remediation Program (PRP) on a voluntary basis to a user-defined extent. Program-specific policies and existing guidance are not superseded, only supplemented, by this guidance. GSR-specific terminology is defined in the referenced material herein.

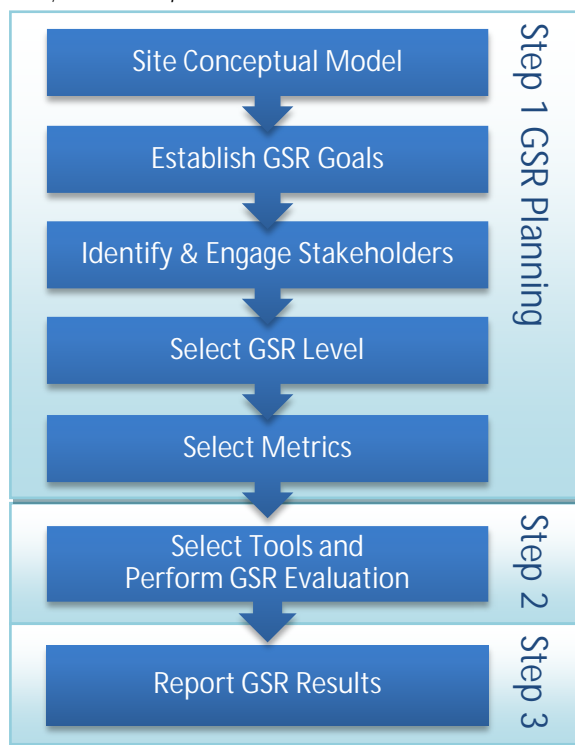
GSR initiatives are not required by the PRP, but may benefit the responsible party and others by being utilized throughout the investigation and risk evaluation process. The greatest benefit of using GSR processes and techniques is realized by employing them as early as possible in a project. However, GSR may be employed in any phase, from site investigation through corrective action implementation. A responsible party may benefit from the use of GSR techniques through reduced project costs or collateral environmental impacts. Additionally, GSR techniques may assist in attaining internal corporate sustainability goals of the responsible party, consulting firm, or vendors.

The following three-step process walks through the planning, evaluation, and reporting of GSR integration. Applying GSR principles may follow this process; however, it is intended to be flexible and scalable in a site-specific manner.

### Step 1. GSR Planning

The GSR planning step, as depicted in the adjacent graphic, includes a series of simple operations. The operations begin by either identifying appropriate GSR goals at a new site or using the site conceptual model to identify appropriate GSR goals at an existing site. This is followed by engaging the community or Stakeholders to the degree possible as defined by the user, but to a greater degree than in a status quo project. The level of GSR evaluation is then selected, followed by the tool(s) and metrics appropriate to the site-specific conditions.

In Step 2 the user performs the selected GSR evaluation, integrating the results into the rest of the site decisions and activities. Lastly, in Step 3 the user follows up to verify and communicate the impact of the selected GSR remedy at each existing reporting stage.



## Site Conceptual Model (SCM)

The SCM forms a basis to the overall remediation approach at a given site. The SCM comprehensively summarizes the current knowledge of the geology, hydrology, and contaminant distribution, nature and behavior with respect to identified exposure pathways. The SCM provides the basis for completing a subsurface investigation, evaluating risks to receptors, and developing a corrective action strategy, if necessary.

The GSR user should incorporate GSR aspects and goals into the SCM during development of the SCM. If the SCM has been developed, GSR aspects should be incorporated and the SCM updated to reflect those changes. The GSR aspects may affect the overall SCM in terms of corrective action goals, feasibility of a selected remedy, or justifying a change in the Site Management Decision (SMD) when the remedial goals are no longer being efficiently achieved.

Due to site variability, site-specific circumstances may help shape appropriate goals and provide particular opportunities for employing GSR concepts. Consideration of the site circumstances through the SCM is essential in making sound professional judgments regarding opportunities for utilizing GSR practices throughout the remediation process.

### Goals

The user should identify the goal(s) of the GSR process in the planning documentation as provided in PRP report forms.

The goals of the GSR evaluation may vary; these goals may include, but are not limited to:

- reducing the impacts of standard investigation tasks
- calculating baseline environmental footprints of an activity
- incorporating social and economic considerations
- evaluation and comparison of the footprints of several options
- reducing the footprint by optimizing an existing remedy

GSR goals may also reflect local, state, federal, and/or corporate guidance and policies, which may be the drivers for GSR considerations on a project. Goals may also reflect applicable and available incentives, such as grant funding recommendations.

### Drivers and incentives

The drivers for conducting a GSR evaluation are important in defining the GSR evaluation structure. The core activity in a GSR evaluation is the investigation or remediation around which the evaluation is centered. At no point in the evaluation should the risk to receptors be undermined or manipulated to lessen the protectiveness of the remediation or thoroughness of the investigation. If the results of the GSR evaluation conflict with existing guidance or policy, that guidance or program-specific policy supersedes GSR evaluation results.

Incentive identification should be conducted in conjunction with the stakeholder identification process. Available incentives could include loans/grants, contractual obligations, project recognition/award, carbon credits, etc. Several websites are available to assist the GSR evaluator in the identification of incentives. For example, state incentives for renewable and efficient energy can be found at: <http://www.epa.gov/renewableenergyland/incentives.htm> and <http://www.dsireusa.org/>. As another example, the MPCA's Green Step City Program can provide acknowledgement/promotion for those GSR cleanups conducted in Green Step cities and teamwork to market the project where GSR was implemented and provides simple best management practices (BMPs) for referencing during a GSR evaluation. Information can be found at: <http://greenstep/pca.state.mn.us/>.

## Barriers identification

Typical barriers that will affect the GSR evaluation are remediation project scopes, budgets, staffing availability or knowledge, schedule limitations, and contract language that do not include GSR language. It is expected that the barriers will be project-specific and, therefore, the effects on the GSR evaluation will also be project-specific. The user should identify any barriers in the planning process and report those barriers in the respective PRP report forms.

## Stakeholder Identification/Engagement

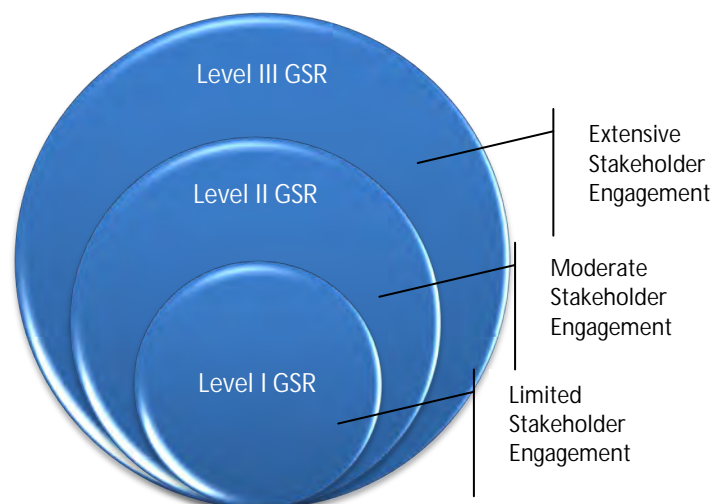
Site stakeholders are typically identified prior to selecting a remedy and may include federal and state regulators, local units of government (LUGs), responsible parties, the site owner or occupant, Native American tribes, local residents, and others such as neighborhood associations or economic development organizations. Additional examples of stakeholders are provided in the “Framework for Integrating Sustainability into Remediation Projects” by the Sustainable Remediation Forum (SURF) organization (Remediation Journal Summer 2011).

Stakeholders for the GSR evaluation are usually a subset of this group, as not all stakeholders will be interested in the GSR evaluation or results. Stakeholders may be engaged at appropriate points throughout the GSR evaluation process. Prior to contact, their role in the GSR evaluation should be defined and documented in the planning step, including the extent of their potential impact on the project decisions. The mitigation of risk to receptors may not be undermined by the additional consideration of social or stakeholder concerns.

In communicating GSR to stakeholders, it is important to begin with the objectives of the site investigation and risk evaluation – the overall protection of human health and the environment. It is important to present a balanced message of the corrective action goals and site-specific considerations that collectively form the decision criteria for the selection of a remedy when corrective action is required. In most cases, more than one alternative will meet the corrective action goals. GSR is not a means of justifying a no-action remedy (“greenwashing”) or justifying less remediation. The objective of GSR is to reduce the environmental, social, and economic impacts of remediation projects.

Specific to the PRP, stakeholder engagement should go beyond the Petroleum Release Notification requirements as noted in Guidance Document 4-02, *Potential Receptor Surveys and Risk Evaluation Procedures at Petroleum Release Sites*. Level I GSR should include stakeholder outreach beyond that completed in standard investigation or corrective action procedures to the degree possible without being cost or time prohibitive. At this level, examples of additional outreach effort could include public signage at the site or electronic correspondence sharing information about the link to MPCA’s What’s In My Neighborhood (<http://www.pca.state.mn.us/lupg67f>). Other ideas should be discussed with PRP staff prior to completion.

If conducting a Level II GSR evaluation, the user should plan to conduct additional outreach to the surrounding community members, organizations, and city planning office to provide information on the intended investigation and/or corrective actions planned for the site and engage these stakeholders to participate in an exchange of information/ideas. Particularly, the user should gather information and opinions on beneficial historical uses of the site from the community/neighborhood perspective or city



plan information that may assist in directing the end use of the site in concert with said plans or other city initiatives.

If conducting a Level III GSR evaluation, the user should consider these and other avenues of community/stakeholder engagement, including concepts outlined by the US EPA Office of Community Engagement, found at <http://www.epa.gov/oswer/engagementinitiative/index.htm>. Specific to PRP sites, the user should access <http://www.epa.gov/oust/communityengagement/index.htm> for community engagement ideas and resources.

## Level selection

The tools and resources used to complete a GSR evaluation range from simple BMPs and qualitative approaches to complex life cycle assessments (LCA). The user can start by selecting the appropriate level of detail/effort for the GSR evaluation from the following:

Level I – Best Management Practices: (BMPs): The objective of this approach is to adopt practices based on common sense, promoting resource conservation and process efficiency, without attempting to quantify their net impact on the environment, community, or economics.

Level II – BMPs and Simple Evaluation: The objective of this approach is to combine BMPs with a simple evaluation of the three GSR aspects of economic, social, and environmental components. A quantitative evaluation at this level will mean selecting a simple tool to evaluate remedial options.

Level III – BMPs and Advanced Evaluation: This approach includes BMPs and an in-depth quantitative evaluation, which is intended to be utilized on projects where corrective actions are anticipated to last longer than five years. Most Level III evaluations determine the best approach using an LCA-type evaluation of different alternatives, combined with weighting criteria. Applying LCA to a remedial activity would track the effects of production, transportation, use, and disposal of different materials and products associated with the activity. LCA accounts for energy and resource inputs as well as polluting outputs to land, water, and air.

Tools and approaches specific to each level are presented in Step 2 of this document.

## Metrics selection

If you are completing a Level II or III evaluation, the user should identify criteria for assessing the GSR goals, such as energy-use reductions to obtain a lower carbon footprint. What metric can be used for each goal? What is realistic to measure, given the intended scope of the GSR evaluation, regulatory requirements, other drivers/incentives, contractual expectations, available funding, schedule, and staff experience? GSR planning involves not just stating the goal but also thinking about and planning for how it will be measured.

Ideally, the reason behind each metric for measuring GSR goals should be clearly identified by the user and documented in a manner that is transparent and facilitates understanding and discussion among stakeholders.

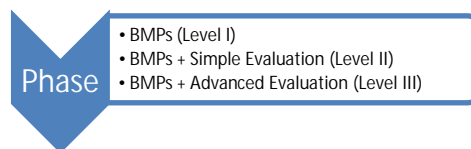
Appendix A includes a green and sustainable remediation metrics table to aid in selecting metrics. Additional guidance on metrics selection is provided on the SURF organization's website: <http://www.sustainableremediation.org/library/coming-soon-guidance-tools-and-other-resources/>.

## Step 2. Perform GSR Evaluation

This section provides users with a framework identifying how to evaluate, select, and implement GSR practices in each phase of a PRP project.

PRP project phases may include: Limited Site Investigation or Remedial Investigation (LSI or RI), Conceptual Corrective Action Design (CCAD), Simple Corrective Action or Complex Corrective Action (Focused Investigation, Pilot Test, DCAD), and Implementation/Operation and Monitoring (RSOM, etc). Petroleum Brownfield Program (PBP) project phases include investigation (Phase I and II Environmental Site Assessments), Response Action Plan (RAP)/Construction Contingency Plan (CCP), and RAP/CCP Implementation.

During Step 1 Planning the user should have identified the appropriate GSR level they wish to employ.



### Level I - BMPs

EPA has identified numerous BMPs, which are introduced and described at [https://www.clu-in.org/greenremediation/docs/GR\\_Quick\\_Ref\\_FS\\_Intro.pdf](https://www.clu-in.org/greenremediation/docs/GR_Quick_Ref_FS_Intro.pdf). For PRP sites, the following lists of petroleum-specific BMPs should be used:

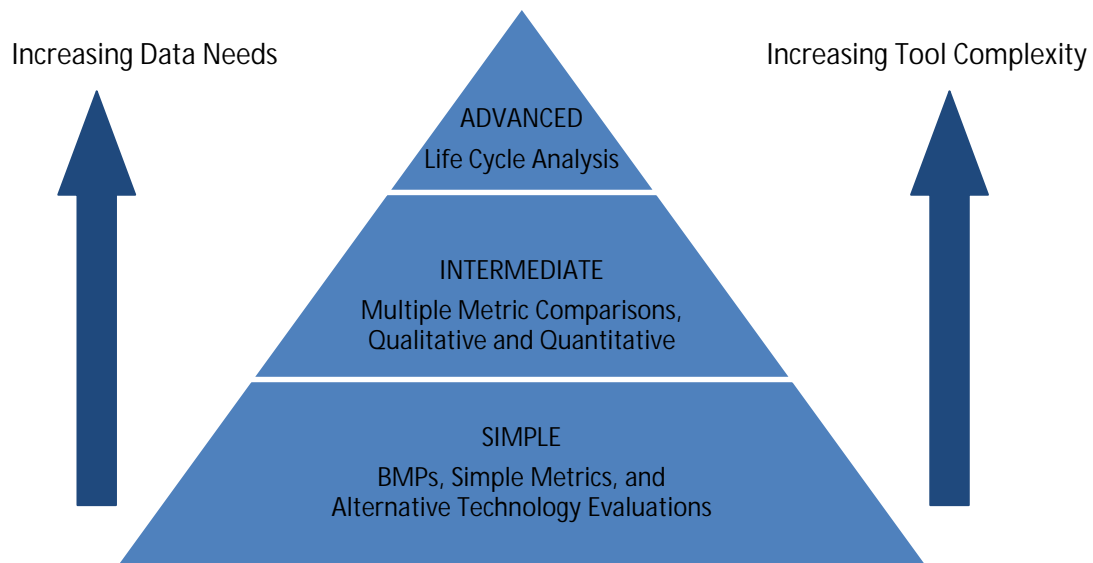
- ITRC Green and Sustainable Remediation Technical and Regulatory Guidance Document BMP tables per phase (Section 3).
- ARRA LUST Green Practices BMPs: <http://www.pca.state.mn.us/index.php/view-document.html?qid=10511>
- OSWER's "Green Remediation BMPs: Sites with LUST Systems": [www.clu-in.org/greenremediation](http://www.clu-in.org/greenremediation)

### Levels II and III – Qualitative and Quantitative Tools

If either a qualitative or quantitative (simple or advanced) approach is selected, identifying metrics for each evaluation is necessary. Qualitative and quantitative assessment tools have been developed to calculate environmental metrics to help consider all factors in designing and implementing remediation systems. These tools can range from simple decision trees and Excel spreadsheets to comprehensive life cycle assessments. The ITRC GSR Overview Document (2011) provides a number of tools available for consideration in a GSR evaluation (see Appendix A: "Tools Designed for Site Remediation" of the Overview Document). Examples of publicly available, free, quantitative environmental aspect tools include:

- Sustainable Remediation Tool (SRT) ([www.afcee.af.mil/](http://www.afcee.af.mil/)) developed by the Air Force Center for Engineering and the Environment (AFCEE) and its partners
- SiteWise™ ([www.ert2.org/t2qsrportal/sitewise.aspx](http://www.ert2.org/t2qsrportal/sitewise.aspx)) developed by Battelle, US Navy, and US Army Corps of Engineers (USACE)
- EPA and California State Water Resources Control Board (SWRCB) Leaking UST Footprint Calculator ([www.ustcalc.org](http://www.ustcalc.org))
- Net Environmental Benefit Analysis (NEBA), developed by the Oak Ridge National Laboratory ([http://www.esd.ornl.gov/programs/ecorisk/net\\_environmental.html](http://www.esd.ornl.gov/programs/ecorisk/net_environmental.html))

In the current state of the science of GSR, the MPCA anticipates that the tools identified above will be most frequently utilized. If the user selects a proprietary tool to perform their GSR analysis, they should anticipate sharing the tool, assumptions, and calculations/derivatives with MPCA staff.



The user should be cognizant of the complexity and data demands required of performing a Level II or III GSR evaluation. Resource demands are depicted on the graphic above, per complexity of the evaluation tool.

### **Sustainable Remediation Tool (SRT)**

SRT calculates certain environmental metrics, such as emissions, for specific remediation technologies and processes. The tool is comprised of a series of Microsoft Excel spreadsheets with two tiers of evaluation. Each corrective action technology may be evaluated at either tier. For each technology and in each tier of evaluation, sustainability metrics are calculated. These metrics are the following:

- Carbon Dioxide Emissions (CO<sub>2</sub>)
- Nitrogen Oxide Emissions (NO<sub>x</sub>)
- Sulfur Oxide Emissions (SO<sub>x</sub>)
- Particulate Matter (PM<sub>10</sub>)
- Total Energy Consumed
- Change in Resource Service
- Technology Cost
- Safety / Accident Risk

After calculating output metrics, several other features are available to help interpret the results. Users have the option to consider various scenarios for future costs of carbon dioxide offsets and for energy. These costs consider net present value over the project lifetime. Also available to users is a Stakeholder Roundtable, in which various parties involved can choose to weigh the importance of each metric. The group's weights are then compiled into a consensus set of metrics, which represents an equal compromise of metric weights for the group. These features allow users more flexibility and aid in the decision-making process. SRT is available for free download at <http://www.afcee.af.mil/shared/media/document/AFD-090610-067.txt>.

### **SiteWise™ Version 2**

SiteWise™ Version 2 is comprised of a series of Microsoft Excel spreadsheets that provide a detailed baseline assessment of several quantifiable GSR metrics: GHGs; energy usage; criteria air pollutants that include sulfur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), and particulate matter (PM); water usage; and



accident risk. SiteWise™ first divides every remedy into four phases: 1) remedial investigation; 2) remedial action construction; 3) remedial action operations; and 4) long-term monitoring. Each of these phases includes activities undertaken such as transportation, material production, equipment use, and residual management that have impacts on the environment. The tool has been updated to include incremental cost due to footprint reduction activities as well. SiteWise™ has also been updated to include life cycle impacts for all global impacts of all remedial activities included in the tool. SiteWise™ Version 2 is available on the Navy's Green and Sustainable Remediation Portal <http://www.ert2.org/t2gsrportal/SiteWise.aspx>.

### **EPA/CA SWQCB Leaking UST Footprint Calculator (Beta)**

The Leaking UST Footprint Calculator estimates and compares the greenhouse gas emissions for the five most common remediation technologies used at contaminated underground storage tank sites in California. Results are normalized to short tons of CO<sub>2</sub> emissions. One short ton is equal to 2,000 pounds. The calculator is pre-populated with average values collected from real leaking UST sites across California. You can use these average values, select a design scenario, or customize inputs to fit the conditions at your site.

The calculator is meant to help cleanup professionals and stakeholders better understand the greenhouse gas emissions of common technologies. It provides a breakdown of where emissions come from and where they can be reduced for remedy optimization.

### **National Laboratory Environmental Sciences Division Net Environmental Benefit Analysis (NEBA)**

According to the Oak Ridge National Laboratory, Environmental Sciences Division, a net environmental benefit analysis (NEBA) is a methodology for comparing and ranking the net environmental benefit associated with multiple management alternatives. NEBAs can be conducted for a variety of stressors and management options, including chemical contaminant mitigation, hydropower mitigation, global climate change mitigation (e.g., carbon sequestration), etc.

NEBA for chemically contaminated sites typically involves the comparison of the following management alternatives: (1) leaving contamination in place; (2) physically, chemically, or biologically remediating the site through traditional means; (3) improving ecological value through on-site and off-site restoration alternatives that do not directly focus on removal of chemical contamination, or (4) a combination of those alternatives.

NEBA involves goals that are common to both Natural Resource Damage Assessment (NRDA) and remedial alternatives analysis for the Comprehensive Environmental Response and Liability Act (CERCLA) and related state regulations, e.g., valuing ecological entities, assessing adverse impacts, and evaluating restoration options. Oak Ridge National Laboratory is developing a [framework for NEBA](#), with special application to petroleum spills in terrestrial, wetland, and aquatic environments. This framework is funded by the National Petroleum Technology Office of the U. S. Department of Energy. Primary information gaps related to NEBA include: non-monetary valuation methods, exposure-response models for all stressors, the temporal dynamics of ecological recovery, and optimal strategies for ecological restoration.

### **CleanSWEEP**

CleanSWEEP, software specific to the evaluation of using renewable wind or solar energy on remediation sites, is currently being beta-tested by AFCEE and their partners and is expected to be released publicly in the coming months. CleanSWEEP assesses the potential to switch from non-renewable energy to renewable energy to power remediation systems. It also evaluates the potential of using renewable energy based on a site's location away from the power grid. EPA provides facts and lessons-learned from modifying remedial systems with renewable energy alternative technologies through the following BMP fact sheet: [https://www.clu-in.org/greenremediation/docs/Integrating\\_RE\\_into\\_site\\_cleanup\\_factsheet.pdf](https://www.clu-in.org/greenremediation/docs/Integrating_RE_into_site_cleanup_factsheet.pdf).

## Remedial Action Cost Engineering and Requirements (RACER)

AFCEE has also developed and utilizes the Remedial Action Cost Engineering and Requirements (RACER) software (<http://www.afcee.af.mil/resources/restoration/racer/index.asp>), which estimates costs for all phases of environmental remediation projects, from site investigation through site closeout. The system enables users to develop and update cost estimates, evaluate and compare the cost of various treatment options, attempt to quantify environmental liability for budgeting or regulatory/financial disclosures, and develop a consistent approach for project budgeting.

## Life Cycle Assessment

LCA tools include:

- Guidance for Performing Footprint Analyses and Life-Cycle Assessments for the Remediation Industry, SURF, Remediation Journal Summer 2011
- Economic Input Output LCA (EIO-LCA) by Carnegie-Mellon University <http://www.eiolca.net/cgi-bin/dft/use.pl>
- SimaPro LCA software <http://www.pre.nl/content/simapro-lca-software> (requires license)

Please be aware that these tools are time and resource intensive, as only the SURF reference above is tailored to the needs of the environmental remediation industry. However, they may provide crucial data to consider in determining the totality of environmental, social, and economic impacts of a long-term remediation project (long-term herein is any system designed to operate for greater than five years).

## Step 3. Report GSR Results

Reporting requirements have been tailored to each PRP guidance document and phase of remediation. The results of the GSR evaluation should be documented or reported in each applicable PRP standard report form. If conducting a Level II or III evaluation, the user may opt to submit a separate GSR document after discussing the details of the evaluation with the assigned PRP project team. The level of documentation will vary depending on the approach used to conduct the GSR evaluation.

Descriptions of the GSR practices should be concise but, above all, only pertaining to the site-relative activities. This information should document all assumptions, sources of information, and methods used to evaluate the effectiveness of GSR practices. Enough information should be provided to determine if the results are verifiable and to document the limits of the evaluation. The GSR evaluation should consider the environmental, social, and economic factors, including energy consumption, resource consumption, greenhouse gas emissions, critical pollutant air emissions, ecological impacts, impacts of pollutants on water, water use, worker safety, and community impacts.

### GSR evaluator expertise documentation

The GSR practitioner should report their GSR expertise in the respective report forms provided; this expertise includes the number and level of GSR evaluations conducted by the practitioner. The evaluations may include sites outside of Minnesota and at equivalent levels if done under other state or proprietary protocol. This information is important to document the level of experience that contractor has with using GSR practices. The contractor's experience information will be gathered by the MPCA for tracking GSR implementation in Minnesota as well as to develop case studies and publish success stories.



**Appendix A**

**ITRC GSR Overview Document**  
**Green and Sustainable Remediation Metrics**

Sustainable Remediation Practices and Objectives						Metric Units	Metric Description
	Land	Water	Waste	Community	Economic		
Fresh Water Consumption						gallons	volume of fresh water used
Water Reuse						Gallon, percentage	volume of water used; percentage of water re-used
Groundwater Protection						Gallons, acre-feet	volume of surface water protected
Surface Water Protection						gallons, acre-feet	volume of surface water protected
Bioavailability of Contaminants						KG	mass of bio-available contaminants
Biodiversity						Specie count	assessment of impacts on biodiversity
Habitat Disturbance						Ecosystem services; area of land impacted	measure of impact on area impacted or change in ecosystem services
Ecosystem Protection						Ecosystem services; area of land impacted	measure of impact on area impacted or change in ecosystem services
Natural Resource Protection						Acres; acre-feet; ecosystem services; human use value	measure of impact on natural resources or natural resources quality
Non renewable Energy Use						Gallon; BTU; kWH	measure of use of non-renewable energy resources
Renewable Energy Use						Gallons; BTU; kWH	measure of us of renewable energy
Net Energy Reduction						%	percent change from baseline
Green House						CO2 equivalents	tons of GHGs emitted

Sustainable Remediation Practices and Objectives	Land	Water	Waste	Community	Economic	Metric Units	Metric Description
	Gas Emission						emitted
Air Pollution (non-GHGs)						lbs emitted	lbs of air pollutants emitted
Contaminant Migration						mass migration over distance; flux	measure of amount of mass migrated over distance and time; flux is a measure of mass migration through an area cross-sectional and perpendicular to flow
Material Use						Kg	kg of total material use, or mass by category of material
Material Extraction						mass per mass	mass of material extracted per mass recovered
Waste Reduction						volume or mass diverted	measure of water diverted from landfill or wastewater treatment operations
Re-use of Materials						volume or mass reused	measure of water diverted from landfill could also use \$ for savings aspect or reuse, volume of water reused
Life cycle cost						\$	costs associated with complete life cycle
Use of Recycled Materials						mass or percentage of materials reused	mass or volume of material reused in proportion to virgin materials
Net Environmental Benefit						discounted service acre years; human use value	measure of impact (negative or positive) to ecosystems and human use
Consider Cost of the "Sustainability Delta", if any						\$ per improvement from implemented sustainability	normalize impacts of sustainability to a common unit and factor in cost
Property Value						\$ or subjective	improvement in property value as a result of implementing remedy

Sustainable Remediation Practices and Objectives						Metric Units	Metric Description
	Land	Water	Waste	Community	Economic		
Tax Base						\$	improvement in taxable value of property
Employment						jobs created	number of jobs created as a result of implementing remedy
Capital Cost						\$	capital costs of projects
O&M Cost						present value O&M costs (\$)	PV of O&M for project life cycle
Worker Risks						fatality and injury	potential for fatality or injury based on worker hours and miles driven
Community Risks						fatality and injury	potential for fatality or injury based on miles associated with offsite transportation
Land Reuse						acres	acres of land reused for beneficial reuse
Local Material Use						% of material for local sources	percentage of materials procured for project from local sources
Noise						dB	noise level of project
Odor						subjective	olfactory impacts of project
Lighting						lumens	increase of lighting intensity to nearby impacted people
Environmental Justice						subjective	potential for project to disproportionately disadvantage communities
Community Impacts						subjective	impacts of project on the community
Cultural Resources						subjective	involvement of interested stakeholders in project decisions
Stakeholder Involvement						Subjective	involvement of interested stakeholders in project decisions
Access to						Subjective	impacts of project on public access

Sustainable Remediation Practices and Objectives	Land	Water	Waste	Community	Economic	Metric Units	Metric Description
	Open-spaces						
Maximize Future Land-use Potential						acres	maximize future land use of property for uses that are beneficial to the local community

## GSR Acronyms

AFCEE	Air Force Center for Engineering and the Environment
ARRA	American Reinvestment and Recovery Act
BMP	Best Management Practices
CAD	Corrective Action Design
CCAD	Conceptual Corrective Action Design
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CO <sub>2</sub>	Carbon Dioxide
DCAD	Detailed Corrective Action Design
EIO	Economic Input-Output
EPA	United States Environmental Protection Agency
FS	Feasibility Study
GHG	Greenhouse Gas
GSR	Green and Sustainable Remediation
ITRC	Interstate Technology & Regulatory Council
kWh	Kilowatt Hours
LCA	Life Cycle Assessment
LUST	Leaking Underground Storage Tank
NO <sub>x</sub>	Nitrogen Oxides
O&M	Operation and Maintenance
OSWER	Office of Solid Waste and Emergency Response Management
PM	Particulate Matter
PRP	Potentially Responsible Party
PV	Photo-Voltaic
RAP	Response Action Plan
RI	Remedial Investigation
SCM	Site Conceptual Model
SO <sub>x</sub>	Sulfur Oxides
SRT	Site Remediation Tool
SURF	Sustainable Remediation Forum
UST	Underground Storage Tank