3.0 MAKING THE CASE

This section provides a rationale for using ecological enhancements during remediation and as an end use. Some of the benefits to be discussed include environmental, economic, and public relations benefits.

3.1 Environmental Benefits

Implementing ecological enhancements, both during the remedial process and as a final end use after remediation is complete, provides numerous environmental benefits potentially affecting soil, surface water, sediment, and groundwater quality, as well as human and ecological health.

- Attracts Wildlife – Both natural remediation technologies and end use plantings are attractive to wildlife, potentially providing significant habitat. However, in some cases, single species plantings such as those often used in phytoremediation can unintentionally encourage ecological imbalances such as increased attack by pests or disease. In addition, the natural remediation technologies plantings may have to be protected from wildlife consumption if the plantings will bioaccumulate potential toxins.

- Hydraulically Controls Landfill Leachate – Natural remediation technologies can help to draw down leachate head buildup in closed landfills, thereby eliminating side seepage.

- Biodegrades Environmental Contaminants – Natural remediation technologies enhance both aerobic and anaerobic biochemical degradation of various contaminants, including volatile organic compounds, polynuclear aromatics, and various other hydrocarbons, as well as some pesticides.

- Enhances Natural Attenuation/Biodegradation Remedies – As a component of some more complex remedies, natural remediation technologies can serve to facilitate attainment of specified remediation goals via final polishing.

- Controls Dust – Both natural remediation technologies and end use plantings reduce fugitive dust emissions, particularly if the soil is prepared with compost and/or mulch at the time of planting.

- Controls Sediment and Erosion – Both natural remediation technologies and end use plantings, once established, reduce sediment transport and soil erosion from storm events due to soil stabilization from plant roots and increased evapotranspiration.

- Stream Bank Buffer – Plantings can be used along stream banks to filter storm water runoff, which results in reduced contaminant loading to surface waters.

- Uses Atmospheric Carbon Dioxide– Both natural remediation technologies and end use plantings utilize atmospheric carbon dioxide and produce oxygen, which reduces greenhouse gases and mitigates global warming.

- Improves Ground Water Recharge – Both natural remediation technologies and end use plantings improve groundwater recharge as compared to mowed grass or paved areas.

- Minimizes Environmental Exposures – In situ natural remediation technologies reduce the need to excavate and haul impacted soil. Excavation and hauling potentially creates additional exposure pathways during the movement of the soil, thereby increasing environmental risk.

- Improves Environmental Stability – In situ natural remediation technologies avoid disrupting the soil as in excavation, thereby improving the stability of the local ecosystem.

- Provides Harvestable Resource – Metals can sometimes be recovered for reuse by harvesting natural remediation technologies biomass, thereby reducing resource mining elsewhere.

- Improves Aesthetics – Both natural remediation technologies and end use plantings are often more aesthetically pleasing than mowed grass or paved areas.

- Provides Educational Opportunity – Natural remediation technologies plantings can provide an educational opportunity for students wishing to learn about natural remediation technologies and environmental processes.

- Provides Recreational Area – End use plantings can provide an area for community or employee recreation.

- Provides Migratory Bird Pathways – Both natural remediation technologies and end use plantings can provide needed landscape ecology for migratory birds, depending on the size and location of the site.

3.2 Economic Benefits

- Cost Competitive – Both natural remediation technologies and end use plantings can be cost-competitive with other traditional remediation technologies and end uses. They also can be an important component of more complex remedies, particularly when addressing final polishing remedy requirements.

- Provides Use for Waste Materials – Composted waste materials (sewage sludge, fly ash, manure, yard waste, etc.) can be used as a soil amendment for both natural remediation technologies and end use plantings, thereby obviating the cost of waste disposal.

- Enables More Efficient Use of Limited Resources – Limited societal resources can be better deployed at a greater number of sites if those limited resources can be more cost-effectively deployed by harnessing natural attenuation and biodegradation processes.

- Uses Atmospheric Carbon Dioxide – Both natural remediation technologies and end use plantings use atmospheric carbon dioxide and produce oxygen, which reduces greenhouse gas production, thereby reducing costs associated with global warming.

- Provides Recreational Use – End use plantings can serve as a recreational area for the community, possibly with associated revenue.

- Attractive to Customers – Aesthetically pleasing planted areas may provide a competitive business edge by attracting more customers.

- Provides Marketing/Competitive Advantage – Ecological enhancements can be used as a marketing/competitive advantage to emphasize a company's environmental stewardship, thereby attracting environmentally conscious clients.

- Provides Source of Recoverable Resources – Harvested biomass from natural remediation technologies can provide a source of recoverable metals, while harvested biomass from natural remediation technologies and end use plantings can provide fuel, lumber, or other beneficial end products.

- Provides Opportunity to Obtain Environmental Offsets – The use of environmental enhancements can provide an opportunity to obtain environmental offsets when negotiating site cleanup objectives with regulators.

- Conservation Easements – Conservation easements can result in a one-time income tax credit and/or multiyear property tax savings (see Appendix B for additional information).

3.3 Public Benefits

During the remediation or redevelopment of environmentally impacted sites, nongovernment organizations and local community groups such as the Boy and Girl Scouts, schools, youth programs, bird watchers, nature conservationists, and prairie and wetland enthusiasts may express interest in pursuing reuse alternatives that incorporate ecological enhancements.

In many cases these organizations will desire to use the ecological enhancements as a means to provide educational opportunities, aesthetic benefits, and natural resources to the local area. Biology, horticulture, ecology, wetland hydrology, plant identification, and environmental remediation, are among the topics of interest. From the aesthetic point of view, ecological enhancements can improve the community image, bring in tourism, and

provide recreational usage. The natural resources associated with these systems could operate as seed banks and breeding grounds for these groups.

For site owners and regulatory agencies, these alternatives can provide public relations benefits that may not be available from other strategic options. These benefits include enhanced reputation, "green" image, external validation, and sustainable operations. Reputation and image count. In 1999, the Conference Board, a worldwide business research network, asked consumers what matters most when forming an impression of a company. Most said reputation—it was the No. 1 response. People reward a good reputation and punish a bad one. Almost half said they had done business with a company in the preceding 12 months or supported it in some other way if they considered it socially responsible. Half said they had boycotted a company's products in the same period or had urged others to do so when they didn't agree with its actions or policies. Another study by James Gregory and Atlantic Research (2002) showed that business leaders in that year's Fortune top ten most admired companies ranked consumers as the most important influencers of corporate reputation. Even more than chief executive officer reputation, print media, employees, or analysts, the survey demonstrated the importance of reaching the consumer with strong corporate messages that contribute to market success and business results.

Reputation and image are built through actions taken and how they are presented to stakeholders. In many cases, nongovernment organizations can provide an impartial assessment of the activities agreed upon by site owners and regulatory agencies and can help the process to move forward with community acceptance. These organizations can also serve to ensure the continued operation and maintenance of these systems, either by monitoring the progress over time (during remediation) or accepting the responsibility directly (end use). In this manner, these efforts lead to sustainable operations and long-term advantages of beneficial public relations.