Case Study: Implementation of Green Remediation Practices at a Groundwater Treatment Facility in New York State, Port Jefferson Station, New York	
Site Overview	The Lawrence Aviation Industries (LAI) site occupies approximately 126 acres and includes the LAI facility and Outlying Parcels. The 42-acre (LAI) facility was an active manufacturer of titanium sheeting for the aeronautics industry and is located within a residential area consisting of single-family houses and an apartment complex. An abandoned, unlined earthen lagoon, which formerly received liquid wastes, and a former drum crushing area, are located at the property. Past disposal practices have resulted in a variety of contaminant releases and resulting contaminant plume that extends from the site to Port Jefferson Harbor.
GSR Project Outcome	The GSR practices performed on this project resulted in the following outcomes: - 460,000 lbs. CO_2 reduction per year from 100% use of electricity from renewable sources - 460 lbs. CO_2 reduction per year from installation of geothermal pump for building heat - 935 lbs. CO_2 reduction per year from use of skylights - 262 lbs. CO_2 reduction per year from use of high efficiency lighting - 2,000 lbs. CO_2 reduction per year from installation of industrial grade insulation curtains on facility door opening - 5,200 lbs. CO_2 reduction per year from use of high efficiency air-stripper blower and transfer pump - Installation of a tankless water heater with an energy efficiency up to 99.5 percent - Recycled materials used during construction include recycled steel in the treatment system building; coal combustion products as part of the concrete mix; regenerated carbon in the offgas treatment vessels; recycled asphalt product as part of the pavement restoration; and crushed recycled concrete in place of crushed stone. - Construction-derived waste that was either re-used or recycled includes mulching of cleared vegetation, recycling of demolished asphalt, and beneficial re-use of drill cutting.
Background & Drivers	Address exhibited groundwater contaminant concentrations exceeding the MCLs. In addition, mitigate the potential for the plume to discharge into the Port Jefferson harbor. This project was required to comply with EPA Region 2's "Clean & Green" policy, which provides guidelines to enhance the environmental benefits of all Superfund cleanups by promoting technologies and practices that are sustainable.

Regulatory Program	Federal Superfund
Site End Use	The end use of the source area property is unknown (currently an inactive industrial facility). The areas coinciding with the downgradient portion of the plume continue to serve as residential properties.
Contaminants of Concern and Impacted Media	Trichloroethene (TCE), tetrachloroethene (PCE), spent acid sump sludges, salt wastes, hydraulic oils, hydrofluoric acid, nitric acids, and other plant wastes. Impacts to soil, groundwater, and surface water.
Key Stakeholders in Project	EPA Region 2, Suffolk County Department of Health Services (SCDHS), the New York State Department of Environmental Conservation (NYSDEC), and the New York State Department of Transportation (NYSDOT)
Cleanup Objectives	The purpose of the selected groundwater remedy is to: - Prevent or minimize potential, current, and future human exposures including inhalation, ingestion and dermal contact with VOC-contaminated groundwater - Minimize the potential for offsite migration of VOC-contaminated groundwater - Restore groundwater to levels that meet NYS Groundwater and Drinking Water Quality Standards within a reasonable time frame - Prevent or minimize VOC-contaminated groundwater from discharging into Port Jefferson Harbor
Remediation Strategy	The site remedy consists of the following: - A groundwater extraction and treatment system for hydraulic control of the source area - A groundwater extraction and treatment system for hydraulic control of the downgradient portion of the plume (performed by others) - In situ chemical oxidation applied to the source area groundwater to potentially reduce the time the groundwater treatment facility is required to operate - Long-term facility O&M and monitoring of the contaminant plume

GSR Strategy/Best Management Practices (BMPs)	Under EPA Region 2's "Clean & Green" policy, the green remediation technologies that serve as touchstones for Region 2 response actions as applicable to the LAI site include: - Use of 100% of electricity from renewable sources utilizing wind and hydropower - Concrete made with coal combustion products replacing a portion of traditional cement. - Use of clean diesel fuels and technologies - Minimize the total energy use and maximize use of renewable energy - Minimize air pollutants and greenhouse gas emissions - Minimize water use and impacts to water resources - Reduce, reuse and recycle material and waste - Protect land and ecosystems Specific BMPs implemented are presented in the GSR Project Outcome box. As part of the procurement strategy for the Remedial Action (RA) construction contractor, respondents were evaluated on their approach for complying with EPA Region 2's Clean & Green policy and implementing additional green remediation practices. Incorporation of green remediation practices was included in the evaluation criteria for subcontractor qualifications during procurement.
GSR Metrics and/or Footprinting Tool(s)	CDM Smith generated a Green Remediation Plan that included a best management practice checklist for documenting and continually improving the sustainability performance of RAC 2 and its projects. The checklist quantitatively and qualitatively measures the reduction in impacts from implementation of green remediation practices.
Lessons Learned [Optional]	Some green remediation practices required an investment up front, but saved on overall project costs by reducing the overall operations and maintenance costs. A geothermal heat pump provides a greater benefit for cooling than heating.
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Relevant Links [Optional]	http://www.epa.gov/superfund/greenremediation/ http://www.epa.gov/superfund/greenremediation/sf-gr-strategy.pdf http://www.clu-in.org/greenremediation/docs/GR_factsheet_topics.pdf
References [Optional]	EPA Superfund Green Remediation Strategy, September 2010