

WILDLIFE HABITAT COUNCIL

THE NEW FRONTIER:
BROWNFIELD DEVELOPMENT &
SUPERFUND/RCRA REMEDIATION PROJECTS
– *ADDING VALUE TO YOUR PROJECTS BY
INCLUDING ECOLOGICAL ENHANCEMENTS*
JUNE 13-14, 2000

MEETING SUMMARY
JULY 20, 2000

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Executive Summary

During the November 1999 Wildlife Habitat Council (WHC) annual meeting, a group of corporate WHC members met to discuss organizing a “watershed meeting” to bring needed attention to phytoremediation and ecological enhancement in Superfund, RCRA Corrective Action, and Brownfields redevelopment. *The New Frontier: Brownfield Development & Superfund/RCRA Remediation Projects – Adding value to your projects by including ecological enhancement* conference was the outcome of their work. On June 13 & 14, 2000 over one hundred corporate and government leaders identified clear benefits, articulated the challenges and obstacles, and examined and developed strategies for promoting ecological enhancement.

Involve the community to ensure support for ecological enhancement.

Community involvement builds trusting relationships and can develop champions within a community for phytoremediation and ecological enhancement. In fact, there is growing public support for green technologies and “green infrastructure” (i.e., the open space, habitat, recreational lands, rural heritage, and other characteristics of a community’s natural resources, environment, culture, and history). This public sentiment is emerging in a “smart growth” movement and its principles would appear to support ecological enhancement. Nonetheless, since technology and risk science are complex, effective community involvement requires consistent and respectful communication and outreach. Factors and strategies to consider include:

- Use multiple communication pathways and discuss ecological enhancement with the community early and often, in non-technical language.
- Reach out to multiple constituencies in a community (e.g., education, business, elected officials).
- Be patient and persistent.
- Open industrial facilities to the public and let them meet the employees and managers.
- Embed in employees and contractors the importance of communicating and building a productive relationship with the community.
- Do not set unrealistic public expectations.

Demonstrate the benefits and value of ecological enhancement. The value and benefits of ecological enhancement are unacknowledged and not fully realized in Superfund, Brownfields, and RCRA. There are many reasons behind this, including a historical focus on scientific and technical solutions rather than natural systems and attenuation, the jobs vs. environmental political debate, and the lack of trust and credibility among stakeholders. Nonetheless, there are useful strategies to demonstrating value and benefits:

- Emphasize remediation benefits *and* the added wildlife, environmental education, and community benefits.

- Use success stories to communicate the benefits and encourage pilot programs and demonstration projects to generate success stories.
- Find innovative partnerships that present opportunities for mutual gains.
- Expand outreach programs.

Address the inflexibility that can exist in regulatory programs and coordinate across government agencies to create opportunities for ecological enhancement. More could be achieved if regulatory programs had, and demonstrated, the flexibility to test innovative approaches such as ecological enhancement, and if greater coordination and consistency existed across local, state, and federal levels of government. For example, complications from the integration of local land use zoning with state and federal cleanup standards can prevent ecological enhancement. Those complications include significant differences across laws and implementing agencies, (e.g., inflexibility in the statutes and laws, jurisdiction, incentives, missions, technical expertise, and other factors). Nonetheless, strategies and suggestions emerged to promote regulatory flexibility, accountability to environmental standards, and mechanisms to test ecological enhancement:

- Be proactive, initiate communication, and raise ecological enhancement option early.
- Educate government officials and the community on ecological enhancement, and address questions in the audience's language.
- Use pilot programs and demonstration projects as a means to test various flexible approaches to site remediation and reuse, and examine other existing models.
- Build trust with key agencies and individuals.
- Understand different agency jurisdiction and roles, and promote communication across levels of government.
- Promote performance-based standards.
- Find innovative partnerships that present opportunities for mutual gains.

In addition to these crosscutting themes, one issue was discussed only within the Superfund context – ***Natural Resource Damages*** (NRD) credits – despite the fact that NRDs have applications beyond Superfund. Strategies for using NRD credits to promote ecological enhancement included clarifying the role of trustees, ensuring early discussions between the trustees and companies, and clearly identifying and quantifying the benefits of the enhancements. The application of NRDs in RCRA and Brownfields needs further examination.

Next Steps. Many of the conference participants left motivated to move forward on specific next steps. The WHC, its corporate members, and many participating government officials committed to take an active role in moving forward. The first step included the expansion of the conference-organizing Steering Committee. An expanded Steering Committee would brainstorm additional options and next steps for WHC, prioritize options and develop an action plan to implement opportunities. Topic areas for consideration include:

- Education on ecological enhancement.
- Policy leadership to promote ecological enhancement.
- Case studies to capture the success stories.
- Site-specific project support.
- Outreach to several regulatory and government programs (e.g., Superfund Redevelopment, Brownfields, Smart Growth, watershed management).

The WHC was encouraged to take a leadership role in advancing the next steps and forming an agenda that promotes ecological enhancement at Superfund, RCRA, and Brownfields sites.

Companies can take a next step now.

If individual companies are considering an ecological enhancement project now, there are resources available to give them additional information.

- US EPA Citizen's Guide to Phytoremediation:
<http://www.epa.gov/swertio1/products/citguide/phyto.htm>
- US EPA Remediation Technology Development Forum
<http://www.rtdf.org/public/phyto/default.htm>
- US EPA Use of Natural Landscapes
<http://www.epa.gov/greenacres/>
- Interstate Technology and Regulatory Cooperation
<http://www.itrcweb.org/reports/phyto>
- International Phytoremediation Electronic Network
<http://www.dsa.unipr.it/phytonet/>
- AEHS – International Journal on Phytoremediation

In addition, contact the Wildlife Habitat Council at:

WILDLIFE HABITAT COUNCIL
1010 WAYNE AVENUE, SUITE 920
Silver Spring, MD 20910
(301) 588-8994

Acknowledgement of Sponsors

A meeting such as this cannot come about without the support and involvement of sponsors. For this conference we wish to express appreciation to:

AIG Environmental

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BP

Bridgestone/Firestone, Inc.

Ford Motor Company

Phillips Petroleum Company

U.S. Steel Group

U.S. Environmental Protection Agency, Office of Solid Waste and
Emergency Response

BACKGROUND

Origin of the Idea

During the November 1999 Wildlife Habitat Council (WHC) annual meeting, a group of corporate WHC members met to discuss organizing a “watershed meeting” to bring needed attention to phytoremediation and ecological enhancement in Superfund, RCRA Corrective Action, and Brownfields redevelopment.¹ By informing other corporate leaders of the multiple benefits of ecological enhancement and promoting a discussion among industry and government, the group hoped to use the meeting as a catalyst for improving the use of ecological enhancement in site restoration and remediation. Doing so would provide substantial gains in remediation effectiveness and efficiency, wildlife habitat, community relations, and environmental education. The group agreed to organize a Steering Committee and proceed with planning for a conference in June, 2000.

WHC hired RESOLVE, a non-profit facilitation and dispute resolution firm, to orchestrate the Steering Committee and to design and facilitate the conference sessions. The Steering Committee members included:

- Jerome S. Amber, P.E., Manager, Environmental Quality Office, Ford Motor Company
- Timothy A. Bent, Senior Environmental Manager, Bridgestone/Firestone, Inc.
- David L. Brown, EHS Manager, Owens Corning
- Chuck Carson, Vice President, Environmental Affairs, U.S. Steel Group
- Stephen A. Elbert, Business Unit Leader, BP
- Tuss Erickson, Director, Environmental Affairs, Phillips Petroleum Company
- Michael P. Last, Rackemann, Sawyer & Brewster
- Suthan S. Suthersan, Ph.D., P.E., Senior Vice President/Director Remediation Services, ARCADIS Geraghty & Miller
- Hugh J. Dillingham, Wildlife Habitat Council Chairman of the Board, and Bayou City Partners
- Bill Howard, President, Wildlife Habitat Council
- Bob Johnson, Vice President – Programs, Wildlife Habitat Council
- Troy Hartley, Ph.D., Facilitator, RESOLVE, Inc.

The Steering Committee identified clear goals for *The New Frontier: Brownfield Development & Superfund/RCRA Remediation Projects – Adding value to your projects by including ecological enhancements* conference and oversaw the design of the conference agenda to achieve the following objectives.

¹ Phytoremediation is the use of plants and trees to contain, sequester, degrade or reduce organic and inorganic contaminants in soil, sediments, surface water and groundwater.

Conference Objectives

- Introduce participants to the benefits of ecological enhancement in Superfund, RCRA, and Brownfields;
- Promote an in-depth review, discussion, and analysis of the barriers to initiating and implementing ecological enhancement projects;
- Identify and examine strategies for overcoming obstacles; and
- Identify clear next steps to continue the discussion among key corporate, government, environmental, and community participants.

The New Frontier conference was designed as an interactive set of meetings. Its success depended upon active involvement and engagement of the participants with the ideas and information presented by speakers, panelists, and fellow audience members. The objectives were to be achieved through several conference sessions and activities:

- The **Reception & Poster Session** provided an opportunity to review ecological enhancement projects, network with peers, and hear from a national environmental policy leader, F. Henry Habicht II. The posters were available throughout the conference and participants were encouraged to review the materials and bring those experiences and lessons learned into the conference plenary and break out sessions.
- The **Overview of the Opportunity** session included a resource panel that highlighted several benefits achieved through ecological enhancement, including cost savings, remediation, natural resource damages, wildlife habitat, community relations and environmental education, and regulatory innovation. The first hour of short presentations was followed by audience question and answer discussion.
- The **Panel of Case Studies** included a Superfund, RCRA, and Brownfields case. Each was explored in detail, with presentations examining the benefits, barriers, and strategies for overcoming obstacles.
- Through the **Working Lunch & Break Out Session** smaller groups of participants explored and developed specific strategies for overcoming barriers and challenges identified throughout the day.
- The final session, a **Report & Panel of Commentators**, included a summary of the break out session conclusions with comments and discussion among a panel of government officials, providing a government perspective. It also set the stage for future discussions with the regulatory community about ecological enhancement.

The full agenda is enclosed as Attachment A and the final participant list is enclosed as Attachment B. The remainder of this meeting summary chronicles the conference proceedings, identifies common themes and concepts that emerged from the discussions, and concludes by summarizing the next steps suggested and discussed by participants.

ANNOTATED CONFERENCE PROCEEDINGS*

The following sections catalogue information presented and discussions held in each of Agenda sessions.

Overview of the Opportunity

The first session, “Overview of the Opportunity,” provided a broad survey of the benefits, and some considerations surrounding the use of ecological enhancement techniques, including the real costs and benefits of using phytoremediation and ecological enhancements; how the use of these techniques may assist with natural resource damage credits; and how these techniques influence the Superfund, Brownfields, and RCRA decision-making process. Four speakers made introductory remarks, followed by discussion with the audience.

Mark Barash, Esq., U.S. Department of Interior, Office of the Solicitor introduced issues surrounding Natural Resources Damage (NRD) credits, including the following:

- Legal provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, give the U.S. Departments of Interior (Fish and Wildlife Service) and Commerce (National Oceanic & Atmospheric Administration) jurisdiction over NRDs as natural resource trustees. However, these provisions apply beyond CERCLA to any type of hazardous waste release, including those under Superfund, RCRA, drinking water laws, state laws, and other legislation governing hazardous waste releases. Additionally, there can be other agencies that have natural resource trusteeship (e.g., federally recognized tribes, Federal landowning agencies).
- NRD credits can be given by the trustees for activities which enhance current wetlands and for the production of new ones, to expand Applicable or Relevant and Appropriate Standards (ARAR) projects, and for creative uses, that might include links to educational programs via schools, (e.g., school children participating in the ecological enhancement process in some way, going to see it, etc.).

A real ***constraint*** to obtaining NRD credits arises from the need for up-front coordination, which requires staff time and effort. In addition, there may be ecological risks at a site, which constrain possible future wildlife use of an area.

* The following is a summary of the key ideas and points raised by individual participants during the conference. It should not be construed as representing all views of all participants on each topic discussed, nor should it be interpreted as an agreement among conference participants.

Furthermore, the presence of multiple trustees may complicate reaching agreement on both what constitute approvable environmental enhancements and the proper degree of credit to give for specific projects.

Benefits for companies integrating projects designed to achieve NRD credits into remedial activities result from the economies achievable through expanding the scope of their existing remediation activities at a fairly low cost – e.g., after heavy equipment is in place, it is easier to include extra enhancement opportunities such as a shallow water wetlands, or vegetative swales that contribute to wildlife habitat. In addition, the company benefits by gaining an enhanced reputation with the community as a “good neighbor,” exhibiting environmentally responsible practices.

Bruce Thompson, de-maximis, inc., used the Solvents Recovery Service of New England (SRSNE) Superfund Site in Southington, CT to illustrate several benefits of ecological enhancement.

Efforts at the SRSNE included installation of a phytoremediation system of 1,000 poplar trees installed at this site in order to biologically “pump and treat” contaminated groundwater. Phytoremediation was chosen for this site as an alternative to the more expensive conventional pump and treat system. Initial greenhouse studies found that the concentration of total volatile organic compounds at the site did not limit tree growth. Additional trees were added to the poplar mix, including willows and native tree species. Currently, most of the trees planted within the site are thriving.

Several **benefits** were realized in the SRSNE case. Mr. Thompson commented on the positive public acknowledgement of their ecologically restorative process for this site. In addition, corporate costs were reduced, and a site that was previously barren and unattractive was enhanced.

Lessons learned were the importance of identifying members of the regulatory community who are active advocates for the technology and establishing a good working relationship with these individuals early in the process.

Eric Newman, U.S. EPA Region III, provided a **regulatory perspective**, particularly with regard to Superfund and the friction that sometimes occurs between corporations and regulatory agencies. As a project manager, Mr. Newman indicated that he has a bias for action when assigned to a site – he wants to work immediately toward finding a remedy for the site and does not always perceive the corporate party sharing this goal. In his view, corporations are often acting primarily to minimize remediation costs and effort.

Several **strategies** were suggested to address this friction. Corporations should educate EPA on the science of the phytoremediation technologies, since EPA often does not necessarily understand them well enough to recognize their application. Furthermore, corporations should work with the regulators early in the Superfund decision-making process, raising ecological enhancement remedies at the beginning of the process and not after completion of the baseline risk assessment.

Raising ecological enhancement after the risk assessment re-enforces the perception (whether correct or not) that corporations principally want to minimize remedial costs and effort. Implementation of these strategies would improve the process and assist in finding mutually agreeable outcomes.

Richard Jacobs, PPG Industries, used PPG's voluntary decision to undertake a land reclamation project on their limelake sites in Barberton, OH to illustrate several benefits of ecological enhancement.

The Barberton site resulted from over 75 years of soda ash production by the Solvay Process and contained six above ground waste impoundments containing more than 33 million metric tons of lime wastes. The decision to use land restoration was one of practicality and cost – remediation of the impoundments would have taken more than 50 years and capping would cost more than \$100 million. Sewage sludge was used as a natural cap for the lake's lime waste surface, since the sludge when mixed with the salt would produce a soil that could sustain vegetative cover and stimulate wildlife habitation.

PPG's experienced some *barriers* in implementing their land restoration plan. First, they had to manage initial concerns from the public regarding the importation of sludge to the site since the sludge created odor and dust problems. PPG addressed the public's concerns through education and outreach. Second, PPG had to work with EPA and regulators to obtain a permit to implement their plan; they had to use a series of demonstration permits to import sludge to 10 acre plots at a time. PPG's land restoration project was successful – chloride leakage to the groundwater reduced 95%, the site appearance improved, and wildlife returned to the site.

PPG realized several *benefits* from using ecological enhancement remedies over traditional clean-ups. In particular, now the community considers PPG a good neighbor, and regulators regard PPG as a corporate partner rather than an adversary – e.g., the State is now considering the site for inclusion in the State's park system. Furthermore, PPG's employees take pride in PPG's accomplishments, and customers who visit the site have viewed it as a demonstration of PPG's commitment to environmental stewardship. PPG has even used the site to convince other municipalities of the efficacy of such remediation projects.

Panel of Case Studies

The "Panel of Case Studies" session examined a Superfund case, a Brownfields redevelopment project, and a RCRA site. The purpose of this panel was to highlight phytoremediation and habitat enhancement successes, lessons learned and technical, public, and regulatory barriers. In addition, they identified some strategies for overcoming these barriers.

***The Woodlawn Landfill Superfund Site, Port Deposit, MD
Bridgestone/Firestone, Inc.***

Mr. Timothy Bent with Bridgestone/Firestone presented on the use of ecological enhancements at the Woodlawn Landfill Superfund Site. This site was a sand and gravel quarry in the 1950's, and became an Agricultural, Municipal, and Industrial Waste Landfill from 1960-1978. It was listed on the National Priority List (NPL) in 1987 after vinyl chloride was discovered in the groundwater.

The Record of Decision (ROD) for this site was signed in 1993, including requirements for a RCRA Subtitle D cap and a groundwater pump and treat system with on-going monitoring. The estimated cost was over \$26 million.

Bridgestone/Firestone proposed a natural attenuation remedy for the contaminated groundwater, with a vegetated soil cover. The Wildlife Habitat Council developed habitat enhancing strategies for the site, which were presented as part of the proposed remedy. Bridgestone/Firestone experienced several barriers in their efforts to implement their remedy. Most of the barriers were overcome after employing several strategies. See the two tables below.

<i>Barriers</i>	<i>Strategies</i>
<ul style="list-style-type: none"> • <u>Institutional</u>: Resistance to change to new innovative strategies when traditional technologies have been used for years. <ul style="list-style-type: none"> – Ecological enhancement is stigmatized by perceptions that it is a “do-nothing” approach. • <u>Economical and Financial</u>: Perception that questioned how ecological enhancement could be a better solution when it costs less than traditional approaches. • <u>Regulatory and Legislative (including ARARs)</u>: <ul style="list-style-type: none"> – Regulators were uncomfortable with potential precedent-setting impact. – The state had concerns with compliance to state regulatory standards. – Resistance to expenditures for overseeing an ecological enhancement project that may have limited applications to other sites. • <u>Technical</u>: Difficulty communicating risks/benefits, particularly to professionals with varying technical backgrounds. 	<ul style="list-style-type: none"> • Demonstrate technical viability to regulators in order to overcome their doubts about the effectiveness of new technologies. • Develop a thorough conceptual model of the site with which to help communicate and foster a shared understanding of site issues. • Search throughout the agency for supportive decision-makers; their support can assist in convincing other regulators of the viability of phytoremediation and ecological enhancement. • Counter the perception that ecological enhancements only seek to minimize cost and effort. • Provide a pathway that addresses the regulator’s needs and advocate this with the agencies. • Seek involvement from WHC, a highly respected non-advocacy conservation NGO, to increase credibility with the agencies and to help “show a picture” of what your company is envisioning. • Involve EPA in the research, so they become familiar and invested in the new technology.

Bridgestone/Firestone’s landfill cover and groundwater remedies were accepted and the ROD was amended. The site will have a vegetated soil cover instead of an engineered plastic cap, and monitored natural attenuation of groundwater as opposed to a pump and treat system.

The groundwater restoration should be completed within 12 years at a cost of \$6 million, as opposed to over 30 years at a cost of \$26 million for the original remedy.

***Rouge Heritage 2000 Brownfield Project, Dearborn, MI
Ford Motor Company***

Mr. Jerome Amber, Ford Environmental Quality Office (EQO), presented on plans for the redevelopment of Ford’s complex on the Rouge River. Mr. Amber commented that environmental concerns used to be outside the realm of thinking in the manufacturing world, but now environmental redevelopment is seen as a competitive advantage in the marketplace. Consequently, Ford, in coordination with outside consultants, is performing demonstration projects to test the feasibility of environmental programs such as habitat roofs on buildings, phytoremediation, fuel cell power generation, and energy efficiency systems.

Ford is, and anticipates, encountering several obstacles in its brownfield redevelopment initiative at the Rouge River plant. In addition, it is employing and intends to take several strategies to overcome these obstacles. See the tables below.

<i>Barriers</i>	<i>Strategies</i>
<ul style="list-style-type: none"> • Regulatory restrictions and the complications of multiple regulatory authorities involved in this project (e.g., Rouge River plant also a RCRA site). • Environmental response activities required. • Incremental cost in project implementation. • Site safety issues, in part from implementing redevelopment at an operating manufacturing plant. • Ownership/control of the property (e.g., access to the Rouge River by other industries on site whose suppliers use the river for transport). • Ford/Rouge Steel Company (RSC) joint operating issues. • Means to demonstrate sustainability. • Obtaining employee support and acceptance (hourly plant employees, etc.). • Ambitious project with many critical inter-related milestones and pathways. 	<ul style="list-style-type: none"> • Senior Management commitment, including William Clay Ford, Jr. • Involve and inform the agencies in the early phases of the project to enhance cooperation. • Pursue grants, public funding, and other creative funding mechanisms to offset some of the costs. • Creation of public/private partnerships, (e.g., through agreements between the State and EPA, Ford has flexibility in using its own strategies to achieve results without obtaining prior regulatory approval, but Ford must demonstrate success within 5 year). • Ford can use their own strategies to achieve results without obtaining prior regulatory approval, but must demonstrate success within 5 years. • Conduct community outreach programs to educate the public and gain their support.

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***Texas City Refinery, Land Treatment RCRA Facility, Texas City, TX
BP***

Mr. David Tsao, Ph.D., BP, presented on the use of phytoremediation at several closed RCRA land treatment cells at the operating Texas City Land Treatment facility as an alternative to conventional landfarming for remediation and restoration. One of the benefits of phytoremediation remedies is its broad range of applications to different types of contaminants. In the case of contaminated soil, the fullness of the root system determines the extent of phytoremediation that will occur. Several different grass, leafy, and woody species were planted in contaminated soil in order to test the effectiveness of phytoremediation in reducing hydrocarbons. In addition, significant wildlife habitat benefits have resulted and the 22-acre test site at the facility has attracted birds, turtles, and numerous insect species.

There was significant cost savings achieved at the site, approximately \$290,000 annually in savings for the 22-acres when compared to the cost of land farming.

BP faced obstacles in implementing the phytoremediation technique, and employed several strategies to overcome them. See the tables below.

<i>Barriers</i>	<i>Strategies</i>
<ul style="list-style-type: none"> • Gaining regulatory acceptance. • Demonstrating effectiveness of phytoremediation. • Questions regarding long-term viability of phytoremediation (e.g., would degradation continue to occur into the future). 	<ul style="list-style-type: none"> • Frequent interaction with regulatory agencies (e.g., providing education sessions to regulators on phytoremediation techniques). • Continual monitoring and research to test effectiveness and varying conditions/ applications of phytoremediation and use of this research to demonstrate effectiveness to others. • Continued research and study of other demonstration pilots and their results, and monitoring the academic literature.

Working Lunch & Break-Out Sessions

The 100+ conference participants were predominantly drawn from industry (representing about 25 companies), government agencies, consultants, and legal firms. The conference participants were divided out into three groups: Superfund, RCRA, and Brownfields in order to flesh out particular issues and barriers, along with strategies to address those obstacles. Based upon the morning's deliberation, several categories of issues were presented to each breakout group. The breakout groups prioritized the most significant issue for their program area and began discussions on those issues. The issues presented to each group included:

- Coordinating Across Local-State-Federal Government
- Coordination Within a Government Agency
- Demonstrating the Value of Ecological Enhancement
- Involving the Community
- Natural Resource Damages Credit
- Rigidity of the Regulatory Process
- Working With Government Agencies

Superfund Break-Out Group Summary

	Demonstrating Benefits of Ecological Enhancements	Rigidity of Regulatory Process	Involving Communities	Natural Resource Damages
Issue	<ul style="list-style-type: none"> Communicate the value of using ecological enhancement and natural remedies as an alternative to traditional remediation approaches. 	<ul style="list-style-type: none"> What can companies do to work with the agencies, including those that acknowledge the inflexibility of the regulatory process. 	<ul style="list-style-type: none"> Important to involve the local communities. 	<ul style="list-style-type: none"> Expectations and roles of the trustees.
Key Points	<ul style="list-style-type: none"> Need for effective communication and education about new technologies. 	<ul style="list-style-type: none"> Rigidity is tied to the statute EPA is not allowed to pay for ecological enhancements so companies have to demonstrate that the enhancements are an added benefit to the remedies. The question of land use. Often RPMs do not know the zoning. Brownfields process is more performance-based, less process oriented; it would be nice if Superfund sites could be more like this. 	<ul style="list-style-type: none"> If you identify your stakeholders and communicate with them early, you can obtain their buy-in in advance. 	<ul style="list-style-type: none"> Will enhancements performed in a remedy be recognized. How can you credit the eco-remedies. Companies do not always have a grasp on trustee expectations. It can take time to break down barriers.
Strategies	<ul style="list-style-type: none"> Target multiple audience. Emphasize clean-up and added value. Focus on benefits. Use wildlife as a communication medium. Implement Community Relations. Use success stories as examples. Find partners for win/win opportunities. 	<ul style="list-style-type: none"> Administer reforms. PRPs should be active in the early phases of creative development Promote culture change that is more industry-friendly. Performance based ROD. Obtaining partners who can go the extra mile (e.g., U.S. Soccer foundation partnering with US EPA and FMC to create a soccer field on a site, the WHC/ Bridgestone Firestone partnership that increases trust between corporations, regulators, and the community). 	<ul style="list-style-type: none"> Identify stakeholders. Early communication. Assemble package to fit needs. Stay the course. Talk to local elected officials. Engage in public meetings every 6months to a year to keep the public informed. 	<ul style="list-style-type: none"> Clarify trustee roles. Involve trustees early. Engage companies early. Identify/quantify benefits of ecological enhancement

Brownfields Break-Out Group Summary

	Working with Government	Demonstrate Benefits of Ecological Enhancements	Involving Communities	Coordinating Across Local-State-Federal Governments
Issue	<ul style="list-style-type: none"> Reducing obstacles. Introducing incentives. Getting results. Creating trust. 	<ul style="list-style-type: none"> Stakeholders need to consider benefits and options of ecological enhancement. 	<ul style="list-style-type: none"> Effective community involvement. 	<ul style="list-style-type: none"> Overcoming obstacles and impediments to facilitate redevelopment.
Key Points	<ul style="list-style-type: none"> Need clear vision, objectives, and transparency in relationship. Economic development and ecological enhancement are co-equal drivers for working together. 	<ul style="list-style-type: none"> Need for credibility and trust between stakeholders. Consider all options and benefits instead of “nature v. jobs.” Communities don’t consider in long-range plans. Need to encourage multi-use. Takes patience to test options (e.g., takes time for plants to grow) Historical focus on scientific and technological solutions rather than natural systems. Small companies are not engaged. 	<ul style="list-style-type: none"> Broad participation includes business, and government. Effective community involvement rests upon an understanding and respect for competing and contrasting interests and motives. Community concerns are not fully addressed when the focus is on the technology. Risk communication often very technical. 	<ul style="list-style-type: none"> Legal process. Overlapping agency responsibilities and authorities. Decision-making inconsistent within agency. Implementation view varies from staff member to staff member within an agency. Adversarial relationship with agencies.
Strategies	<ul style="list-style-type: none"> Engaging stakeholders early. Institute mechanisms for flexibility, alternative cleanup standards, and mechanisms for implementation. Joint recognition of cost reality and necessity of benefits. 	<ul style="list-style-type: none"> Develop outreach and education. Target youth, teachers, town councils, local governments, planning boards, Chamber of Commerce, and small businesses. Send Earth day letters to policy makers and regulators. 	<ul style="list-style-type: none"> Establish a dialogue(e.g., “Chicago Model”). Present information in plain language. 	<ul style="list-style-type: none"> Team building, trust building with agency and community, up-front. Aligning objectives with agency and other constituencies.

Brownfields Break-Out Group Summary

	Working with Government	Demonstrate Benefits of Ecological Enhancements	Involving Communities	Coordinating Across Local-State-Federal Governments
Strategies (cont.)	<ul style="list-style-type: none"> Florida Model – based on local government as lead with advisory committee involvement. Advisory committee composed of local government, residents, and business. Support with environmental review, economic incentives, technical support, and flexibility. Self-nomination draws resources in vs. imposing constraints. Contamination not necessary to qualify for economic incentive. 	<ul style="list-style-type: none"> Partner with credible sources (e.g., WHC, educators, universities, etc). Proactive business solutions (before controversy). Encourage incentives for pilots programs, tests, etc. Expand Remediation Technology Development Forum (RTDF) outreach, provide funding. 	<ul style="list-style-type: none"> Need for frequent communication. Think about style of communication (e.g., web site versus flyer). Involve non-environmental groups (e.g., business, social, economic, education, in all aspects of the project). Anticipate community concerns. Multi-stakeholder process, presentations. Be innovative. Be aware of public expectations and outputs. Plan for a successful community involvement process. 	<ul style="list-style-type: none"> Access high levels of agency, but start from bottom up. Demonstrate proactive approaches. Educate on technical issues within agencies and across agencies. Establish process that allows flexibility.

RCRA Break-Out Group Summary

	Working with Government	Rigidity of Regulatory Process	Involving Communities	Coordinating Across Local-State-Federal Governments
Issue	<ul style="list-style-type: none"> Developing a productive relationship with government 	<ul style="list-style-type: none"> More could be accomplished in RCRA than is currently being realized. 	<ul style="list-style-type: none"> The more involved the community the better 	<ul style="list-style-type: none"> Need for enhanced coordination and consistency across levels of government.
Key Points	<ul style="list-style-type: none"> Need for effective communication 	<ul style="list-style-type: none"> RCRA Corrective Action process can be cumbersome and does not fit the ecological enhancement context. 	<ul style="list-style-type: none"> Community involvement builds trust and identifies common interests. Community is sophisticated, deeply vested in their community, and suspicious of company's motives. Community perspective is very important to government regulators. 	<ul style="list-style-type: none"> Recognition that there are significant differences across agencies (e.g., jurisdiction, incentives, missions). There can be different perspectives taken from state to state.
Strategies	<ul style="list-style-type: none"> Communicate up-front and throughout the process. Early timing of raising ecological enhancement is important from regulatory perspective. What is the best method to do this? Share success stories. 	<ul style="list-style-type: none"> Demonstration pilots that examine new tools that protect human health and groundwater and establish a long-term relationship with RCRA (e.g., long-term permits, deed restrictions). Need new RCRA tools that can get to the protective goals more efficiently, including ecological enhancement options. 	<ul style="list-style-type: none"> Use multiple communication pathways with community. Give community access to site managers, early and often. 	<ul style="list-style-type: none"> Build trust with key agencies – know who has what jurisdiction and the roles, responsibilities, and relationships between different government agencies. Answer their questions in their language (i.e., in the terminology that has meaning to them and addressing the interests they have).

RCRA Break-Out Group Summary

	Working with Government	Rigidity of Regulatory Process	Involving Communities	Coordinating Across Local-State-Federal Governments
Strategies (cont.)	<ul style="list-style-type: none"> • Demonstration pilots to test out models of flexibility. Recognize benefits of flexibility to government and industry, particularly if it shows greater performance/ outcome. Find other common interests that help bridge industry- government perspectives. • Take the initiative to communicate about ecological enhancement and raise opportunities for demonstration pilots. 	<ul style="list-style-type: none"> • Enhance public confidence in on-site activities and use of ecological enhancement on RCRA sites. 	<ul style="list-style-type: none"> • Embed, in all staff and contractors, the importance of involving the community and having a productive relationship with the public. All contractors and staff are ambassadors for company and talk about company in informal settings. • Build long-term, on-going relationships with community (e.g., citizen advisory panels and other forms that promote communication). • Demonstrate the value of ecological enhancement for the community (e.g., conservation education, ecological resources, green space). • Be cautious not to over promise and set up unrealistic expectations. 	<ul style="list-style-type: none"> • Build relationship with your community so that you have champions within the community.

Break-Out Session Reports & Panel of Commentators

As the last session of the day, break-out group findings were reported to the full conference. A panel of officials representing government perspectives were invited to comment on the break-out group findings.

Joel Hirschhorn, National Governor's Association, responded to the discussions on Superfund. He commented that “there has been a paradigm shift in how we view remediation,” adding “we used to think in terms of clean-up, now we concentrate on re-use.” Mr. Hirschhorn discussed the movement towards a “green infrastructure,” and the shift in the communities thinking about preserving and building our green space as parks, trails, etc. – the community that used to take green space for granted now values it more than ever. He sees this paradigm shift as a major new opportunity with regards to Superfund, since the public is more receptive to enhancing green space. He encouraged corporations to give the public an alternative to cleanup alone – instead, give the public cleanup plus ecological enhancements. In fact, Mr. Hirschhorn challenged WHC and the participants to take a leadership role in promoting ecological enhancement and connecting it to improving green infrastructure.

Martin Harris, Co-Director for the Joint Center for Sustainable Communities, representing the *National Association of Counties*, responded to the Brownfields group report. Mr. Harris stated that the group's findings not only apply to Brownfields, but also are applicable to Superfund and RCRA corrective action sites. He commented that many different factors drive communities to redevelop lands. He stressed the importance of cities and counties working in cooperation, as well as the integration of the community. For industry and government to work together, there needs to be a clear vision, engagement of stakeholders early in the process, and the perception of economic development and ecological enhancement as co-equal drivers. In conclusion, Mr. Harris challenged the conference participants to educate the public on ecological enhancement, and to do this, in part, by continuing to share success stories.

Dennis Treacy, Director of the Commonwealth of Virginia's Department of Environmental Quality, responded to the RCRA break-out presentation. Mr. Treacy addressed the issue of “trust,” which from his perspective is the largest barrier to environmental protection. He suggested corporations can work on building this trust by reinforcing to the public that community interests are important to them.

Timothy Fields, Assistant Administrator for the Office of Solid Waste and Emergency Response for the U.S. EPA commented on the discussions as a whole. He underscored each of the previous panelists' suggestions. He reinforced EPA's commitment to the Superfund Redevelopment Initiative, Brownfields program, and the productive reuse of RCRA Corrective Action sites. Mr. Fields encouraged WHC and the conference participants to take the initiative, educate the public and government agencies, and build trust with their local communities and government agencies.

COMMON THEMES & CONCLUSIONS

In addition to specific issues, barriers, and strategies within particular programs (e.g., Natural Resource Damage credits in a Superfund context) there were several cross-cutting themes applicable to ecological enhancement in Superfund, Brownfields, and RCRA.

Involve the community to ensure support for ecological enhancement.

Community involvement builds trusting relationships and in turn, can develop champions within the community for phytoremediation and ecological enhancement. In fact, there is growing public support for green technologies and “green infrastructure,” (i.e., the open space, habitat, recreational lands, agricultural heritage, and other characteristics of a community’s natural resources, environment, culture, and history). This public consensus that is emerging in a “smart growth” context would support ecological enhancement. Furthermore, the views of a community are very important to government regulators. Nonetheless, technology and risk science are complex and while the community is very sophisticated, it does require consistent and respectful communication and outreach to build upon the foundation of public support that may exist for ecological enhancement.

Factors and strategies to consider include:

- Use multiple communication pathways and discuss ecological enhancement with the community early and often, in non-technical language.
- Reach out to multiple constituencies in a community (e.g., education, business, elected officials).
- Be patient and persistent.
- Open your facilities to the public and let them meet your employees.
- Embed in your employees and contractors the importance of communicating and building a productive relationship with the community.
- Do not set unrealistic public expectations.

Demonstrate the benefits and value of ecological enhancement.

The value and benefits of ecological enhancement are unappreciated and not fully realized in Superfund, Brownfields, and RCRA. There are many reasons behind this, including a historical focus on scientific and technical solutions rather than natural systems and attenuation, the jobs vs. environmental political discussion, and the lack of trust and credibility among stakeholders. Nonetheless, there are common factors and strategies to consider when seeking to demonstrate the value and benefits of ecological enhancement:

- Emphasize remediation benefits *and* the added wildlife, environmental education, and community benefits.

- Use success stories to communicate the benefits and encourage pilot programs and demonstration projects to generate success stories.
- Find innovative partnerships that present opportunities for mutual gains.
- Expand outreach programs, such as the Remediation Technology Development Forum (RTDF).

Address the inflexibility that can exist in regulatory programs and coordinate across government agencies to create opportunities for ecological enhancement.

More could be achieved if regulatory programs had, and demonstrated, the flexibility to try innovative approaches such as ecological enhancement, and if greater coordination and consistency existed across local, state, and federal levels of government. For example, complications from the integration of local land use zoning with state and federal cleanup standards can prevent ecological enhancement. Those complications include significant differences across laws and implementing agencies, (e.g., inflexibility in the statutes and laws, jurisdiction, incentives, missions, technical expertise, and other factors). Nonetheless, strategies and suggestions emerged to promote regulatory flexibility, accountability to environmental standards, and mechanisms to test ecological enhancement:

- Be proactive, initiate communication, raise ecological enhancement early in the process, educate government officials on ecological enhancement, and address questions in the audience's language.
- When it is possible, gain the early involvement of a credible conservation organization, such as WHC, that can both communicate the wildlife/education benefits to the public, responsible agencies, and industry. Additionally involvement from an organization like WHC can improve communication, strengthen design, and enhance community involvement.
- Use pilot programs and demonstration projects as a means to test various flexible approaches to site remediation and reuse, and examine other existing models, (e.g., Florida's brownfield process).
- Build trust with key agencies and individuals.
- Understand different agency jurisdiction and roles, and promote communication across levels of government.
- Promote performance-based standards.
- Find innovative partnerships that present opportunities for mutual gains.

These ideas represent the first step toward promoting ecological enhancement at Superfund, Brownfields, and RCRA sites. Additional steps are needed to flesh these options out into specific objectives, action items and tasks.

NEXT STEPS

The next steps for conference participants and WHC involve a challenge to promote ecological enhancement and address the themes and issues identified in the conference in several distinct ways. Many of the conference participants left feeling motivated to move forward and specific next steps were identified, including an expansion of the conference Steering Committee. An expanded Steering Committee would brainstorm additional options and next steps for WHC, prioritize options and develop an action plan to implement opportunities. Topic areas in which WHC may take a leadership role include:

- Education on ecological enhancement.
- Policy leadership to promote ecological enhancement.
- Case studies to capture the success stories.
- Site-specific project support.

WHC and the Steering Committee will consider sponsoring additional conferences and discussions among the private sector and other stakeholders, and will also consider how to reach out to additional EPA and other agency programs beyond the Superfund Redevelopment Initiative, (e.g., Brownfields program, Smart Growth, watershed management).

Companies can take a next step now.

If individual companies are considering an ecological enhancement project now, there are resources available to give them additional information.

- US EPA Citizen's Guide to Phytoremediation:
<http://www.epa.gov/swertio1/products/citguide/phyto.htm>
- US EPA Remediation Technology Development Forum
<http://www.rtdf.org/public/phyto/default.htm>
- US EPA Use of Natural Landscapes
<http://www.epa.gov/greenacres/>
- Interstate Technology and Regulatory Cooperation
<http://www.itrcweb.org/reports/phyto>
- International Phytoremediation Electronic Network
<http://www.dsa.unipr.it/phytonet/>
- AEHS – International Journal on Phytoremediation

In addition, contact the Wildlife Habitat Council at:

WILDLIFE HABITAT COUNCIL
1010 WAYNE AVENUE, SUITE 920
Silver Spring, MD 20910
(301) 588-8994

ATTACHMENT A

CONFERENCE AGENDA

THE NEW FRONTIER: BROWNFIELD DEVELOPMENT & SUPERFUND/RCRA REMEDATION PROJECTS

June 13-14, 2000

Washington Marriott
1221 22nd Street, NW
Washington, DC

AGENDA

Tuesday, June 13, 2000

5:30 p.m. **Reception, Poster Session, and Dinner**

Brief Remarks – Henry (Hank) F. Habicht, President, Global Environment Technology
Foundation

Wednesday, June 14, 2000

7:30 – 8:00 a.m. **Registration and Continental Breakfast**

8:00 – 8:15 a.m. **Welcome – Bill Howard, President, Wildlife Habitat Council**

8:15 – 10:15 a.m. **Overview of the Opportunity**

Michael P. Last of Rackemann, Sawyer & Brewster, and Dr. Suthan Suthersan, Geraghty & Miller, Inc., will co-chair a panel of experts giving short presentations, followed by a question and answer group discussion with the audience. Topics covered will include:

- Phyto remediation and habitat enhancement techniques.
- What are the real costs and benefits to using phyto remediation and habitat enhancement?
- How does phyto remediation and habitat enhancement assist with natural resource damage credits?
- Can phyto remediation and habitat enhancement speed up the rate at which Superfund, RCRA and Brownfield projects are undertaken and completed?

Speakers in this session include: Mark D. Barash, U.S. Fish and Wildlife Service; Richard Jacobs, PPG; Eric Newman, U.S. EPA Region 3; and Bruce Thompson, de maximis, Inc.

10:15 – 10:30 a.m. **Break**

10:30 – 12:30 p.m. **Panel of Case Studies**

Three cases- a Superfund, Brownfield redevelopment, and RCRA corrective action – will highlight phyto-remediation and habitat enhancement successes, lessons learned and technical, public and regulatory barriers and strategies for overcoming them.

- Bridgestone/Firestone: Woodlawn Landfill Superfund site, Port Deposit, MD
- Ford Motor Company: Rouge Heritage 2000 Brownfield Project, Dearborn, MI
- BP: Texas Refinery, Land Treatment RCRA Facility, Texas City, TX

Facilitators will moderate a question & answer session with the audience.

12:30 – 12:45 p.m. **Break**

12:45 – 2:00 p.m. **Working Lunch & Break Out Sessions**

Participants will engage in small group discussions, building on questions emerging from the case studies and guided by the facilitators, to develop strategies for overcoming barriers and challenges to phyto remediation and ecological enhancement at contaminated sites.

2:00 – 2:10 p.m. **Break – Return to Plenary**

2:10 – 3:15 p.m. **Report-out & Panel of Commentators**

Break out group findings will be reported to the full conference. A Panel of officials representing government perspectives, will discuss the break out group findings. The facilitators will moderate additional question and answer discussion with conference participants and the Panel. The Panel will consist of the following individuals:

- Joel Hirschhorn, Director, Natural Resources Policy Section, National Governors Association
- Martin Harris, Co-Director, Joint Center for Sustainable Communities, representing the National Association of Counties
- Dennis Treacy, Director, Department of Environmental Quality, Commonwealth of Virginia, representing the Environmental Council of States
- Timothy Fields, Assistant Administrator for Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency

3:15 – 3:30 p.m. **Wrap-up – Next Steps**

The Wildlife Habitat Council will summarize the day's events and outcomes. Next steps will be introduced to continue the expansion of dialogue with corporations and government agencies on the use of phyto remediation and ecological enhancement.

3:30 p.m. **Adjourn**

ATTACHMENT B

CONFERENCE PARTICIPANTS

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ATTACHMENT C

GLOSSARY OF TERMS

ARARs (Applicable or Relevant and Appropriate Requirements). Within the Superfund Amendments and Reauthorization Act (SARA) of 1986, Congress essentially translated into law EPA's policy to use other environmental laws to guide response actions. SARA added CERCLA Section 121(d), which stipulates that the remedial standard or level of control for each hazardous substance, pollutant, or contaminant be at least that of any applicable or relevant and appropriate requirement (ARAR) under federal or state environmental law. (See, *Introduction to: Applicable or Relevant and Appropriate Requirements*, June 1998, EPA540-R-98-020, OSWER9205.5-10A, PB98-963 228, pg. 1.)

Superfund. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. The Superfund Amendments and Reauthorization Act (SARA) amended the CERCLA on October 17, 1986. (See, <http://www.epa.gov/superfund/>)

RCRA. RCRA is the Resource Conservation and Recovery Act, which was enacted by Congress in 1976. RCRA regulates the management of solid waste (e.g., garbage), hazardous waste, and underground storage tanks holding petroleum products or certain chemicals. (See, <http://www.epa.gov/epaoswer/osw/index.htm>)

Brownfields. Abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination. (See, <http://www.epa.gov/swerosps/bf/>)

Natural Resource Damages (NRDs). Several federal statutes authorize federal and state officials to act on behalf of the public to restore natural resources affected by releases of oil and other hazardous materials. Under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), parties responsible for contaminating the environment and causing injury to natural resources are also liable for natural resource damages (or compensation), which are to be used to restore the injured resources. NRD are for injury to, destruction of, or loss of natural resources, including the reasonable costs of a damage assessment [CERCLA [§§101\(6\)](#); [107\(a\)\(4\)\(C\)](#); OPA [§§1001\(5\)](#); [1002\(b\)\(2\)](#)]. The measure of damages is the cost of restoring injured resources to their baseline condition, compensation for the interim loss of injured resources pending recovery, and the reasonable cost of a damage assessment [[43 CFR Part 11](#); [15 CFR Part 990](#)]. (See, <http://www.epa.gov/oerrpage/superfund/programs/nrd/primer.htm>)