

WILDLIFE HABITAT COUNCIL

**BREAKING NEW GROUND:
THE BENEFITS OF ECOLOGICAL
ENHANCEMENTS IN BROWNFIELD
DEVELOPMENT AND SUPERFUND/RCRA
REMEDIAATION PROJECTS**

JULY 10 AND 11, 2001

MEETING SUMMARY

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Executive Summary

Background

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 That “watershed meeting” was held in June, 2000. Among the many conclusions reached was the notion that the dialogue must continue but with the additional participation of the regulatory community. This second meeting took place on July 10 and 11, 2001.

A Steering Committee identified clear goals for the conference and oversaw the design of a draft conference agenda that sought to achieve the following objectives:

- Reflect on how federal, state and/or local rules and regulations help or hinder wildlife habitat restoration and/or improvement;
- Identify drivers and barriers to ecological enhancement in RCRA, Superfund and Brownfields re-development;
- Illustrate and present examples of restored habitat and redevelopment from specific cases from across America; and,
- Share the wealth of technical, social, and institutional knowledge, along with available resources, that can assist in overcoming barriers for ecological enhancements.

All participants agreed that each of the four objectives was achieved.

Setting the Stage

Bill Howard, President of WHC and Michael Shapiro, Acting Assistant Administrator for US EPA’s Office of Solid Waste and Emergency Response welcomed all the participants to an event termed “historic.”

Ecological reuse is a bridge that brings together community goals and meets the regulatory standards for remediation programs/cleanups at brownfield and Superfund sites. Conceptually, it must be raised during the early planning stages of redevelopment. Working creatively with stakeholders to include and achieve community goals adds value to society and improves the quality of life for those living within those communities. As an example, brownfields (or those sites with low-level contamination among other

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.

requirements) can serve as catalysts for revitalizing local economy, housing, and ecological needs.

Both WHC and US EPA are catalysts for communication activities that focus on contaminated sites and the planning activities for future uses that benefit the surrounding community. In order to gain community acceptance (and include their economic, ecological, recreational, and other goals) local brownfield and Superfund remediation programs need to expand their focus to more than just “clean-up and get out” actions.

During the next few years, US EPA’s agenda will likely include:

- Superfund
- RCRA corrective action
- Underground storage tanks
- Brownfields and facilitating opportunities to assist communities meet their needs for development, economic growth, and recreation

The US EPA is interested in broadening the ideas of the existing programs with groups like those meeting today, meeting new challenges, and moving from an era of solving immediate problems to working with industry and providing value to communities and society. Sharing new technologies, success stories, research, and keeping communication lines open can help overcome some of the institutional, social, and technological barriers that communities, landowners, and regulatory agencies face when dealing with brownfield and Superfund/RCRA sites.

Identification of Drivers and Barriers

If we begin with the premise that ecological enhancements at brownfield development and Superfund/RCRA remediation projects is conceptually sound, then the next logical step is to look at drivers promoting and barriers interfering with their acceptance.

Drivers are factors that encourage leaders to include ecological enhancements in their brownfields redevelopment projects. *Barriers* are factors that make it difficult for firms to include such enhancements or even to avoid redevelopment efforts entirely. It is commonly held that these drivers and barriers should be identified by a cross-section of stakeholders. Once identified, methods for leveraging drivers or hurdling barriers should be sought.

Changes in the way industry approaches land restoration might come in the form of better management practices or new technologies. Changes by government include revised rules, a shift from regulations to voluntary programs, streamlined process requirements, or any other approach that achieves positive results, without compromising human health, ground water quality, or other environmental requirements.

The conference was intended to be a convening of interested parties in a forum designed to shed light on the drivers and barriers to ecological enhancements in Brownfields Redevelopment. Discussions were held in three “break-out” groups focused along the following topics: New Tools and Models for Decision Making in Regulatory Programs; Overcoming Institutional Barriers in Order to Increase the Use of Ecological Enhancements; and Overcoming Social Issues to Gain Public Support for Ecological Enhancements. Prior to the Breakout Sessions, the attendees participated in a plenary that allowed them to hear expert opinions of key federal, state and local policy and regulatory leaders involved with restoration of contaminated land in the United States.

Breakout sessions were designed to involve a combination of case presentations and collaborative dialogue. Participants were asked to identify critical drivers and barriers during their discourse and the outcomes are presented in the following summary tables.

Breakout Session I: New Tools and Models for Decision Making in Regulatory Programs

Drivers to Ecologically Enhanced Redevelopment	Barriers to Ecologically Enhanced Redevelopment
<ul style="list-style-type: none"> ➤ Early anticipation of results ➤ Ecological approaches are recognized as a benefit to natural resources and human health ➤ All parties involved need to know that various values change over time and base environmental services on assessments and endpoints defined at that time ➤ Success stories ➤ Flexibility ➤ Environmental/habitat enhancement banking ➤ Better intra-governmental relations ➤ New technological tools 	<ul style="list-style-type: none"> ➤ Internal communications in government agencies (elevation issues) ➤ Inefficiencies in communicating innovation within organizations ➤ It takes more steps to accomplish more than minimal requirements for remediation ➤ Greater technology needed up front ➤ The perception that these projects require more resources and training (especially for state, local, tribal, and federal government) when both are limited ➤ Difficulty convincing regulators of new ideas/technological advances ➤ Time, (i.e. most industrial landowners are in a hurry to get things done, but the resources are not always available to move at that pace; these projects take too long and industrial landowners sit on the problem for too long) ➤ States and other agencies have checklists and take a yes or no only approach ➤ Lack of education/lack of pooled resources to help smaller business owners and regulatory agencies get these projects in place ➤ There are often irreconcilable and confusing connections drawn between lab data and how the real natural world actually work ➤ Differing value systems which need to be reconciled

Breakout Session II: Overcoming Institutional Barriers in Order to Increase the Use of Ecological Enhancements

Drivers to Ecologically Enhanced Redevelopment	Barriers to Ecologically Enhanced Redevelopment
<ul style="list-style-type: none"> ➤ Regulations ➤ Industry Best Practices ➤ Innovation Curve ➤ Assessments ➤ Insurance Agencies are Willing To Partner ➤ Reward System ➤ Need The Land ➤ Willingness To Partner From All Constituency Groups ➤ Voluntary Eco-enhancement ➤ Brownfields Application For Superfund Sites ➤ Know Safety Margins And Levels (Environmental Indicators) 	<ul style="list-style-type: none"> ➤ Funding ➤ Increased Stringent Cleanup Levels For Enhancement ➤ State Regulatory Agencies Are Not As Progressive ➤ More State Involvement Can be a Barrier ➤ Personal History and Emotion ➤ Time Limit ➤ Industry and the Federal Government Are Not Together On Environmental Indicators ➤ Environmental Impacts are not Agreed Upon Between Agencies, ➤ Zero Risk Mentality ➤ No Endpoint To Regulatory Processes ➤ Perceived Contamination <p>Credibility</p> <ul style="list-style-type: none"> ➤ Fear To Partner ➤ State Regulatory Projects Are Construction Oriented ➤ Lack Of Trust ➤ “In The Trenches” Mentality

Breakout Session III: Overcoming Social Issues to Gain Public Support for Ecological Enhancements

Drivers to Ecologically Enhanced Redevelopment	Barriers to Ecologically Enhanced Redevelopment
<p><u>Social Values Accruing to the Facility</u></p> <ul style="list-style-type: none"> • Improved process; • Greater stakeholder involvement and therefore long term ownership; • Benefits beyond the site boundaries into local communities; • Enhanced human dimension in cleanup decisions; • Potential positive economic implications in depressed areas • Opportunity to fulfill a variety of local needs (open space, jobs, tax base, land conservation, etc.) <p><u>Social Benefits Accruing to the Community</u></p> <ul style="list-style-type: none"> • Tax benefits • Econ. Development beyond boundaries • Potential higher quality of life • Greater employment opportunities • Desired open space • Education aspects <p><u>Benefits of Comprehensive Community Outreach</u></p> <ul style="list-style-type: none"> • Insight as to local interests in the project, gained trust. • Greater likelihood of regulatory approval • Improved scheduling/less delays • Improved regulatory and public relations and support for project • Enhanced relations with media • Stimulus for revitalization and new development beyond site boundaries • Cost savings vs. narrow scoped cleanup solutions • More sustainable final use over long periods of time • Greater integration into surrounding environmental and social ecology of the area • Opportunity to fulfill local needs for open space, tax revenues, education facilities, etc.) • Perpetuate local ownership • Contribution as case studies in future forums 	<p><u>Costs to a Facility:</u> cost is perceived as one of the largest barriers. Yet how it is evaluated often drives the cost figure. Companies must consider:</p> <ul style="list-style-type: none"> • Risk management cost • Cleanup cost/savings/profits • Long term maintenance and monitoring costs (seek sustainable solutions for time periods greater than 25 years) • Litigation costs/savings • Creative financing options • Public outreach is a small incremental cost that often save considerably when looking at the big picture) • Avoided costs (hard to measure but often real) <p><u>Concerns of the Public including:</u></p> <ul style="list-style-type: none"> • Fear of ecological enhancement as a “cover up” for “real” cleanup • Fear that the level of cleanup will not be compatible with future use • Uncertainty as to what level of cleanup is tolerable • Longstanding public antagonism from local groups or individuals • Long term financial assurance and environmental integrity of any proposed action; • Human health concerns • Misinformation regarding risks of contamination and feasibility of proposed solutions • Lack of communication regarding process.

Outcomes and Next Steps

Several themes emerged during the day's discussions and are summarized below.

1. Community Involvement

Though not always required, community involvement builds trusting relationships that 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 facilities to the public
- Underscore the importance of communicating and building a productive relationship with the community.
- Do not set unrealistic public expectations.

2. Education

Many key participants in cleanup determinations are leery about the benefits of non-traditional approaches. The value and benefits of ecological enhancement are not fully appreciated realized within Superfund, Brownfields, and RCRA programs. 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.

Most regulators are unfamiliar with the science and technology. Most regulatory structures are not "friendly" toward non-traditional approaches and oftentimes are ill-

prepared to accept the data that supports them. Local government representatives and citizenry are not well versed in these issues.

Regulators, community leaders and businesses must work together to articulate goals, risks and risk abatement activities. Objective measures of success must be mutually agreeable and monitoring systems must be in place. More forums like today's need to be available so that case studies can be presented and used to educate members of all constituencies.

3. **State Involvement**

For some states habitat creation may represent yet another "requirement" for an underfunded Agency. Many state environmental and resource agencies do wish to be actively engaged. There are, however, enormous barriers that need to be overcome. To do so, the regulated community will need to understand that government agencies operate with constrained resources and that "investments" will need to be provided.

Additionally, stakeholders from all sides need to recognize that multiple state and local agencies have a "stake" in the dialogue. In all but a handful of states, for example, the natural resource agency and the environmental protection agencies are separate entities. If institutions for communication are established and successes in pilot projects become the norm, the success stories should form the basis for culture change within regulatory agencies and acceptance at the community level.

4. **Policy Changes and Innovation**

Separation of RCRA Corrective Action from the Superfund Platform.

Most experts believe that we are addressing only the tip of the iceberg when it comes to brownfields redevelopment, as the focal point seems to be those sites on the National Priorities List. There are hundreds of RCRA Corrective Action sites in each and every state that are caught in the regulatory morass of a system that has only a modest success rate. It is commonly held that a newer more flexible platform must be developed for addressing the sites of this wide a magnitude.

Habitat Banking/Credits as an Incentive Program for Ecological Enhancements

There is significant interest in pursuing a national Natural Resource Credit System. Such a system would reward facility or landowners for improvements made to the land that resulted in ecological benefit. There are a number of potentially sensitive issues that would need to be addressed by a myriad of stakeholders before any such program could be implemented. However, the benefits and rewards associated with such an approach could be significant. It was felt that the time was right to further explore how and under what parameters a system such as this might operate.

5. The Role of a Non-aligned Third Party

WHC was widely recognized as the ideal convener for unbiased, constructive dialogue on land rehabilitation issues. Those who attended expressed their appreciation for the opportunity to discuss pertinent issues. The beginnings of critical bridges were built during this conference through dialogue between regulated community and the regulators.

WHC must consider being a fulcrum to leverage dialogue and resources in the future. To that end, three ideas were proposed and supported:

- a. As originally intended, WHC should go forward with the third in the three conference series on encouraging ecological enhancements in site remediation. This next conference should include industry, the regulating community, the supporting services AND the non-governmental organizations and communities.
- b. WHC could convene a high-level policy dialogue including key decision-makers on all sides of the brownfield issue. This group would be charged with developing policy recommendations for state and federal implementation – but only on subject matter that was “ripe” for discussion. To initiate this process, WHC should establish a meeting with the new U.S. EPA Assistant Administrator for Solid Waste and Emergency Response (OSWER) to explain how ecological and habitat enhancement outcomes can help in site cleanups. Participation should also be sought from the states (through the Environmental Council of the States (ECOS) and the Association of State and Territorial Solid Waste Management Officials (ASTSWMO)).
- c. WHC should continue to play a pivotal role in providing technical and analytical support in discrete projects around the nation. Though culture change is slow, there is a need to demonstrate repeatedly that there are intelligent, cost effective ways in which to build ecological enhancements into brownfields redevelopment.

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:

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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

BP

Bridgestone/Firestone, Inc.

ExxonMobil

Ford Motor Company

Phillips Petroleum Company

PPG Industries, Inc.

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

U.S. Steel Group

We also acknowledge the **American Chemistry Council** and the **National Association for Environmental Management** for the support they provided in developing and promoting this conference.

Finally, we wish to express our appreciation for the contributions of **Consensus Solutions** in designing the protocols that were used in convening the meeting, and for their assistance in facilitating the discussions.

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.² That “watershed meeting” was held in June, 2000. Among the many conclusions reached was that the dialogue must continue but with the additional participation of the regulatory community. Just as before, a Steering Committee was formed to plan the event, develop a series of objectives and craft an agenda for the conference. The Steering Committee members included:

- Jerome S. Amber**, Vice President, Ford Motor Land Development
Ford Motor Company
- John Arata**, Assistant Vice President, Director of Business Development
AIG Environmental
- Tim Bent**, Senior Environmental Manager
Bridgestone/Firestone, Inc.
- Greg Biddinger**, Ph.D., Environmental Science Issues Advisor
ExxonMobil
- Charles G. Carson III, Ph.D.**, Vice President, Environmental Affairs
United States Steel LLC.
- Tom Davis**, Acting Executive Director
National Association for Environmental Management
- Stephen A. Elbert**, Business Unit Leader
BP
- Carol Davis, P.G.**, Site Manager
Phillips Petroleum Company
- Richard A. Jacobs**, Manager, Environmental Projects
PPG Industries, Inc.
- Robert E. Roberts**, Executive Director
Environmental Council of the States
- Glen Schultz**, Technical Director, Closed Sites
Waste Management Inc.
- Robert Springer**, Director, Waste, Pesticides and Toxics Division
Region V, U.S. Environmental Protection Agency
- Bob Johnson**, Executive Vice President
Wildlife Habitat Council
- Rob Pauline**, Director of Field Programs
Wildlife Habitat Council
- Adam R. Saslow**, President

² 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.

Consensus Solutions

The Steering Committee identified clear goals for the conference and oversaw the design of the draft conference agenda to achieve the following objectives:

- Reflect on how federal, state and/or local rules and regulations help or hinder wildlife habitat restoration and/or improvement;
- Identify drivers and barriers to ecological enhancement in RCRA, Superfund and Brownfields re-development;
- Illustrate and present examples of restored habitat and redevelopment from specific cases from across America; and,
- Share the wealth of technical, social, and institutional knowledge, along with available resources, that can assist in overcoming barriers for ecological enhancements.

WHC hired Consensus Solutions, Incorporated to lead the facilitation team. Consensus Solutions is one of the leading public policy facilitation and mediation firms in the Southeast. The team also included facilitators from Justice and Sustainability Associates.

The Breaking New Ground conference was designed as an interactive set of presentations and discussions. 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:

1. The **Cocktail Reception and Poster Session** provided an opportunity to see and hear about ecological enhancement projects from around the country. The poster session continued throughout the two days and the printed materials were available during the entire conference
2. The **Plenary Opening Panel Discussion** brought together five nationally renowned experts in the field representing leadership at the federal, state and local levels of government. They first presented their thoughts on how rules and regulations help or hinder wildlife habitat restoration and presented real world examples to illustrate their points. They then took part in an informal discussion moderated for cross conversation. Finally, they entertained questions from the audience and provided answers.
3. During the registration process, attendees were asked to indicate a preference for attending one of three **Breakout Sessions and Working Lunch**. The sessions were professionally facilitated and featured “Subject Matter Experts” who have faced and often overcome significant regulatory, institutional, technical and social barriers.

4. The final session, **The Presentation of Strategies**, was a uniquely structured recap of the three Breakout Sessions. Participants hailing from federal, state and local entities briefly described the “lessons learned” in the Breakout Sessions they attended and then focused their remarks on how the day’s discussions may result in process, cultural or other changes within their organizations.

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.

Opening Remarks

Bill Howard

President, Wildlife Habitat Council

Mr. Howard convened the meeting and made opening introductions. After welcoming the participants, he remarked that this was an excellent opportunity to accomplish real progress since many of the “decision-makers” responsible for the acceptance and approval of ecologically-based designs and approaches regarding remediation of contaminated sites were present in the room. He shared several site-specific examples where the Wildlife Habitat Council had assisted in the successful planning, implementation and management of ecological enhancement projects at remediated sites. Mr. Howard ended his remarks by encouraging the attendees to be creative and look for opportunities for synergy. The lowering or elimination of barriers to ecological enhancements at these types of sites offers many unique and increasingly valuable opportunities for all stakeholders.

Mike Shapiro

Acting Assistant Administrator, U.S. EPA, Office of Solid Waste and Emergency Response (OSWER)

Mike Shapiro gave an introduction of the EPA’s role and working history of cooperation with WHC. He then went on to discuss ecological reuse as an excellent opportunity to accomplish community goals and meet regulatory standards. He encouraged early engagement of all of the stakeholders during the early planning stages of remediation programs/cleanups for brownfield and Superfund sites highlighting the opportunities for ecological enhancement as outcomes. Working creatively with stakeholders to include and achieve community goals adds value to society and improves the quality of life for those living within those communities. As an example, brownfields (or those sites with low-level contamination among other requirements) can serve as catalysts for revitalizing local economy, housing, and ecological needs.

* 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.

US EPA facilitates communication activities to plan for future land use on contaminated sites that best benefit the participating community. In order to gain community acceptance and include their economical, ecological, recreational, and other goals, local brownfield and Superfund remediation programs need to expand their focus to more than just “clean-up and get out” actions. Sharing new technologies, success stories, research, and keeping communication lines open can help overcome some of the institutional, social, and technological barriers that communities, landowners, and regulatory agencies face when dealing with brownfield and Superfund/RCRA sites.

During the next few years, US EPA’s agenda will likely include:

-
- RCRA corrective action
Underground
- Brownfields and facilitating opportunities to assist communities meet their needs for development, economic growth, and recreation

The EPA is interested in broadening the ideas of the existing programs with groups like WHC, meeting new challenges, and moving from an era of solving immediate problems to working with industry and providing value to communities and society.

Opening Panel: A View from Government

Examples of how federal, state and/or local rules and regulations help or hinder wildlife habitat restoration and/or improvement and present examples of restored habitat.

Robert Springer

Director, Waste, Pesticides and Toxics Division, US EPA Region 5

There is a need to reorient provisions for RCRA to include wildlife habitat restoration, but regulatory agencies need input from industry as to what, where, when, why, and how habitat restoration initiatives and incentives can be included in remediation programs. About 40%, or 110 sites in Region 5, have indicated that they want to incorporate ecological and habitat restoration efforts into remediation plans. In Chicago and surrounding areas at the southern tip of Lake Michigan, RCRA sites are adjacent to critically threatened/endangered habitats, and this situation is probably not uncommon. Managing for future land use, including ecological reuse and habitat restoration, and combining those efforts from environmental organizations and corporate entities creates win-win outcomes.

Steve Heare

Director Permits and State Programs, US EPA, OSWER

The general consensus on Superfund/RCRA remediation from a risk and regulatory perspective is that traditional clean up efforts look good, but the continuing loss of habitat and natural resources looks bad to surrounding communities.

Most Superfund redevelopments can bring both financial and ecological improvements to the community. Increasing ecological reuse of these sites, which can include habitat restoration, should be included in the early stages of planning. Landowners and regulatory agencies should be aware that:

- a. Completion of the remediation project does not mean the end of the project; continuous monitoring and testing are needed;
- b. Pooling resources increases value and decreases project cost; and
- c. Communication between all stakeholders is key, and anyone can have a creative idea with multiple benefits.

Risk-taking can be difficult for all parties involved in clean-up and redevelopment. There are many opportunities for Superfund/RCRA remediation programs including creating and restoring wetlands, implementing trails and bike paths, erecting environmental education centers and picnic pavilions, and establishing native vegetation cover. These actions benefit the community and achieve a goal for the common good of natural resources.

Mr. Heare pointed to the following illustrative examples in his presentation:

- a. Bowers Landfill, Pickaway County, Ohio. This landfill was transformed into a 6-acre wetland.
- b. Silver Bow Creek/Warm Spring, Butte, Montana. Part of the wastewater treatment system of a copper mine was converted to a 400-acre wetland that includes trails and bike paths.
- c. Army Creek Landfill, New Castle County, Delaware. A sand and gravel quarry was then utilized as a landfill before finally being covered with native vegetation as part of a habitat restoration project.

J. Christian Bollwage

Mayor, Elizabeth, New Jersey

Taking risks on brownfield redevelopments (and other contaminated sites) can be overwhelming to landowners, developers, and regulatory personnel. However, long-term community benefits such as increased commercial development and revenue from tax incentives and property taxes, new employment opportunities, and ecological and recreational opportunities for the community can result from taking risks.

Enlisting all aspects of the community and state and local government [and supporting brownfield legislation (S.350)] can help maximize both the support and benefit of risk-taking during brownfield redevelopment planning process.

Mayor Bollwage pointed to the following illustrative examples in his presentation:

- a. Invested \$10 million in a road leading to a landfill disposal site and then turned the brownfield into the nation's largest retail outlet: an Ikea merchandise store;
- b. Reclaimed contaminated site was utilized as baseball fields;
- c. "Great ditch" to Newark bay was restored to 13 acres of created wetlands

Judge Robert Eckels

Harris County, Texas

There are approximately 500,000 brownfield sites across the U.S. ranging in size from abandoned, privately owned laundromats to closed manufacturing warehouses. Many brownfields are abandoned and many are privately owned, but the question is: How do we make the best use of these sites? Whether the site is two, four hundred, and ten thousand acres, there is an opportunity to combine resources of diverse partnerships to revitalize the economic needs of the community and re-establish natural resource integrity. Brownfield redevelopment decreases pressure to develop greenfields and can help local governments solve issues that occur with explosive growth.

Judge Eckels pointed to the following illustrative examples in his presentation:

- a. Enron brownfield to Houston Astros Enron Stadium;
- b. Attwater's Prairie Chicken;
- c. Union Station and Rails to Trails

George E. Meyer

Special Assistant to the Secretary, Wisconsin Department of Natural Resources

The cleanup of most contaminated sites is left to local, state, and tribal agencies, but the barriers and limited resources that these smaller agencies must face can be difficult. Local landowners are concerned about the results of remediation efforts, and what the community will be left with when work is completed. The historical and emotional state of the clean-up site and past and future land use should be taken into consideration as well. In order to reduce barriers on smaller agencies, attitudes on larger levels should encompass the needs and restrictions of the smaller agencies. Consolidating brownfield and contaminated site issues into one inclusive bureau could help break down those barriers.

Interaction, Questions and Answers

Following the panel, there was a brief question and answer session. What follows is a brief restatement of the questions asked and a general set of responses. No attribution is catalogued here.

Q: Is there a provision for habitat restoration in S.350?

A: There is nothing specific to habitat restoration at this time, but it may give municipalities the tools for brownfield reclassification, etc. which includes productive use, including habitat/ecological restoration.

Q: What is the level of community involvement in remediation program planning?

A: We get help from county and city government through public hearings, notifications, etc. Also get help from state, conservation groups, historical groups, and others and their involvement helps reduce make the stakeholders aware of their concerns/issues which reduces the risk and long-term problems of the remediation program.

Q: What is the best stage to implement habitat restoration in RCRA?

A: The earlier the better. Get stakeholders and public comment throughout the process.

Q: What do you perceive as barriers? The different agencies don't seem to have the same standards or agendas, there seems to be a lack of communication between all parties. How do you manage those barriers?

A: We try to make all parties and potential parties aware of our actions and plans so that there are no surprises and we get community support. It was noted that companies are worried about compliance today AND in the future.

Follow Up Q: Does making the public aware of all actions really work or does it cause more problems?

A: Must make sure that regional directors of all agencies are also aware of actions and have their support to work out problems with the public.

Q: Who are the stakeholders in a clean up and redevelopment project?

A: There are more stakeholders than one can imagine. Among them are officials at all levels of government (city, county, state and federal), the environmental community, economic development and business not to mention the parties with historical presence at the site.

Q: Institutional controls of land use planning have been chilling to local governments. Local government personnel changes may occur more often than on regional levels. Local agencies don not always feel that they have the resources, technical or financial, to accomplish their remediation goals. We need support from regional and higher levels of EPA and other federal agencies. Comments?

A: The resources can be had if the political will exists to make them a reality and by communicating and making decisions to move forward. There are smaller brownfields within communities (one to ten acres) that can be effectively handled by municipalities. Local governments are often concerned about getting land “locked-in” for one use in perpetuity, but that does not have to be the case with the proper land use planning.

Q: What about the possibility of environmental or habitat mitigation banking (similar to wetland or forest banking)?

A: One participant noted that it depends on local government mostly. Many believed that this issue was ripe but had not been looked at sufficiently. Recommended that this item be a focus of future dialog to identify increased opportunities.

Q: How can WHC play a role?

A: Tremendous asset for setting up forum/ideas. WHC can show communities what various parties can do and how all parties can act responsibly. WHC can provide the resources to facilitate discussion and forge partnerships on projects. WHC provides enormous analytical capability and technical expertise in the areas of ecologically enhanced brownfields remediation.

Break Out Sessions and Working Lunch

The 125+ conference participants were predominantly drawn from industry (representing about 25 companies), government agencies, consultants, insurance and legal firms. The conference participants were divided out into four sections spanning three subject areas:

- **New Tools and Models for Decision Making in Regulatory Programs (2 sections)**
- **Overcoming Institutional Barriers in Order to Increase the Use of Ecological Enhancements**
- **Overcoming Social Issues to Gain Public Support for Ecological Enhancements**

These groups were established to look within their topical areas for drivers of environmental enhancements, barriers to overcome and successes and failures in dealing with the broad range of social, economic and scientific issues.

The format for the groups was essentially the same across all four sections. First, participants were asked to write on an index card exactly what ONE question they would like to see discussed (time permitting) within each section. Those questions are recapped in Appendix C. Time prevented most of them from being discussed but collectively they provide a “window” into the desire of the stakeholders for additional information that will assist in increased use of ecological enhancement in the restoration of contaminated lands.

After this exercise as well as the establishment of ground rules, guest presenters provided insights on a variety of case studies. These case studies are not recapped here. Select presentations are available through WHC.

At the conclusion of the presentations, groups of between 25 and 40 people engaged in dialogue on the topics at hand. The discussions focused first on drivers of and then barriers to ecologically enhanced redevelopment. The discussions were structured to then focus on how to identify the leverage points and use them effectively to develop successful efforts.

Breakout Session I – New Tools and Models for Decision Making in Regulatory Programs

Synopsis of Presentations

These presentations were made to two different sections. After the presentations, the group was split into two breakout groups.

Dr. Ted Tomasi, ENTRIX, Inc.

Discussed approaches for incorporating ecological values into remedial options analysis at contaminated sites where unacceptable human health risks are not present. Ecological risk assessment methods define baseline risks, but formal methods for including ecological costs and benefits of remedial actions have not gained widespread acceptance. He discussed methods for measuring ecological service gains and losses from alternative remedial actions, called net environmental benefits analysis. The techniques are adapted from those used for assessing ecological components of natural resource damage assessments. These methods can also be used to assess the benefits of resource enhancements designed to offset any residual risks that might be associated with a natural attenuation option. Barriers to the potential use of these approaches are addressed, and lessons learned from case studies are presented.

Larry Kapustka, ecological planning and toxicology, inc.

The realization that land use activities often have greater adverse consequences to wildlife than do chemicals provides an opportunity to change attitudes and practices. We are working on ways to incorporate landscape features into the environmental management process. Specifically, we are developing simple, direct approaches to use landscape features critical to habitat quality of valued species in the earliest stages of site evaluation. The approach is intended to guide the planning process so that assessments consider the most relevant species of the area; define what parameters are to be measured, and uses those data to calculate more realistic exposure assessments. The approach will lead logically to consider a wider range of land management options than are considered at most sites today. For example, habitat enhancement can be used to draw animals away from contaminated zones. Contaminated localities that also have poor quality habitat may be allowed to go through a slower, less costly bioremediation process until the risk level is lowered to acceptable levels. And direct comparisons of lost resources stemming from destructive remediation options can be assessed instead of merely focusing on the lowering of contaminant concentrations.

Daniel M. Powell, U.S. EPA, Technology Innovation Office

This presentation focused on issues related to the population of sites “mothballed” due to technical and liability problems associated with long-term clean-up activities or perceived “large-scale” contamination problems. The discussion highlighted potential technology solutions to mothballed sites, especially where the presumed costs of assessment and

cleanup discourage site owners, including municipalities, from taking action. First, a three-pronged or “triad” approach to investigation and monitoring that 1) relies heavily on field analytical technologies; 2) requires the use of systematic planning to focus data collection on necessary decisions; and 3) employs “dynamic,” in-field work planning and decision making can (and has) both save(ed) time and money, but also minimize(ed) uncertainty. The triad reduces site assessment costs, and it also impacts total project costs by better directing site clean-up activities. A second area of consideration includes those sites where subsurface contamination exists. For these sites, technology alternatives that aggressively attack the source-term contamination may help permanently eliminate the risk of residual contamination and move these sites forward to a stage where owners can be willing to consider them for redevelopment.

The following table presents the drivers and barriers that were identified by the discussants in this breakout session

Drivers to Ecologically Enhanced Redevelopment	Barriers to Ecologically Enhanced Redevelopment
<ul style="list-style-type: none"> ➤ Early anticipation of results ➤ Ecological approaches are recognized as a benefit to natural resources and human health, ➤ All parties involved need to know that various values change over time and base environmental services on assessments and endpoints defined at that time. ➤ Success stories. ➤ Flexibility ➤ Environmental/habitat enhancement banking ➤ Better intra-governmental relations ➤ New technological tools 	<ul style="list-style-type: none"> ➤ Internal communications in government agencies (elevation issues) ➤ Inefficiencies in communicating innovation within organizations ➤ It takes more steps to accomplish more than minimal requirements for remediation ➤ Greater technology needed up front ➤ The perception that these projects require more resources and training (especially for state, local, tribal, and federal government) when both are limited ➤ Difficulty convincing regulators of new ideas/technological advances ➤ Time, (i.e. most industrial landowners are in a hurry to get things done, but the resources are not always available to move at that pace; these projects take too long and industrial landowners sit on the problem for too long) ➤ States and other agencies have checklists and take a yes or no only approach ➤ Lack of education/lack of pooled resources to help smaller business owners and regulatory agencies get these projects in place ➤ There are often irreconcilable and confusing connections drawn between lab data and how the real natural world actually work ➤ Differing value systems which need to be reconciled

Breakout Session II – Overcoming Institutional Barriers in Order to Increase the Use of Ecological Enhancements

Synopsis of Presentations

Joan S. Blaustein, Department of City Planning, Pittsburgh, PA

At Nine Mile Run, several development projects failed before the city took ownership of this project. They applied a range of strategies including embracing the opposition and giving them meaningful responsibilities in the effort. The community, with support from knowledgeable academics and consultants, developed their own model and utilized small community grants to make it all happen. They set goals, recognized limitations and worked toward a common vision which included:

- Biologically diverse and sustainable ecosystem w/o impacts on other areas.
- Public open space that is safe and healthy.
- Reinforce connection between Frick Park and the Monongahela River.
- Return Nine Mile Run as an amenity to Summerset, Frick and wildlife.

In the final analysis, a new urban neighborhood was restored NOT to a pristine state but one of balance. They created an affordable urban "backyard." Largely by engaging the naysayers, they turned an urban disaster into urban asset.

Mike Swindoll, ExxonMobil.

Innovating within regulatory programs: enhancing ecological habitat while remediating groundwater. Mr. Swindoll presented a framework and then a case study concerning a site in Billings, MT. He suggested that defining institutional barriers and obtaining regulatory flexibility can yield superior environmental performance and also yield decreases in risk to human health and the environment. One must take a systematic approach and align project and participants' goals. By doing so, win-win outcomes can be created.

Participants were asked to discuss the drivers of ecological enhancements and the strategies for leveraging them. The participants developed the following:

Drivers of Ecological Enhancements	Strategies for Leveraging Drivers
<ul style="list-style-type: none"> ➤ Regulations ➤ Industry Best Practices ➤ Innovation Curve ➤ Assessments ➤ Insurance Agencies are Willing To Partner ➤ Reward System 	<ul style="list-style-type: none"> ➤ Parceling (Selling Unusable Sites, Financial Incentives?) ➤ Showcase Beneficial/Eco Enhancements First, Before Punitive Actions ➤ ITRC (Interstate Technology Regulation Cooperation) Conferences

Drivers of Ecological Enhancements	Strategies for Leveraging Drivers
<ul style="list-style-type: none"> ➤ Need The Land ➤ Willingness To Partner From All Constituency Groups ➤ Voluntary Eco-enhancement ➤ Brownfields Application For Superfund Sites ➤ Know Safety Margins And Levels (Environmental Indicators) 	<ul style="list-style-type: none"> ➤ Use Uncontaminated Sites As Well ➤ Training To Link Washington With the Real World ➤ Share Information on Federal State Partnerships ➤ State Level Incentives are Needed ➤ Environmental Indicators are the Key To Reform ➤ Educate Community About Environmental Indicators And Pilots

Participants were then asked to discuss the barriers to ecological enhancements and the strategies for overcoming them. The participants developed the following:

Barriers to Ecological Enhancements	Strategies for Overcoming Barriers
<ul style="list-style-type: none"> ➤ Funding ➤ Increased Stringent Cleanup Levels For Enhancement ➤ State Regulatory Agencies Are Not As Progressive ➤ More State Involvement Can be a Barrier ➤ Personal History and Emotion ➤ Time Limit ➤ Industry and the Federal Government Are Not Together On Environmental Indicators ➤ Environmental Impacts are not Agreed Upon Between Agencies, ➤ Zero Risk Mentality ➤ No Endpoint To Regulatory Processes ➤ Perceived Contamination <p>Credibility</p> <ul style="list-style-type: none"> ➤ Fear To Partner ➤ State Regulatory Projects Are Construction Oriented ➤ Lack Of Trust ➤ “In The Trenches” Mentality 	<ul style="list-style-type: none"> ➤ Build trust, common goals ➤ Pilot Workshops ➤ EPA Find Measure Of Final Cleanup ➤ More State Representation ➤ EPA Should Seize Opportunities Through Coalition Building ➤ Utilize Core Groups ➤ Support the Greenspace Supplement—S 350 For Major Funding ➤ Internal Marketing ➤ Marketing of Successes ➤ Evaluate Root-Cause Analysis Of Failures ➤ Develop Guiding Principles, Set Common Goals/Consensus Points ➤ Partner With All Stakeholders ➤ Ensure Health Indicators are Monitored ➤ Share Information With Federal and State Officials ➤ Overcome Gaps through Science and Technology

Breakout Session III – Overcoming Social Issues to Gain Public Support for Ecological Enhancements

Synopsis of Presentations

John Arata, AIG Environmental

Aligning corporate environmental issues with community concerns regarding problem sites. This is essentially a two step process where the data is first confirmed and conformed and the role of environmental insurance is defined. Second, the responsible parties must address the concerns of the community and the regulating entities concerning the parties' reliability in undertaking the cleanup. Oftentimes, once the emotional issues are set aside, the key concerns are found to be the same: time, results and cost.

Bill Cutler, FMC Corporation

Stakeholder involvement in cleanup and redevelopment. Avtex Fibers Superfund site, Front Royal, VA – case study.. In 1999, after a protracted bankruptcy proceeding, the property title was transferred to the local Economic Development Authority (EDA), and FMC entered into an agreement with EPA to conduct all future cleanup work. The stage was set for a new era! EPA, VADEQ, FMC and the EDA agreed to jointly sponsor a Multi-Stakeholders Group (MSG) to involve the community in cleanup and redevelopment efforts. The MSG is modeled after the “Standard Guide to the Process of Sustainable Brownfields Development” put forth by ASTM. The MSG process brought together local officials, concerned citizens, neighboring schools and businesses, and the sponsors to develop a “Vision” for site redevelopment and restoration.

An initial Re-Use Study, conducted in 1998, identified three future uses of the 440-acre site: business park, active recreation (soccer fields) and conservation. This Re-Use study set the stage for future redevelopment opportunities at the site. The MSG, through a series of public meetings and design workshops, helped to develop a Conservancy Park Master Plan for the 220-acre parcel along the River. The Master Plan, approved by the Town and County in 2000, integrates future recreational and wildlife conservancy uses with Superfund remediation plans. With this Master Plan in place and supported by the community, the Superfund cleanup work is proceeding expeditiously. Redevelopment plans for the soccer fields and business park parcels are being formulated, again with significant community input through the MSG forum.

David Daddario, North American Realty Advisory Services

Starting from a very broad list of community needs, corporations need to work with the community to focus on land uses and activities that are appropriate and acceptable site uses. Utilizing community outreach skills (arranging/participating in public meetings, writing/distributing newsletters, posting updates regarding the cleanup and revitalization via the Internet, etc.), the aim is to build a consensus of support for the project and

its economic development benefits among the general public. This consensus of support can also help to motivate county, state and federal-elected officials to respond quickly to requests made of them, and help the property owner successfully compete for grant money and other available funds to make the Brownfield/Superfund redevelopment a reality for the community.

Case studies illustrated how leading corporations are working with communities in successful Brownfield and Superfund revitalization projects nationwide.

Following the presentations, the group conducted a lively discussion on a range of social issues. While consensus was not forged on any given topic, general themes began to emerge.

First, the group identified critical stakeholder groups needed to ensure the success of a successfully redeveloped site. Stakeholder groups named here included: the facility, environmental activists, public entities, municipalities, schools and individuals.

Drivers to Ecologically Enhanced Redevelopment	Barriers to Ecologically Enhanced Redevelopment
<p><u>Social Values Accruing to the Facility</u></p> <ul style="list-style-type: none"> • Improved process; • Greater stakeholder involvement and therefore long term ownership; • Benefits beyond the site boundaries into local communities; • Enhanced human dimension in cleanup decisions; • Potential positive economic implications in depressed areas; and • Opportunity to fulfill a variety of local needs (open space, jobs, tax base, land conservation, etc.) • <p><u>Social Benefits Accruing to the Community</u></p> <ul style="list-style-type: none"> • Tax benefits • Econ. Development beyond boundaries • Potential higher quality of life • Greater employment opportunities • Desired open space • Education aspects 	<p><u>Costs to a Facility:</u> cost is perceived as one of the largest barriers. Yet how it is evaluated often drives the cost figure. Companies must consider:</p> <ul style="list-style-type: none"> • Risk management cost; • Cleanup cost/savings/profits; • Long term maintenance and monitoring costs (seek sustainable solutions for time periods greater than 25 years); • Litigation costs/savings; • Creative financing options; • Public outreach is a small incremental cost that often save considerably when looking at the big picture); and, • Avoided costs (hard to measure but often real) <p><u>Concerns of the Public including:</u></p> <ul style="list-style-type: none"> • Fear of ecological enhancement as a “cover up” for “real” cleanup; • Fear that the level of cleanup will not be compatible with future use • Uncertainty as to what level of cleanup is tolerable;

Drivers to Ecologically Enhanced Redevelopment	Barriers to Ecologically Enhanced Redevelopment
<p><u>Benefits of Comprehensive Community Outreach</u></p> <ul style="list-style-type: none"> • Insight as to local interests in the project. • Greater likelihood of regulatory approval • Improved scheduling/less delays • Improved regulatory and public relations and support for project • Enhanced relations with media • Gained trust • Stimulus for revitalization and new development beyond site boundaries • Cost savings vs. narrow scoped cleanup solutions • More sustainable final use over long periods of time • Greater integration into surrounding environmental and social ecology of the area • Opportunity to fulfill local needs for open space, tax revenues, education facilities, etc.) • Better quality of life • Income generation of proposed final use beyond “cap and fence” mentality • Perpetuate local ownership • Contribution as case studies in future forums 	<ul style="list-style-type: none"> • Longstanding public antagonism from local groups or individuals • Long term financial assurance and environmental integrity of any proposed action; • Human health concerns; • Misinformation regarding risks of contamination and feasibility of proposed solutions; and, • Lack of communication regarding process.

The group concluded its discussions with dialogue on next steps. In particular, the participants identified conceptual, regulatory and cultural shifts that need to be made for these kinds of projects to evolve beyond the pilot stage and toward common practice. Leaders need to:

- Overcome fear and loathing within agencies and company project managers
- Focus on the best broad-based solution. What will be a “home run” beyond the 30-year time frame commonly used. It will not be a fenced site (this will become someone else’s problem in the future.)
- Create incentives from state and federal agencies for companies and communities (\$, less cumbersome processes, ecological enhancement banking)
- Distribute financial resources more wisely (not always best spent on fines, litigation, studies rather we need to move toward financial resources spent on solutions towards a better final use).
- Encourage insurance underwriting to manage and cover risks

- Develop the regulating community's appreciation of the benefits of ecological enhancement to multiple stakeholders (minimize command and control)
- Employ a neutral and objective broker to build consensus and trust among all parties
- Allow communities the opportunity to communicate what they are willing to accept as a risk and final use. Create a means to take the project to the people that are or will be impacted.
- Reprioritize concerns to see bigger picture. Issues are not only centered on cleanup but ecological and social issues need attention as high priority
- Get state agencies information and support. This cannot be a strictly federal initiative as most brownfields issues are predominantly managed on the local level with local issues.
- Overcome the lack of available information. Need to promote sustainable and innovative solutions at state, municipal and federal level.
- Provide incentives for those taking on the risk and cost of innovative solutions. Those that get out as a "safety net" should not be rewarded the same as those that take on the risks. There should not be constraints (economic and regulatory) for those making a project work. Get beyond mentality that those responsible need to be punished and cannot gain reward for working through beneficial solutions.

Closing Panel – Presentation of Strategies

As the last session of the day, break-out group findings were reported to the full conference. Participants drawn from federal, state and local government briefly described the “lessons learned” in the Breakout Sessions they attended and then focused their remarks on how the day’s discussions may result in process, cultural or other changes within their organizations. The following are some key points that were made collective by the group.

WHC was widely recognized as the ideal convener for unbiased, constructive dialogue on brownfields redevelopment issues. All who attended expressed their appreciation for the opportunity to discuss these pertinent topics. Through dialogue between and among the regulated community and the regulating community, infused with the models and creativity of the supporting services, the beginnings of critical bridges were built.

Many common themes were underscored from last year’s conference including:

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 underappreciated 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.

Several new themes emerged with the additional participation of the regulatory community.

While the science and technology is not available to support ALL types of ecologically enhanced redevelopment, it is available to support many different activities.

Phytoremediation, air sparging, bio-remediation and various forms of speciation all lend themselves to cost effective clean ups. These tried and true technologies should be used on more than a pilot-by-pilot basis. As successes in pilot projects become the norm, the success stories should form the basis for culture change within regulatory agencies and acceptance at the community level.

Further, several concepts were introduced as worthy of longer, more serious dialogue. Chief among them was the concept of developing a Natural Resource Credit System.

Education is critical.

Many legitimate stakeholders are leery about the benefits of non-traditional approaches.

Most regulators are unfamiliar with the science and technology. Most regulatory structures are not “friendly” toward non-traditional approaches. Local government representatives and citizenry are not well versed in these issues.

Regulators, community leaders and businesses must work together to articulate goals, risks and risk abatement activities. Objective measures of success must be mutually agreeable and monitoring systems must be in place. More forums like today’s need to be available so that case studies can be presented and used to educate members of all constituencies.

Separation of RCRA Corrective Action from the Superfund Platform.

Most experts believe that we are addressing only the tip of the iceberg when it comes to brownfields redevelopment, as the focal point seems to be those sites on the National Priorities List. There are hundreds of RCRA Corrective Action sites in each and every state that are caught in the regulatory morass of a system that has only a modest success rate. It is commonly held that a newer more flexible platform must be developed for addressing the sites of this wide a magnitude.

Closing Remarks

Robert Johnson, Executive Vice President, Wildlife Habitat Council

Taking a quote from the opening remarks of Judge Eckels, Bob summarized the day's events by stating, "More unites us than divides us."

We believe the above statement is true, and the testament to that is all the corporate and agency personnel in this room. Collectively, we need to develop incentives for industry, use resources more effectively and streamline regulations. Clearly, the outcome of the day's dialog indicated we must find the ways and means to overcome barriers to increase habitat and improve the quality of life within communities. The public is expecting it.

WHC was established for the very reasons identified above and is committed to assisting the stakeholders represented in this room to achieve the common objective achieving a healthy vibrant ecology in tandem with a healthy sustainable economy.

This second conference brought industry and the regulating community together in a collegial and collaborative setting. Together, we have started down the path of developing incentives for industry, using resources more effectively and streamlining regulations. Next year we hope to expand representation from industry and the regulating communities and add other interested parties including a range of non-governmental organizations. Collectively, we can move even further down the path toward sensible public policy that yields benefit for economy and environment.

WHC has convened this, the second conference on the topic, with the generous support of several sponsors including:

- ❖ **AIG Environmental**
- ❖ **BP**
- ❖ **Bridgestone/Firestone, Inc.**
- ❖ **ExxonMobil**
- ❖ **Ford Motor Company**
- ❖ **Phillips Petroleum Company**
- ❖ **PPG Industries, Inc.**
- ❖ **U.S. Environmental Protection Agency
Office of Solid Waste and Emergency Response**
- ❖ **United States Steel LLC.**

We also acknowledge the **American Chemistry Council** and the **National Association for Environmental Management** for the support they provided in developing and promoting this conference.

Finally, we wish to express our appreciation for the contributions of **Consensus Solutions** and **Justice and Sustainability Associates**.

Attachment A

Conference Agenda

**Breaking New Ground:
The Benefits of Ecological Enhancements in Brownfield Development &
Superfund/RCRA Remediation Projects
July 10 and 11, 2001**

*Renaissance Washington, D.C. Hotel
999 9th Street, NW
Washington, DC*

AGENDA

Tuesday, July 10, 2001

- 4:00 – 6:30 p.m. **Registration**
- 6:00 – 7:30 p.m. **Cocktail Reception**
Participants will have the opportunity to meet and greet each other while informally discussing some of their ideas for the next day's sessions. Cocktails and hors d'oeuvres provided.

Wednesday, July 11, 2001

- 7:00 a.m. **Registration (open all day)**
- 7:30 – 8:00 a.m. **Continental Breakfast**
- 8:00 – 8:30 a.m. **Opening Remarks**
- Bill Howard, President, Wildlife Habitat Council
 - Mike Shapiro, Acting Assistant Administrator, U.S. EPA, Office of Solid Waste and Emergency Response (OSWER)
- 8:30 – 10:30 a.m. **Panel Discussion**
These panelists will present examples of how federal, state and/or local rules and regulations help or hinder wildlife habitat restoration and/or improvement and present examples of restored habitat.
- Panel Moderator
- *Robert Springer*, Director, Waste Pesticides and Toxics Division, EPA Region 5
 - *Steve Heare*, Director Permits and State Programs, U.S. EPA OSWER

- *J. Christian Bollwage*, Mayor, Elizabeth, NJ (Co-Chair, Brownfields Task Force, U.S. Conference of Mayors)
- *Judge Robert Eckels*, Harris County, TX (Chair, Environment, Energy and Land Use Steering Committee, National Association of Counties)
- *George E. Meyer*, Special Assistant to the Secretary, Wisconsin Department of Natural Resources (President, Environmental Council of States)

10:30 – 11:00 a.m. **Break**

11:00 – 2:00 p.m. **Break-Out Sessions and Working Lunch**

Each session will include case presentations, discussion of an issue, and facilitated discussion on the use of tools and techniques to overcome the barriers encountered.

I. New Tools and Models for Decision Making in Regulatory Programs

- **Dr. Ted Tomasi, ENTRIX, Inc.**
Methods for incorporating ecological values into remedial decisions: Benefits, barriers and lessons learned.
- **Larry Kapustka, ecological planning and toxicology, inc.**
Using landscape ecology to focus on ecological risk assessment and guide risk management decision-making.
- **Daniel M. Powell, U.S. EPA, Technology Innovation Office**
Retro real estate – Using technologies to reinvigorate mothballed sites.

II. Overcoming Institutional Barriers in Order to Increase the Use of Ecological Enhancements

- **Joan S. Blaustein, Department of City Planning, Pittsburgh, PA**
Nine Mile Run: Ecological restoration of an urban brownfield – case study.
- **Mike Swindoll, ExxonMobil.**
Innovating within regulatory programs: enhancing ecological habitat while remediating groundwater

III. Overcoming Social Issues to Gain Public Support for Ecological Enhancements

- **John Arata, AIG Environmental**

Aligning corporate environmental issues with community concerns regarding problem sites

- **Bill Cutler, FMC Corporation**
Stakeholder involvement in cleanup and redevelopment.
Avtex Fibers Superfund site, Front Royal, VA – case study.
- **David Daddario, North American Realty Advisory Services**
Winning community support for brownfield/Superfund redevelopment

2:00 – 2:30 p.m.

Break

2:30 – 3:30 p.m.

Presentation of Strategies

Short recap of working group discussions followed by remarks on how the Speakers will use today’s dialogue in their own efforts to change culture or process in their own organizations.

- **Marie Halka, Anne Arundel Economic Development Corporation, MD**
- **George E. Meyer, Special Assistant to the Secretary, Wisconsin Department of Natural Resources**
- **Nicholas Di Pasquale, Secretary, Department of Natural Resources and Environmental Control, DE**
- **David M. Morrow, Assistant Program Manager for Operations, Department of Interior, Natural Resource Damage Assessment and Restoration Program**
- **Steve Luftig, Acting Deputy Administrator, U.S. EPA, OSWER**

3:30 – 4:00 p.m.

Summary and Concluding Remarks

- **Robert Johnson, Executive Vice President, Wildlife Habitat Council**

4:00 p.m.

Adjourn

Attachment B

Questions Posited in Each Breakout Section

At the beginning of each breakout session, participants were asked to write down ONE question on an index card. Time permitting, a multi-vote process would be used to identify the most “popular” questions for discussion amongst the group. Those questions are recapped here. Where the notation indicated “flipcharts,” WHC staff endeavored to aggregate similar questions for consideration. Unless otherwise indicated, however, the questions below reflect those that were written by the participants.

New Tools and Models for Decision Making in Regulatory Programs (2 sections)

1. How does one assess which risk to address first in a multi-risk situation, and how does one determine which species are key to the HIS formula? Are both plant and microbial populations considered and how?
2. Eco risk assessment may not agree with clean-up standards in regulations, how can that be resolved?
3. In voluntary cleanup situations what incentives can be offered by state/federal/local governments to get industry to do habitat enhancement/
4. Dr. Kaputska mentioned an option for managing decisions regarding habitat restoration and species was to “move species” away from the exposure areas. How is this done and are only particular species targeted for this strategy? Is this in lieu of habitat restoration or an interim measure until the habitat recovers?
5. Dr. Tomasi suggested that societal values shift over time (related to education, affluence), how can the economic models adjust or forecast such shifts?
6. Ecological risk: How do you determine if a “value” is strong enough to warrant clean-up costs?
7. If you are already under enforcement action, how can you get EPA region buy-in into clean-up for habitat enhancement? How fast could this occur in your having EPA buy-in?
8. EPA triad approach: This is what I have been calling “planned use remediation”. This method works, but is not consistent with CERCLA/RCRA and some state programs. What is EPA doing to allow “Triad at CERCLA/RCRA sites?

9. How do you get EPA Region Remediation Project Mangers to accept the Triad approach? How is internal EPA communications occurring?
10. What is the level of acceptance of NEBA and MJI ???? as decision making criteria?
11. With regards to technology, what are the regional resources and what would be our first steps in directing an owner of a property to the right sources to get the help.
12. How can one conduct an ecological risk assessment that is cost-effective and valid?
13. Is it a benefit to incorporate the NRDA/Ecological Risk process into the initial stages of the RI/FS process?
14. How do we allow for the variability of natural systems in remediation or discharge standards? I.e., standards are often absolute while natural systems don't always meet them and so often fall out of consideration.

Overcoming Institutional Barriers in Order to Increase the Use of Ecological Enhancements

From the flip chart:

1. What is the commitment of EPA and other agencies to communicate (tools, innovations, education) with site level remediation?
2. Same question. How can EPA guide and educate local governments so they can have confidence and assurance to become involved?
3. What is the commitment of EPA and other agencies to find successful programs of incentive to push progress on remediation and ecological restoration?
4. What is the commitment of EPA to get regional and local project point people educated to possibilities, successes, etc.?

From Cards:

1. In the well-known light the economic development controls the “market-share” of “highest use” for sites needing reclamation, how can wildlife habitat enhancements capture more share? How can it better compete? How can private enterprise help it compete?
2. I like the idea of natural resource credits – how can such a program establish quantifiable criteria?
3. What can be done to facilitate “trust” among agencies, industry, and NGO’s in enhancing ecological communities in Brownfield development?
4. Provide references for including habitat restoration along with and including phyto-remedial design. Can case studies be provided?
5. What are the data needs or technical weaknesses which prevent the existing tools from being used for useful solutions; e.g., HIS were not available for all species; clear understanding of link between decreasing ecological services and increasing levels of contaminations.
6. What will it take for private site owners and their consultants to consider and employ innovative approaches to site clean-up (company lawyers)? Can technology help solve “mothballed “ site problems?
7. How can EPA do a better job in getting our own Remedial Project Officers (in the region) and our state counterparts to engage with industry and State and local governments to create habitat?
8. What is the role of tax rules on valuation of property used for conservation purposes? Will “economic value” be raised by moving beyond pure financial assessments?
9. there is extensive information available in the RCRA area Superfund programs to help with site remediation. How can this information be made available to Brownfield stakeholders who are new to the cleanup process and may not have a strong technical background?
10. How can EPA communicate to more stakeholders about site re-use successes? What long-term assurances for site management and care is in-place?
11. How does one define the relationship between contaminants and environmental services? What is the measure of environmental services: list specific examples to use in planning risk evaluation during feasibility study.

12. What would be the impact of a Supreme Court decision on Wetland Development vs. Take Regarding Wetland Preservation/Mitigation and Habitat Concerns?
13. What can be done with the bio-mess generated from the phyto-remediation practices?
14. How do you get industry, the Federal Agencies, Local Agency, and community to invest in the concept of redevelopment?
15. How does one communicate the approach of cleaning up sites without “traditional” ecological risk assessment tools to regional and state regulators?
16. What are the “nuts and bolts” of the process of quantifying the relationships between contaminant levels, ecological risks, and ecological functions? Also, what levels of scientific rigor and regulatory acceptance are associated with this process? And, what needs to be done to improve this process?
17. How do we equip small to medium sized local governments to effectively move through the regulatory maze so that they have the confidence to think creatively and dream?
18. How can agencies effectively communicate innovative ecological approaches to remediation sites to regional offices; state and local agencies (and oversight contractors) and give them the tools to implement these programs and work with industry to get things done?
19. I’d like to discuss the application of tools and models (from the 1st break out session) to the notion of the wildlife habitat credits and how they may be used in developing the value of credits.
20. A priority EPA needs to get regional project managers up to speed on innovative activities to assist RCRA/Superfund/State bad sites – companies should not have to train each project manager. EPA project managers can be reluctant to go into unknown areas they have personally not dealt with in the past.
21. What should be the community involvement in the process and oversight of property after site development?
22. How can we get a better understanding of risk based ecologic clean-up goals and how they relate to or impart human health risks?

Overcoming Social Issues to Gain Public Support for Ecological Enhancements

1. How do you engage local communities and governments over the course of cleanup when those leaders may change or where there may be conflicting interests?
2. How do we bring and implement a long term sustainability approach as an underpinning to the solutions we are developing?
3. What are the incentives for the private sector(land owner or engineering firm) to include habitat enhancement in RCRA programs?
4. Small sites, frequently located in depressed parts of the community, appear neglected. How can these be integrated and raise in priority for restoration and habitat enhancement?
5. What is the best process for getting all the stakeholders engaged early to gain support and commitment? Should this be formalized?
6. Where can I find habitat/community articles with ideas/information for Responsible Care News?
7. How will EPA manage community expectations when community desires are not economically viable?
8. What type of public participation opportunity is possible during design and implementation of an ecological restoration project?
9. Including stakeholders in the restoration and enhancement may create unfulfilled expectations. How can this best be managed?
10. How can we better communicate environmental risks in the context of remediation and ecological restoration with the public?
11. What tools can be employed to ensure that future potential risks are minimized?
12. How do we overcome the stigma of the site with the local neighbors and how do we develop trust with the neighbors?
13. How do we bring together the various interests for a common goal?
(Presentations, education, public involvement, & communication)

14. Can you address the long-term residual poor public perception after a site has been remediated?
15. How can we formalize and institutionalize a process in the RCRA/CERCLA Program to gain appropriate stakeholder involvement?
16. What can I learn about brownfield remediation issues in the urban setting – empowering neighborhoods, corporate support, etc.
17. How can we overcome social antagonism against fed/state regulators to achieve Brownfield’s goals?
18. How is it best to align often conflicting “stakeholder” incentives to achieve desired outcomes?
19. What can be done to ease perceptions of racial environmental bias in industrial areas?
20. What are some new ideas for future use of some of the more difficult sites – meaning sites which are very small in less desirable locations – middle of nowhere – bad part of town, etc?
21. What role can ecological enhancement play at small or difficult environmental sites – those that lack the potential for significant, broad-based community redevelopment – to provide some benefits for site neighbors and other stakeholders?
22. How can parties responsible for site cleanup use ecological enhancement to reduce future environmental liabilities?
23. Why should our company spend more money for a RCRA cleanup to include habitat enhancement?
24. Do member companies who employ ecological enhancement also apply economic values to their ecological investment? How do you marry stockholder value with ecological value?
25. How can we educate the public about the benefits of using native plant species in landfill closures?
26. Interest in energy efficiency when sprawl and brownfields converge and how to leverage corporate and environmental communities for greater success.
27. What incentives can be developed for those who pay for cleanups that go beyond requirements to pay for beneficial improvements at sites?

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>)

Attachment D

Conference Participants

<i>Attendee Name</i>	<i>Organization</i>
Allen, Robert	Delaware DNREC
Amber, Jerome	Ford Motor Company
Ander, Mike	URS Corporation
Appel, Lisa	Wildlife Habitat Council
Arata, John	AIG Environmental
Bach, JP	Wildlife Habitat Council
Balkissoon, Indira	Tech Law Inc.
Ballnik, Dan	Ford Motor Company
Barkley, Matthew Jacob	Baker Environmental, Inc.
Bedsole, A. Dwight	DuPont Company
Bent, Timothy	Bridgestone/Firestone, Inc.
Biddinger, Gregory	ExxonMobil
Biribauer, Caroline	Wildlife Habitat Council
Bjorkman, Bjorn	ThermoRetec Consulting Corp.
Black, Ned	U.S. EPA
Blaustein, Joan	City of Pittsburgh, PA
Bodden, Martha	Mitretek Systems
Bolen, Zane	ExxonMobil
Bollwage, Chris	City of Elizabeth, NJ
Brown, Steven	Rohm & Haas Company
Brown, James	U.S. EPA
Buckholtz, Marjorie	U.S. EPA
Calvey, Mary Jane	Oklahoma State Government

Clarke, Rosita	U.S. EPA
Comlish, Paul	Wildlife Habitat Council
Coran, Laurie	Wildlife Habitat Council
Cutler, William	FMC Corporation
Daddario, David	North American Realty Advisor Services, L.P.
Dale, Diane	William McDonough & Partners
Dameron, Erica	Virginia State Government
Daniels, Rita	Justice & Sustainability Ass., LLC
Davis, Carol	Phillips Petroleum Company
Davis, Tom	Tom Davis Associates
Deutsch, Paul	Geomatrix Consultants
DiPasquale, Nicholas	Delaware State Government
Duncan, Jeff	GES, Inc.
Dunlop, Becky	The Heritage Foundation
Eckels, Judge Robert	Harris County, Texas
Edwards, Don	Justice & Sustainability Ass., LLC
Elbert, Stephen	BP
Ells, Stephen	U.S. EPA
Eng, Myron	U.S. EPA
Ferguson-Southard, Denise	Maryland Dep. of the Environment
Fredricks, Scott	U.S. EPA
Freed, Elisabeth	U.S. EPA
French, Ronald	Camp, Dresser & McKee
Friant, Steve	ENTRIX, Inc.
Gacanich, Jeanne	CVCS / MRNA
Gibson, Will	Tetra Tech EM Inc.
Glazer, Art	Tetra Tech EM Inc.
Gortych, Tom	Decision Quest

Greer, Richard	ENTRIX, Inc.
Gunter, Barbara	Pennsylvania State Government
Halka, Marie	Anne Arundel Econ. De. Corp.
Hall, Robert	U.S. EPA
Hamilton, Lisa	General Electric Company
Hamm, Ben	U.S. EPA
Hart, Fred	Hart Partners, Inc., The
Harzman, Christina	Michigan State University
Heare, Steve	U.S. EPA
Hite, Tom	City of Akron, Ohio
Holder, Michael	TRC Environmental Corporation
Holmes, Donald	Bethlehem Steel Corporation
Howard, Bill	Wildlife Habitat Council
Jacobs, Rick	PPG Industries, Inc.
Johnson, D. Kay	Vulcan Materials Company
Johnson, Bob	Wildlife Habitat Council
Kaczmar, Swiatoslav	O'Brien & Gere Engineers
Kapustka, Lawrence	ecological planning and toxicology Inc.
Kastman, Ken	URS Corporation
Kemp, Steven	Pfizer Inc.
Kielbaso, J. James	Michigan State University
Kinnell, Jason	Triangle Economic Research
Kolodzinski, Bob	U.S. Steel Group
Krugh, Mike	Marathon Ashland Petroleum LLC
Lago, Carlos	U.S. EPA
Leach, Michael	Phelps Dodge Corporation
Leahy, Ian	American Forests

Logan, Mike	Kerr--McGee Corporation
Luftig, Stephen	U.S. EPA
MacDicken, Becky	Tire Association of America
Maron, James	Maron & Marvel
Maslonek, Marcia	Wildlife Habitat Council
Matheson, Thomas	U.S. EPA
May, Holly	Wildlife Habitat Council
Mayher, Kathleen	U.S. Steel Group
McCann, John	Sunoco, Inc.
McCarthy, Kevin	ThermoRetec Consulting Corp.
Meyer, George	Wisconsin Department of Natural Resources
Morris, Mark	CH2M HILL
Morrow, David	U.S. Dept. of the Interior
Muhlenfeld, Rosemary	Wildlife Habitat Council
Naccache, Joe	BP
Nesbit, Jen	Wildlife Habitat Council
Nguyen, Phu	Michigan State University
Kerstin Ohlander	Consensus Solutions, Inc.
O'Reilly, Karen	AIG Environmental
Olson, Chris	BP
Outlaw, Douglas	Florida State Government
Page, Phillip	U.S. EPA
Parker, Margaret	Consumers Energy
Pauline, Rob	Wildlife Habitat Council
Perritt, Richard	University of Southern Maine
Peterson, Steven	ERM, Inc.
Powell, Daniel	U.S. EPA
Prasek, Margaret	U.S. EPA

Quinn, Ellen	United Technology Corp.
Rader, David	Pfizer Inc.
Ratcliffe, Jane	U.S. EPA
Richardson, Tom	International Paper Company
Rugh, Clayton	Michigan State University
Russell, Sue	Mitretek Systems
Saslow, Adam R.	Consensus Solutions, Inc.
Sauer, Nancy	URS Corporation
Scheussler, Ed	Tetra Tech EM Inc.
Schulte, Scott	Tetra Tech EM Inc.
Schumer, Roger	International Paper Company
Senger, Randal	Pharmacia Corporation
Shapiro, Mike	U.S. EPA
Sides, Aimee	ThermoRetec Consulting Corp.
Sontchi, Joseph	BP
Springer, Robert	U.S. EPA
Stash, Sandy	BP
Swindoll, Michael	ExxonMobil
Taylor, Michael	Partnership for Sust. Brownfield Redev.
Tillman, Noeleen	Global Env't & Tech. Foundation
Tomasi, Ted	ENTRIX, Inc.
Tsao, David	BP
Turman, Maureen	U.S. Steel Group
Van Dellen, Eric	Alticor
Walkos, Beth	American Chemistry Council
Wieckert, Erin	Kimberly-Clark
Wood, Grady	BP