



Restoring Greenspace: Ecological Reuse of Contaminated Properties in EPA Region 10

Conference Summary

*May 3-4, 2006
Seattle, Washington*

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The Wildlife Habitat Council (WHC) held its fourth Restoring Greenspace conference in Seattle, WA, on May 3rd and 4th, 2006. This was the fourth in a series of regional conferences aimed to encourage and enable site managers, local planners, and communities to incorporate ecological reuse as part of remediation techniques or end uses in their Brownfield, RCRA, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or “Superfund”), or Leaking Underground Storage Tank (LUST) properties. This regional conference presented a first-hand look at innovative programs, new initiatives, and case studies that highlight the incorporation of ecological reuse practices in site restoration in the U.S. Environmental Protection Agency (EPA) Region 10 and aimed to identify strategic methods associated with the implementation of ecological enhancements on contaminated lands based on the white paper, “Making the Case for Ecological Enhancements.” The white paper was prepared by a group of nationally-known experts in 2002 and illustrates known benefits of using ecological enhancements, while relying on actual case studies to capture the lessons learned so far. The paper makes recommendations on next steps for increasing the number of success stories.

The conference objectives were to:

- Identify ecological approaches to cleanup and the costs and benefits of ecological reuse through case studies;
- Identify performance metrics for success in ecological restoration;
- Assess regulatory challenges to using ecological enhancements on contaminated properties;
- Evaluate approaches for obtaining constructive & meaningful stakeholder involvement; and
- Determine next steps for EPA Region 10 stakeholders to address issues surrounding the ecological reuse of contaminated properties.

This conference provided a sound foundation for moving forward in the ecological restoration and reuse of contaminated properties in EPA Region 10. This region, with the strong leadership of EPA and the encouragement of communities and non-profit groups, has initiated many remarkable efforts in the ecological restoration and reuse of contaminated properties.

Welcoming Remarks

Mr. David Carroll, Chairman of the Board, Wildlife Habitat Council, welcomed guests to the conference and thanked all the partners and sponsors who made the event possible.

Partnerships with government agencies, industry, and industry groups like ITRC, as well as conservation groups, allow WHC to work collaboratively among stakeholders to encourage the use of ecologic enhancements in remediating contaminated sites. In cooperation with the EPA, WHC has previously hosted conferences in Regions 5, 2&3, and 6. This is the fourth in the series of regional Restoring Greenspace Conferences. Regional events offer opportunities to foster dialogue and recognize more local efforts by companies, government, and conservation organizations as they support the goal of maintaining responsible and sustainable wildlife habitat management practices on properties undergoing remediation. Mr. Carroll spotlighted “Twin Rivers” in Washington State as an example of a WHC certified site. He hoped more Brownfields and other sites in need of remediation can be identified and reused in part or wholly for wildlife habitat as part of regulated or voluntary cleanup.

Mr. Ron Simms, King County Executive, welcomed the attendees to the Northwest and spoke about a regional awareness of nature and our responsibility to be caregivers for the land that draws so many to this place. The challenges of balancing economic development with quality of life and urban habitat degradation are the key issues we face. Mr. Simms offered a personal story of climbing Mt. Rainier, where using the right skill for the right job illustrates how teamwork is critical. By analogy, this ethic has contributed to a number of successful remediation projects in this area (e.g., Elliot Bay, Pier 50, the Duwamish River, a Superfund site, and Hamm Creek for salmon habitat restoration). Mr. Simms also spoke about the power of regional and national diversity and how we must take advantage of every opportunity to utilize the skills and varying points of view to restore and remediate contaminated sites. *“Those places that were once contaminated will be restored; we have the technology.”* Mr. Simms implored the audience to remember the promise all parents make to their children, *“the world you inherit will be better than mine.”* This generational promise is what the conference dialogue – problem identification and solving – is all about. In closing, Mr. Simms reminded attendees that this county is *“perfect and trying to get better.”* The generational promise will push us to keep climbing the proverbial mountain for clean land, air, and water for all.

Mr. Leonard Forsman, Chairman, Suquamish Tribe, offered his presentation, “Suquamish Tribe and Habitat Conservation: An Ancient Covenant.” Suquamish translates into “people of the clear salt water.” The Suquamish people have lived in Puget Sound for at least 10,000 years. The first contact with non-native people was in 1792, when Captain George Vancouver traded with Suquamish Indians camped on Bainbridge Island. The process of establishing trade and settlements in the Northwest culminated in 1850 with the Oregon Donation Land Claim Act. This allowed non-natives to claim up to 640 acres of land each; much of this land was owned by Indians, causing conflict. In January, 1855, Chief Seattle signed the Point Elliot Treaty at Mukilteo for the Suquamish Tribe. This treaty exchanged land for certain reserved treaty rights, including fishing rights, shellfish gathering rights, hunting rights, water rights, healthcare, and education. Chief Seattle’s speech at this time expressed the Suquamish connection to the land and waters. Mr. Forsman described the tools that tribal trustees have utilized for habitat protection in the more recent past. These include: Growth Management Act, Water Rights Protection, CERCLA, and policies for Natural Resource Damage Assessments (NRDA). The Boldt and Refeedie decisions reaffirmed tribal

rights to half of the harvestable salmon (Boldt) and shellfish (Refeedie) and gave the tribes management authority for restoring the habitat that supports those species. Mr. Forsman explained that, in looking at tribal lands, projects are held to an even higher standard than may occur under federal and state regulation, due to tribal values and a desire to uphold a generational promise to past and future: the Suquamish people always consider “*the seven generations that preceded us and the seven generations that will follow*” to guide the best use of any land.

Opening Panel: Setting the Stage in Region 10: What are the Obstacles and Opportunities in the Ecological Reuse of Contaminated Properties?

Speakers on this panel included Lori Cohen, Associate Director of the Office of Environmental Cleanup, EPA Region 10; Robert Johnson, Acting President, Wildlife Habitat Council; and Jim Pendowski, Toxics Cleanup Manager, Washington State Department of Ecology.

Ms. Cohen’s presentation highlighted projects of interest in Region 10, and she noted how WHC’s mission is aligned with EPA’s goal to protect habitat and greenspace. These projects illustrate the kinds of obstacles and opportunities we face in remediating sites. Superfund site success stories were explored, including:

- Harbor Island and the West Waterway at the Port of Seattle. These sites involved extensive cleanup of toxics on a 65-acre site contaminated by both shipbuilding activities and a creosote treatment facility. The projects included dredging and removal of creosote-treated pilings. Cleanup at the Lockheed site was undertaken while Todd Shipyard continued to operate. The work included capping strategies using clean dredge material from a Snohomish River project. This thick cap provided a substrate for shellfish habitat and, thus, met the interests of tribal trustees and other stakeholders. “*One acre of reclaimed property in a city can save five acres of urban greenspace; the benefits of cleanup are greater than just the site size alone, as it reduces demand on other non-contaminated sites in urban areas,*” commented Cohen.
- Cleanup in the Coeur d’Alene area of Idaho. Years of smelter pollution from this Kellogg, Idaho, site required major cleanup. Hillsides were stabilized, trees planted, and the old Union Pacific Railroad bed has provided a trail for bikes that runs over 72 miles. A recent conservation easement negotiated with a farm owner now protects 400 acres of non-polluted farmland. This land will be transformed into a wetland for protection of bird habitat, helping restore the ecosystem in the area.
- Middle Fork, Snoqualmie River.



Lori Cohen, EPA Region 10.

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Creative collaboration was required at this 22-acre Brownfield site in the region. This site included oil and chemical contamination, debris, and the discovery of a methamphetamine lab site. The resolution required collaboration among the EPA, the Army Corps of Engineers, the public health agency, and the prosecuting attorney, as well as \$250,000 to cleanup and complete this site for use as a trail and recreational area.

These and other examples exhibit common characteristics, regardless of the size of the site:

- Vision – stakeholders all come to the table and share their vision for future use;
- Champion – one person or organization really promotes and cares about the site;
- Balance – between regulation required and collaboration; and
- Flexibility – enabling the vision to be attained.

Cohen closed her remarks by encouraging attendees to “*Look to the future, and be willing to be flexible to pursue your goal.*” She sees EPA as moving more towards a stronger role as a catalyst for voluntary action and collaboration.

Robert Johnson, Acting President, Wildlife Habitat Council, began his presentation by recognizing industry in its role in creating WHC in 1988. “*Industry has the property that can ultimately provide habitat. Habitat is the single most significant issue in preserving species and biodiversity,*” stated Johnson. WHC partners with corporations to implement wildlife habitat considerations in remediation and thereby provides social, economic, and ecologic value to remediated sites. “*Corporations have positively transformed community perceptions and attitudes towards previously contaminated sites, helping communities see corporations can be exceptionally good neighbors.*” In addition to improved community relations, wildlife habitat enhancements can offer substantial cost savings over traditional cleanup remedies, both in implementation and operations and management (O&M). WHC helps corporations understand the link between improved wildlife habitat and ecosystem health. Using recommendations based on accepted scientific research, field experience, and native plants, sites can be restored to historic conditions.

Johnson reviewed three major successful partnerships WHC has with corporations:

- Woodlawn Wildlife Area (in partnership with Bridgestone Americas Holding, Inc.) involved the transformation of a Superfund site into a valuable wildlife habitat and provides an environmental education venue for the community.
- Gnadenhutzen (a BP Atlantic Richfield Company partnership, and the site of a former aluminum manufacturing facility) involved a transfer of ownership to the Port of Tuscarawas. The benefits are ecological, economic, and historical.
- Industrial Excess Landfill (owned by Bridgestone Americas Holdings, Inc.) is a former sand and gravel quarry site transformed by the use of ecological remediation and extensive plantings and habitat enhancements.

WHC’s commitment is to continue to seek partnerships that make wildlife habitat enhancements a reality on contaminated and previously contaminated properties. This regional conference creates a forum for industry (which may hold the land resources) to collaborate with consultants, regulatory agencies, and other stakeholders. In doing so, stakeholders may identify and create vision for the sites that await restoration.

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Jim Pendowski, Toxics Cleanup Manager, Washington Department of Ecology, focused on key issues to consider in cleanup efforts and specific projects to watch in the Washington area as illustrative of the future of cleanup. The State of Washington has its own State Superfund Law, passed by the voters 20 years ago. The State can augment, circumvent, and act independently as needed. Washington has 10,000 cleanup sites identified. Of these:

- 60% are clean and no further action is required;
- 5% are in long term maintenance;
- 12% have not begun the cleanup process; and
- 23% are currently in the cleanup progress.

The trend in cleanup is moving away from just stabilization and removal of hazards and toward using financial resources to support economic and community interests and thereby drive habitat restoration (in addition to the required remediation). The Bellingham Bay site is considered a model for the kind of remediation we may see in the future. This was the site of a pulp and paper plant and there were numerous cleanup problems. In dialogue between the Port of Bellingham, city leaders, and community stakeholders, the future of the waterfront in Bellingham became a focal point. The parties agreed that they wanted to “*turn our community around to look at the waterfront*” which had been industrial in the past. This decision has moved the groups towards ownership of portions of the property. Today, there are 11 cleanups ongoing. The projects are expected to cost over \$120 million. Over \$60 million may be recouped in the re-sale of property for future development. The revitalization of the waterfront is multi-pronged with economic redevelopment and habitat restoration as key components.

The discussion following the three panelists’ presentations addressed the following themes:

- How clean is clean at these sites? A risk-based approach involves information about future use and how regulatory requirements are met. However, “future use” approaches dictate whether the land is better suited for industrial park space or habitat or open space. The “future use” dialogue is community-based and, in it, stakeholders can shape their future. WHC calls this the triple bottom line: economic values of remediated and restored property can involve outcomes with the least cost and the most social and ecological values.
- How is the future use of redeveloped shoreline property evaluated? Land use decisions are not part of a cleanup. After property is acquired, a decision about how much should be available for turn key sales or habitat or other uses will be a local land use decision as guided by shoreline regulations.
- When bringing marketplace economics into decisions about the ownerships of restored properties, which is more sustainable: government or NGO ownership? Participants observed that it is not necessarily an “either/or” partnership. For example, consider a partnership with EPA managing cleanup, Department of Fish and Wildlife restoring habitat, and an NGO acting as a long-term steward. We need to think about these as business decisions, where consideration is given to who has what resources (financial, technical, and human) to cleanup and manage the lands over time. With various designs, one can accept transfer to a local government and/or NGOs if the overall project design is such that it can be maintained. *Partners for Wildlife* is a Department of Interior program, under which \$30 million has not been used. Stakeholders should look for other sources of revenue (e.g., EPA’s Five Star program) beyond their own organizations and budgets.

- Notably however, there is a significant decline in EPA funding for cleaning up orphan sites. How will this affect actual cleanup and the ratio of public to private dollars? EPA has identified enforcement as its first priority, followed by competing taxpayer regions and orphan sites. Within these priorities, human health comes first, followed by ecological considerations. Within these constraints, stakeholders must consider how to put their resources to work. Money creates gravity and brings interest to the table. Remediation specialists must learn to attract other interests (e.g., state, environmental, WHC, real estate) as co-developers.

The Practice of Phytotechnologies Training Course

This three-hour course was presented by David Tsao, PhD, Remediation Engineering and Technology Team Leader, Atlantic Richfield Company (a BP affiliated company). The presentation provided an understanding of the key elements in using phytotechnologies in remediation efforts. Phytotechnologies are a set of environmental cleanup technologies that use vegetation to remediate and/or contain soil and water pollutants. These technologies should be considered as another set of many tools that can be used to remediate a site.

The course reviewed five basic steps of implementing phytotechnologies:

- **Appraisal:** Basic understanding of plant's physiology, site characteristics, and contaminants – know the limits of the tool.
- **Define:** Treatability studies to determine toxicity and potential food web impacts; preliminary design; selection of species and planting areas.
- **Select:** Economic evaluation – conduct a holistic decision making process; tell the whole story.
- **Execute:** Installation techniques – engineer the project to overcome some of the limits. This is a very different type of planting than landscape or farming
- **Operate:** Operation and maintenance needs. To ensure survivability, add a 10%-20% contingency to re-plant due to predation/infestation. Monitoring techniques and statistical analyses used to demonstrate success.

Numerous case studies were incorporated into this training, allowing for a greater understanding of uses, limits, and some surprising capacities of this kind of remediation. For example, poplar trees using deep-rooting planting techniques withstood Hurricane Katrina at a site in Baton Rouge, LA, requiring only re-staking to straighten after the storm.

Innovations that have resulted from using phytotechnology have been incorporated proactively within BP Retail. Phytoscapes, for example, are landscapes that incorporate phytoremediation species to cleanup or prevent environmental liabilities (small leaks and spills). These techniques are being used in all of BP's remodeled or new retail sites in North America.

Dr. Tsao highlighted some of the unique challenges of long-term stewardship of systems for both remedial capabilities and sustainable habitat requiring specialized techniques atypical to both environmental cleanup and ecological disciplines. Building of ecological habitat invites a variety of natural problems (e.g., deer browse damage, beavers toppling trees, and insects defoliating trees); these issues require a variety of long-term maintenance responses. The handling and disposal of harvested material is another O&M issue.

One example was the Chinese Brake Fern, which has been used in studies for removal of arsenic in soils. This plant converts the contaminant AS(III) in the soil to a more toxic AS(V), when tested in the harvested Chinese Brake Fern, posing new disposal issues.

Kitsap County Restoration Tour

This tour group started out at the Elandan Gardens on the south shore of Sinclair Inlet. The inlet extends east into Puget Sound and is an environmentally significant salt estuary and important salmon run. The historic Puget Sound Naval Shipyard and the City of Bremerton sit on the north shore.

In 1992, Elandan Gardens owners Dan and Diane Robinson sought a location for their bonsai garden and they found this site: a small estuary originally used as a Navy and City of Bremerton garbage dump. The 8 ½-acre site had been closed after being filled with seven to eight feet of garbage and dredging. Prior to its current reclamation and restoration, the site was used for log storage and trailer sales.

Diane Robinson describes the original site, “*It began with a blank canvas. A six-acre, flat and nearly treeless abandoned landfill awaited the artist’s touch.*” The Robinsons orchestrated family and community volunteers who followed Dan’s direction and inspiration. The project benefited from extraordinary community commitment. A year of intense construction yielded a garden museum, a gift gallery, and a focal point for community pride. The Robinsons are continuing to develop the area with additional habitat restoration.



Dan Robinson, Elandan Gardens.

Participants enjoyed a drive down the north shore of the Sinclair Inlet. The Puget Sound Naval Shipyard was established here in 1891 and has been an area of heavy industrial use. Currently, the EPA and the Naval Shipyard are working on several cleanup efforts. For example, participants viewed the reclamation and restoration of the shoreline west and adjacent to the Shipyard. This area is a good example of successful habitat development happening adjacent to a highly industrial use.

Kitsap County Parks and Recreation has goals of additional cleanup of the Sinclair Inlet shoreline and estuary, habitat restoration, land acquisition, and providing recreational uses. There are several summer projects to restore the western mudflats and reclaim an old saw mill site. Longer-term plans call for reclaiming four contaminated historical sites.

Next, the tour stopped at Evergreen Park, a 10-acre waterfront site near downtown Bremerton. This reclaimed area includes open space, public restrooms, some retail businesses, picnic shelters, 1,900 feet

of restored shoreline and upland habitat, and a waterfront amphitheater. This site was a former industrial area used for bulk oil transfer, storage, and distribution.

A community grassroots effort was key to creating awareness and developing a common vision for Evergreen Park. Public, private, and volunteer participants coordinated to relocate industrial users, engage public leaders, and attract resources.

The site is now considered one of the city's premier public spaces. Parametrix, the landscape architecture firm that transformed the site, was given a Vision 2020 Award, a regional award for innovative and wise use of land and resources. The City of Bremerton continues to add adjacent shoreline property using Brownfields grants to further restore the site.

King County Restoration Tour

The first stop on the King County Restoration Tour was the Port of Seattle's T-107 restoration area. This restoration project is located on the Duwamish Waterway at the site of the former Seaboard Lumber Mill, which operated from the late 1920s until the early 1980s. Developed as an industrial site, the area was filled with waste-bearing fill material consisting of silt, sand, and gravel mixtures with broken asphalt, rock, concrete, brick, wood, and metal debris. Investigations revealed soils with concentrations of Total Petroleum Hydrocarbons (TPH), lead, mercury, and polycyclic aromatic hydrocarbons (PAHs).



Restored shoreline habitat at T-107 Park.

In 1999, construction of a protective outer berm occurred, armoring and modifying the shoreline. Parts of the berm serve to completely contain low-level industrial contaminants. The construction also included demolition of former structures associated with the mill operation, removal of a 9,200 square foot shoreline dock structure, removal and disposal of highly contaminated upland soil, containment of low level TPH-contaminated soil, excavation of a 1.8-acre intertidal bay, addition of an amended on-site soil mixture of silts and clays with a high organic content, planting the slopes of the intertidal area with emergent marsh plants, the introduction of transitional scrub/shrub habitat between the intertidal marsh, upland meadow, and forested habitat, and intertidal habitat success monitoring for a ten-year period. Construction was completed in 2000.

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The next stop on this tour was the Seattle Construction (SeaCon) property wetland. In the 1970s, this 4.4 acre property was filled in with cement kiln dust (CKD), an alkaline by-product of the manufacture of portland cement. The CKD had pH levels between 8.5 and 12.3 and also contains elevated levels of lead, arsenic, and zinc. In the late 1990s, SeaCon acquired the parcel to develop commercial office warehouse buildings. In 1999, in order to mitigate the effects of CKD on the surface water quality and to create a stormwater detention facility, SeaCon excavated the CKD from the banks of Hamm Creek for a distance of 100 feet and restored the historic riparian corridor wetland. The CKD was spread over the remainder of the site as “pre-load” and then incorporated into the final building site beneath an impervious cover. This site demonstrates how a contaminated property can be commercially developed and, at the same time, be restored for ecological use.



Restored Hamm Creek.

The tour included an intimate interaction with Hamm Creek and its champion, John Beal. Hamm Creek is a Duwamish River tributary running through a heavily industrialized and residential area. Despite development and serious toxic contamination, the creek and its immediate environment contain surprising ecological diversity. Community champion Beal has been the energy behind the restoration, driving nearly three decades of work to remediate and rebuild the health of the waterway. This once-polluted and neglected 3.5 mile stream has been brought back to its natural state where fish and

other wildlife thrive. King County and the U.S. Army Corps of Engineers designed a new 2000-foot natural channel for Hamm Creek that includes an open ravine, wood and other natural features, 1.5 acres of estuary, and three acres of wetlands. The new channel will allow for adult salmon to more easily return upstream to spawn and should greatly help juvenile salmon survival rates as they head into the Duwamish River and Puget Sound. The wetlands offer shelter to fish when flows are high, while the estuary gives them a place to acclimatize to saltwater.

The last stop on our tour was Gas Works Park, a historic gasification plant on the edge of an urban neighborhood on the north shore of Lake Union. Gasification of coal and later oil in the early half of the last century left a legacy of tar, benzene, and PAHs in the soil, as well as an abandoned infrastructure. Nearly 50 years elapsed between the end of operations and the site evaluation and analysis and ultimately remediation and reuse. The City of Seattle was instrumental in avoiding a Superfund designation—key in securing funding and in keeping the Washington Department of Ecology active in the site’s ultimate cleanup. Upland capping, venting/scrubbing, and aquatic capping were all used to contain contaminated

soil. Kite Hill, formerly a pit filled with inert (but physically dangerous) materials was capped using clean fill from the construction of major office tower in the University District. Interestingly, the community felt strongly that retaining the derelict equipment was both part of the historical value of the new park and part of the existing community aesthetic.

Breakout Session – Natural Resources Damage Assessment

A panel of experts defined, discussed, and provided case study examples of the use of Natural Resources Damage Assessment (NRDA), focusing on cooperative assessments. Dale Young (Director, Natural Resources Damages Program, Massachusetts Executive Office of Environmental Affairs) provided an overview of NRDA and statutory authority within the Oil Pollution Act (OPA), CERCLA, and National Contingency Plan (NCP). NRDA trustees may be federal (but not EPA), state, or tribal representatives. Integration of Ecological Risk Assessments (ERAs) and NRDA was explained using a flowchart model that integrates NRDA needs into the remedial investigation and risk assessment process. These processes, occurring simultaneously, can terminate in joint Remediation and Restoration Construction and Monitoring. Cooperative assessment occurs when federal, state, and tribal trustees cooperate on NRDA pursuant to their activities. Non-designated agencies (e.g. EPA, state remedial) may participate as “cooperators” at the invitation of trustees. Primary Responsible Parties (PRPs) may also have the opportunity to participate.

Incentives are offered to industry and PRPs to use cooperative NRDAs. These include reduced costs and time, constraining the focus of studies/investigation, participation in data interpretation and analysis, and participation in trustee decision making.

Review of the three phases of NRDA within CERCLA indicates that the most successful entry for cooperative action is during Phase 1 (review of existing data and data gap identification). Entry at Phase 2 (injury determination, pathway analysis, identification of RP), or Phase 3 (economic value computation), are possible, although more problematic. Ms. Young said that NRDA within CERCLA is the exception rather than the rule because of the complexity of the assessment, history of damage over a long period of time, and scores of contaminants. NRDA is most likely in oil spills because of single PRP, single release, shorter duration, and necessity of quick action.

Three local case studies exemplified the breadth of NRDA:

- Commencement Bay, WA: This presentation involved two corporations interested in quickly resolving liability. The corporations and trustees were able to develop a bay-wide data collection and remediation plan (Presenters: Robert Wolotira, NOAA and Glen St. Amant, Muckleshoot Tribe Fisheries Division).
- Whatcom Creek/Olympic Pipeline, WA: This case involved a pipeline rupture and oil spill. It showed that cooperative assessment among the stakeholders has many drivers. This specific case was driven by interest in improving community relations, enhanced public relations, business needs (restore the pipeline operation), and the need for immediate response. The establishment of an Oil Assessment Team prior to this incident set the stage for positive rapport and the pre-establishment of trust (Presenters: Robert Wolotira, NOAA and Greg Challenger, Polaris).
- Portland Harbor, OR: This presentation involved a case that began as a cooperative effort but eventually involved litigation for a portion of the settlement. Portland Harbor issues included the

large number of trustees involved and multiple contaminants, typical for CERCLA cases (Presenter: Dr. Michael Johns, Windward Environmental LLC).

The case study presentations highlighted elements necessary for successful NRDA Cooperation. These included:

- Professional and personal conduct - trust, respect, ego management, good communication skills
- Dialogue management – data availability, problem solving focus, trustees’ stakeholder advocacy and knowledge of business impacts and liabilities.

Lisa Saban, Windward Environmental LLC, closed the session with her presentation “Restoration Banking as a Means to Resolving NRD Liability: Are We Ready for this Concept?” Ms. Saban indicated that, currently, many NRD claims are resolved when the responsible party agrees to a variety of restoration projects predetermined by the trustees as a way for compensating the public for natural resource damages. The projects typically have a useful life of at least 20 to 30 years or in some cases in perpetuity. Many responsible parties are willing to support the construction and long-term maintenance of these projects, yet they may not be interested in an administrative responsibility required for the life of these sites. Ms. Saban stated that “restoration banking” may be possible where responsible parties could sell their liability as “restoration credits.” Restoration banks would be analogous to mitigation banks that are used with considerable success under the Clean Water Act (CWA). Questions needing further exploration include: need for development of performance criteria in the regulations for restoration banks, and whether this can work with NRDA, as it has not been utilized at this point.

Breakout Session - Institutional Controls

In this session, a panel of experts discussed the use and constraints of institutional controls as tools available to government, business, and the public in preserving land for specific uses. This panel presented several real-world examples on different approaches to institutional controls and their advantages, disadvantages, and challenges. Walt Hufford, (BP Environmental Business Manager) outlined session objectives and offered that even after remediation, land may not be suitable for all uses. Institutional controls are land use tools that limit exposure of contaminated land to human health and the environment. They restrict use and access to the land in order to reduce the remaining risks and attempt to limit the liability that the landowners might otherwise face. This session’s case studies included the Navy’s Indian Island munitions facility and BP’s Gnadenhutten project in northeast Ohio; a general discussion followed of successful implementation of controls or use restrictions.

Diane Vogel (U.S. Navy Environmental Engineer) presented the Indian Island case study. The Navy’s Indian Island facility is both an important homeland security support facility and an important cultural and ecological asset. The need to create a cleanup program was motivated by three site characteristics: decades of use as a munitions depot; pier space needed to accommodate deep draft vessels; and the desire to expand the pier. Two sets of complimenting tools are used in the Indian Island cleanup:

- Land use controls (accomplished by restricted access as a Navy facility with exceptions for Indian cultural uses) and
- Environmental controls.

Protection of wildlife, cultural resources, and national security at Indian Island are balanced through a series of agreements. The creation of a Regulatory Advisory Board (RAB) serves as the foundation for cooperation and a control system that meets security, environmental, and cultural values. The RAB's role is to work closely with the tribe to plan facility improvements and to identify important cultural uses. The Indian Island cleanup resulted in the removal of 280 tons of contaminated soil and surplus or dumped munitions from areas on shore and near piers. Close cooperation with the tribes continues with monitoring to ensure compliance.

John Bolakas, a BP Petroleum Project Manager said that the Gnadenhutten project in northeast Ohio demonstrates how a successful project can result from the collaboration of industry, the community, and the state, and their implementation of use restrictions. There were several lessons learned from this project that are applicable elsewhere. Every project needs a champion, someone with the resources to effect the cleanup and a vision of how to put the parcel of land to sustainable economic use. From a business perspective, the quicker that purpose can be identified (within a benefit/cost comparison of time/investment/ allowable economic use), the better.

No community wants a Superfund listing, and such notoriety will be avoided, if possible. When listing occurs, the community's pride and economic future are diminished. The community's goal is to get to de-listing as fast as possible, mindful of the long term risks, because other, unrelated, economic development is hampered. The regulatory agencies have more on their plate than they have the resources to address. Achieving a successful, sustainable outcome quickly is a high priority. Maintaining momentum is important because "clearing the backlog" helps secure funding in the future and maintain credibility with communities. Clearing the backlog increases the likelihood of cooperation from business.

Lessons can be learned from completing projects. Keeping stakeholders at the table is the main theme. Sweetening the pot is a time-honored tradition; however, truly considering the enrichment of the community beyond the cleanup can pay big dividends. These considerations keep community stakeholders at the table with a *positive* ownership in the outcome.

Long term projects, specifically those that can span more than one local election cycle require planning and thought. Consider a mayor who brokers the circumstances that lead to a cleanup. The election of a new mayor who distrusts the previous administration and foments public suspicion as a way to scuttle the project leads to a project at risk of failure. Everyone loses unless there is a plan in place to cultivate current and upcoming decision-makers. Keeping local elected officials at the table takes careful groundwork.

Presenters Liz Bell of Conservation Solutions and Cyndy Macky of EPA Region 10 said that use restrictions are tricky instruments and, like any negotiation, the terms of one section can have indirect effects on another. Stakeholders should break discussions and negotiations of specific use restrictions into discreet components, so that desires and emotion do not spill across project elements. If community amenities such as parks or ball fields are one component and an office park or commercial development another, the discussions of restrictions for each parcel should be kept separate so as to not muddy the issues of each.

Institutional controls are critical to the long-term management and reuse of land. Without them, Brownfields and other contaminated areas are less likely to be reclaimed and have little likelihood of any economic value. For years, conservation easements have been used for habitat enhancement or preservation and

do not require ownership of adjacent property. These are a practical way to preserve open space, but they also have a practical limitation. They are a negotiated easement and essentially a contract, which involves money in exchange for certain restrictions or obligations. There are key challenges to successful implementation of controls or use restrictions of these types. Funding and policy changes over time can conflict with the stability of the agreement, which, if opened under different environmental, fiscal, legal, or political conditions than when they were made, can seriously disrupt the planned long term reuse of land. Authority of enforcement is another key challenge. Typically, enforcement is permitted by the adjoining land owner unless the owner is a regulatory agency. Of course, if a party does not own an adjoining lot, this avenue is not available.

Some states have enacted authority for a new tool: covenants and restrictions. Through the Uniform Covenants Act, states can establish a stronger system of use restrictions that can be placed on the land and survive with title exchanges. These instruments can be used in common law, but are much more enforceable and are less likely to be challenged in court if established under statute.

In either case, defining the restrictions is of primary concern. Understandably, owners are after the balance of the greatest economic use potential and the least liability. Most regulatory agencies have similar interests, but perhaps view the importance of future liability differently. The agencies' goals are to eliminate or significantly reduce the risk of exposure. Either way, the interests of both the agencies and the landowners are served by defining what should not occur—move things, live there, use of soil and water. The challenge is in establishing enforceable affirmative obligations.

Much of the discussion following the presentations centered on the problems and challenges of enforcement of use restrictions. As a project takes on its new role and is developed, new tenants and owners inadvertently do restricted things, creating risks. Often, the prohibited action is underway for a long period before it is even noticed. Thus, enforcement and liability are problematic. One solution is to have uniform laws from state to state.

In exploring the differences between easements and restrictions, it was discussed that, in one case, owners agree to limit use, whereas easements create an interest (by agencies or by neighbors) in property of another. Restrictions are very tough to enforce as there is limited or no regulatory authority and the next generation of owner loses track of them. However, the IRS may soon require a registry to track them.

Breakout Session - Liability Management

This session was moderated by Christine Arthun, Kinder Morgan, with speakers Tim Bent (Bridgestone Americas Holding, Inc.), Kevin Ryan (Kinder Morgan), and Tom Newlon (Stoel Rives, LLP). Participants reviewed key components in the management of liabilities surrounding the restoration of contaminated properties, including effective communication and relationship building. The panel discussion emphasized the importance of building credible, trusting relationships with stakeholders in order to successfully manage liabilities associated with the restoration of contaminated properties. Several successful projects were used to help attendees understand short and long range rewards attributed to successful liability management of greenspace and wildlife habitat restoration projects.

“Effective communication is a huge factor in liability management. Your actions build credibility. Set up

immediate, intermediate, and long-term cleanup goals. Execute immediate goals on schedule. Share the credit. Create sustainability in both solutions and relationships,” advised Kevin Ryan.

To demonstrate important lessons, Mr. Ryan used the Sparks Solvent/Fuel Site Project – 100 acres impacted by petroleum products and chlorinated solvents. The Sparks Site was initially discovered in 1988. Public interest skyrocketed with intense media exposure of potential impacts on tribal waters and city development plans. Adversarial relations between stakeholders began to threaten collaboration. Ultimately, sustainable solutions were at risk. Thanks to effective intervention, partnerships with regulatory agencies and key stakeholders were forged and the focus was brought back to the primary objective: protecting human health and the environment.

Remediation of the Reno-Sparks project has been ongoing since 1992. In 1998, a three-acre phytoremediation site with 420 poplar trees was created as a passive treatment system to protect a lake. WHC certified the site in 2004. Ryan concluded that, *“Cleanup approaches should incorporate habitat considerations from the start. Create a sustainable site suited to local conditions. Remember the public perception is that healthy trees mean a clean site.”*

Mr. Newlon provided a pictorial timeline of the Terminal 5 Brownfields site located in the Port of Seattle’s Southwest Harbor Project. His photos showed how closely the final restoration matched the vision for the project. Although some internal scoping and assessment of limitations is necessary, Newlon sited proper timing of public outreach as being essential to creating a shared vision with stakeholders.

“Do things that foster confidence, trust, cooperation, and responsible solutions. Create partnerships. Then work them! The public should be invited in well before internal expectations are set on what the project will look like. Listen openly and you’ll hear ideas that weren’t originally on the table,” advised Newlon. He further emphasized a strategic understanding of stakeholder roles, *“EPA is not the same as Washington Dept. of Ecology which is not the same as Washington Dept. of Fish and Wildlife which is not the same as NOAA...”*

According to Mr. Bent, too many people approach liability issues with fear and loathing. A negative mindset is a barrier to effective communication. Instead, Bent coached the audience to reframe liability management as an opportunity to build trust and optimism with stakeholders. Bent advises to educate the public by meeting them with an open, respectful spirit, answer their questions in a language they understand, manage both the technical and perceptual, provide possibilities that meet mutual goals and futures, and work together to build sustainable solutions for contaminated properties.

Mr. Bent used *New Beginnings* – The Woodlawn Wildlife Area as a case study for strategies and solutions. This award-winning project achieved triple bottom line success: economic, ecological, and social. Bent beamed when he announced that over 1,000 residents responded to an outreach piece titled “Uniontown – You must choose!” When tallied, 900 were in favor of ecological restoration!

Bridgestone Americas and WHC have been working together since 1996 to enhance land for wildlife and transform abandoned landfills into community assets. So far, OK, TN, NC, SC, IA and IN have all benefited from their teaming. *“WHC brings third party credibility to sites. They helped generate money for our projects by identifying available funding sources. I highly recommend you team with WHC*

whenever possible.”

The discussion after the presentations focused on potential exposures to safety issues. Mr. Newlon noted that when he was with the legal department on the Port of Seattle's Southwest Harbor Project, public and employee safety outweighed public access. Installing fence with barbed wire along the waterfront pilings was necessary to mitigate the “slip and fall calculation.” Mr. Newlon further noted that security has definitely become a much bigger issue since 9/11. Tim Bent indicated that barbed wire is more apt to be replaced with split rail fences when there is a higher level of confidence in safety issues. The more one can get the public to partner and take responsibility for the welfare of the property, the better. Find a champion!

Breakout Session - Urban Greenspace

This session offered presentations by expert speakers familiar with benefits of incorporating greenspace into a community's culture. Mike Shepherd (City of Bremerton), Jean Godden (City of Seattle), Nancy Whitlock (The Nature Consortium), and Clark Henry (City of Portland) offered a first-hand look at how to engage schools, government, and grassroots citizen groups in the effort to balance the needs of greater density with open space. Case studies in both Portland and Seattle showcased success stories and lessons learned.

Ms. Whitlock and Ms. Godden shared the success story of Saving Soundway, a vacant seven-acre overgrown urban jungle in West Seattle acquired years ago as a possible freeway link to Vashon Island. In the fall of 2005, Soundway was headed for major residential development. Thanks to Ms. Whitlock's enthusiastic grassroots leadership, the stewardship of more than 250 local volunteers, and Ms. Godden's political savvy, a pathway was blazed through complicated deadlines, a tough economy, vying interests and \$1.3M price tag. Today, Soundway is a protected open space.

“Go talk to your government representatives. Talk, talk, talk!” Ms. Whitlock urged the audience. *“Talk with enthusiasm and never lose sight of the land,”* chimed in Ms. Godden.

Clark Henry applauded Ms. Whitlock's tenacity and emphasized the importance of targeting a community hero to champion restoration projects. In a brief history of Portland, Mr. Henry demonstrated how urban planning for parks and open space has long been a part the city's culture (downtown parks date back to 1852). Portland's South Waterfront is a fine example of how a large industrial site can be renovated and revitalized into a mixed-use community gathering-place. Mr. Henry went on to list the cost of environmental assessments, cleanup, project planning and related legal issues as contributing reasons to why Brownfields are so difficult to restore and reuse. He advised the audience to *“Build relationships with those who own or are impacted by contaminated properties. Whenever possible, develop transition and transfer plans for Brownfields. Look for people who want to add these properties to their portfolio.”*

Mr. Shepherd distributed two articles published in the University of Washington's Center for Urban Horticulture:

- “Urban Nature Benefits: Psycho-Social Dimensions of People and Plants” states that more than 80% of the U.S. population lives in urban areas. Scientific research proves urban greenspace

provides many active and passive psychological and social benefits to residents.

- “Using Case Studies in Urban Forestry Education” emphasizes how practical examples help students understand and anticipate complexities in later life.

“Early education on the value and benefits of urban nature eco-systems can make a real difference! Involving youth in the stewardship of nature significantly decreases criminal activities,” Mr. Shepherd noted.

In closing, the panel identified three major challenges for urban greenspace:

- The tradeoffs between safety and accessibility.
- The lack of organizations willing to take ownership of restored properties.
- Adequate funding. We can always use more money!

Breakout Session - Shoreline Restoration

This session was moderated by George Blomberg (Port of Seattle) with speakers Peter Hummel (Anchor Environmental, LLC); Mikell O’Mealy (Oregon Department of Environmental Quality (DEQ)); and Michael Shaw (Port of Tacoma). Shorelines are among the most intensely human-impacted ecosystems, and also some of the most fragile. Panelists presented case studies in the restoration of contaminated shorelines, concentrating on the challenges they have faced and the successes realized in restoring integrity and functionality to contaminated shorelines.

Mikell O’Mealy presented the first case study: the McCormick & Baxter wood treatment operation located on the Willamette River inside the city limit of Portland. This facility made pilings and other treated wood products using creosote, tar, and other substances. The site had extensive beach and shoreline contamination such that tar was visible at the surface and a heavy creosote smell was present on most days. EPA listed it as a Superfund site because of its risk to fish, wildlife, and people.

The company was originally cooperative, but filed for bankruptcy not long after the site was determined to be a Superfund site, leaving no responsible owner. Oregon DEQ declared the site an orphan site, which triggered the availability of limited money for initial planning and demolition. Sufficient funding was secured to demolish all buildings and begin creosote extraction. In 1994, the Record of Decision was issued with a complete list of remedial actions. EPA declared McCormick & Baxter a Superfund site, but DEQ remained the lead agency, an unusual occurrence for DEQ.

The site was severely contaminated and close to downtown Portland. Because of its proximity to endangered salmon habitats, an extensive remediation and restoration plan was developed. Site debris was a major issue: 35 tons of old barges, scrap iron, and other wastes were removed from the site. As creosote and other chemical extraction will continue for years, a barrier wall was constructed near the high water mark to prevent leaching into the river. Extensive monitoring will continue for decades.

Given its proximity to historic wetland, riparian, and upland habitat, the site presented strong opportunities for habitat improvement. To maximize the remedial opportunity, a 23-acre sediment cap was created in the wetland area with six acres of riparian habitat. A 35-acre impermeable upland cap created new upland

habitat.

In-water use of organophilic mats to cap in-water contamination reduced food species for salmonids, thus discouraging their presence. DEQ installed fish excluders to protect listed Chinook from contaminated areas. Although the DEQ cleanup included consultations with NOAA before federal funds were released, even earlier discussions would have resulted in a better project.

Peter Hummel presented the second case study. Historically, Bellingham used a lowland tidal area and creek as a landfill. Its active use was stopped decades ago, and a cap was placed on the landfill. Some efforts at shoring had failed, exposing old refuse. Leaching metals, including zinc, were found in the water. Past efforts at restoration or beautification had not been done well, with invasive and non-native species choking the creek. Bellingham was faced with a choice about the aging Whatcom Creek Estuary-Holly Street Landfill and its shoreline environment. Options included a simple cleanup or a more complex integration of the creek into the surround urban environment. The costs and technical history of integrated projects was not favorable. Despite these obstacles, the city chose to bear the costs of a riskier but more desirable integrated approach.

Today, the remediated site includes a trail extension, an environmental education center, public access areas, new pocket estuaries, and a meandering riparian zone. This was accomplished structurally through a multi-disciplinary team that capped the refuse layer and redesigned the stream bank slope to prevent leaching. Re-sloping also created the riparian zone that created suitable rooting substrate for native vegetation to prevent erosion. The project's integrated approach to cleanup and site improvements for public use was costly and delicate to balance in an urban environment. Through periods of escalating costs, the city's commitment to the project was steadfast. Multiple local, state, and federal grants made the project possible.

Michael Shaw presented the last case study on the Port of Tacoma. The Port sits at the mouth of what was the Puyallup River estuary and tidal area of Commencement Bay. Decades of changes in the waterways have led to loss of habitat and reduced connectivity.

Mr. Shaw reported several high level goals were established to control costs and provide clear direction for this project. Establishing buffers and creating upland, riparian, and inter-tidal habitat are the program objectives. To achieve these, the Port's programs includes a range of actions designed to cleanup lands if necessary, but focus on habitat improvement. Land-forming tools include capping, re-contouring, and increasing habitat complexity and connectivity. Knowing what will provide the greatest immediate benefit to target species is also a key. Remedial actions are sought in order to yield multiple benefits and thereby leverage investments. For instance, tidal influence is important to creating forage and refuge areas. Creating fish passages through flood-control facilities can reduce mortality and increase connectivity.

The Port's strategy is to actively mitigate seven sites that add high quality habitat for strategic and critical early life stages of salmonids. A biologically balanced approach includes fresh water habitat, rearing/foraging, mixing zone, and migratory corridors. For the Port of Tacoma, eight acres of freshwater off-channel habitat created refuge and forage space. When connected to other habitats, 8.5 acres of estuarine habitats become critical areas for young migrants to transition to salt water. The net result is that low cost land in heavily used areas can yield high ecological values if managed strategically.

Mr. George Bloomberg added information from the Port of Seattle where a habitat restoration strategy is to aggressively look for restoration opportunities as new shoreline development is proposed. Restoration amid new proposals for redeveloping heavily-used land offers the chance for cost sharing, new public access, long-term maintenance, habitat creation, and cleanup. One significant advantage is the opportunity to leverage private dollars to benefit restoration. Since there remains a valuable economic component, more public dollars can be used for the cleanup and restoration and less committed to acquisition, public access, and maintenance.

The lower Duwamish River is home to current shipping activity and past toxic industries and dumps. Shipping is a harsh use, even in the best of circumstance because of the heavy alteration of the landscape. Enormous habitat changes occur that are not reversed without intervention. Dredging, filling, toxic sedimentation, and flow alteration are among some of the drastic changes that make the environment very inhospitable for native species.

Mr. Bloomberg related that new techniques are being used in the Duwamish to create pocket habitats. These are experiments in re-establishing semblant habitats, since little trace of the original habitat remains. There are many historic photos and maps that show the original land forms and their waterlines. These can be used to approximate quite closely the pre-alteration landforms and their function. Combining that technology with what is known about the needs of aquatic, riparian, and upland species, the habitat can be created and sustained if care is taken in monitoring and adaptive management principles are adopted.

Some of the steps taken in the Duwamish have had measurable benefits to both the environment and the redevelopment. Stripping away fill to historic sediment levels allows re-establishment of inter-tidal tables and sets the stage for riparian area re-creation and can create parks and other amenities. Reclaiming marshes and removing derelicts allows development to occur in areas that just would not see activity of any kind. From a public use/education stand point, creation of side/off-channel habitat allows for great access and viewing opportunities and is critical forage and refuge habitat for fish in the Duwamish.

After the presentations, the discussions moved into two areas.

- In many areas, contaminated shoreline remediation is a key part of the total package to an endangered species recovery or conservation plan, but they seem to be different disciplines. What are the key institutional, regulatory linkages, and how are they functioning? All presenters felt the key is to ensure early and frequent consultation with other regulatory agencies.
- Participants explored the differences between constructing restoration projects versus other civil works. All presenters felt lead agency, stakeholders, and contractor experience and knowledge affect the outcome of the project. An ability to be innovative while minimizing risks during all phases is critical.

Breakout Session - Planning and Promoting of Ecological Land Reuse of Remediated Sites

The Interstate Technology & Regulatory Council's (ITRC) Ecological Reuse Team provided an overview of their latest Technical/Regulatory Guideline: *Design of Ecological Land Reuse of Remediated Sites*. This session was moderated by Charles Johnson (Colorado Department of Public Health) with support

from speakers Charles Harman (AMEC Earth & Environmental) and Barbara Padlo (Atlantic Richfield Company). Mr. Johnson updated and provided an abbreviated training on the Guideline. He reminded attendees that the document will be published in June, 2006, and the Internet training version will be available in July, 2006.

The presentation identified regulatory flexibility and ways to generate support for ecological land reuse. Techniques to incorporate the concept of “site service capacity” into decision making and ensure sound scientific and technical support where provided. The importance of defining and communicating the value of ecological land reuse to stakeholders and involving them in meaningful planning and decision-making was highlighted. Strategies for planning and designing ecological land reuse and gaining acceptance for non-traditional remediation were discussed. The session highlighted regulatory framework, design of site remediation, and business models for use in presenting alternatives to traditional remediation.

Mr. Johnson provided the regulatory overview and emphasized that ecological reuse can be part of remediation when the enhancement improves the site and protects human health and the environment as required by law. Ecological land end use can use either green or traditional technologies and is applicable in numerous situations: active and inactive sites, CERCLA, DOE: Radiological, DOD: Base Closure, RCRA, solid waste, voluntary cleanup, Brownfields, mining sites, underground storage tank sites, and real estate development. Ecological enhancement process flow charts guide decisions to clarify applicability for ecological reuse. This process puts the consideration of ecological elements into the end use planning and not as an afterthought to the remediation.

Mr. Harman discussed the design of site remediation. Choosing ecological end use is influenced by various factors including: size of the site (the larger the site, the greater the likelihood of supporting viable ecosystems), existing habitat at the site, proximity to existing undisturbed areas, surrounding land uses, topography, hydrology, and site access. Developing site plans, identification and selection of plants, site preparation, and issues with invasive and undesirable species were presented. The monitoring and maintenance of ecological reuse sites concluded this section of the presentation.

Ms. Padlo provided strategies for gaining business acceptance for use of ecological end use in a “bottom line business environment”. Using a refinery case study, Ms. Padlo reviewed a system to quantify the value of ecological enhancements using quantifiable, semi-quantifiable, and qualitative parameters. In closing, the importance of “telling the story” about the qualitative factors to help win approval and support for your project was demonstrated.

Breakout Session - Performance Measures

Panel experts included Dr. Denny Mengel, CH2M Hill, Inc., Joe Nicolette, Elm Consulting, LLC, David Nicholas, U.S. Environmental Protection Agency, and Harry Ohlendorf, CH2M Hill, Inc. This panel examined means to identify and implement performance standards for remediation/reclamation projects. The presentations were followed by an interactive question and answer session.

A key question for this topic is, “How does one define restoration *success*?” No two ecosystems are created equal. As such, establishing metrics and performance standards for their restoration requires consideration of a wide array of different values and functions that depend upon the specific habitat and

its relationship to surrounding natural and human environments. The panel discussion examined the approaches for setting performance standards along with case studies of their implementation.

In one case study – the Bunker Hill, Idaho, site – reclamation and restoration benefits were achieved at a location used for mining and smelting for 115 years. This property once produced 20% of the world's lead supply. Successful projects such as this one demonstrate one or more of following improvements when related to their particular performance measures: increased acreage and improvement of habitat, reduced sediment runoff, increased water quality, and establishment of new plant and animal communities.

While empirically-based standards are critical to measuring whether project objectives have been achieved, a consensus-based approach was also viewed as a critical element for success. Projects used various collaborative/relationship building approaches such as early involvement of stakeholders, developing a common language across disciplines, and using a consensus approach to agree on goals, the value(s) for a site, performance-based measures, and specific action steps. Being able to adapt remediation plans to the needs of the site and newly collected site information was also very important to project success.

After the presentations, the discussion focused on the measuring of results and determining when the performance metrics have been achieved. Monitoring a site involves time and resources. At what point can one feel comfortable that a site will continue to provide value? What is enough in terms of measuring success?

From the discussion, it is clear that participants struggle with determining how long to monitor a site and when it can be called a success. Panel speakers emphasized:

- Project managers must ask themselves at what point they feel comfortable that the site will continue to provide the projected value without continual monitoring. Is it worth waiting longer for that additional 10% of value?
- From the beginning, the stakeholders who will be managing the site long-term should be engaged. They need to be invested in what constitutes success.
- Collaborate with state and the federal agencies from the beginning.

Breakout Session - Ecosystem Services: Creating Value

Panel experts were Laura Napoli (Exxon Mobil), Claire Schary (EPA Region 10), Emily Davis, (International Paper, Forest Resources Division), and Jim Myers (Chevron). This panel focused on how ecosystem services (e.g., flood control, carbon sequestration, open space, and wildlife habitat, on their own, or enhanced) can create value in the marketplace. Panelists discussed these services, their associated costs, their benefits, and mechanisms for extracting value.

Ecosystem services have obvious non-economic value. Panelists addressed the question of valuation and the creation of economic markets for ecosystem services (e.g., the flood storage capacity of the Louisiana wetlands was not valued by the general public until after the Gulf hurricanes of 2005).

One such approach is to create value for these services by linking them with regulatory requirements. For example, pollution trading is a market-based tool to help solve water quality problems. It is a voluntary,

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flexible tool that stimulates innovation. The incentive for trading pollution reduction credits (value) is created by limiting the total amount of pollution that is allowed (market-based). In order for trading to be possible for other ecosystem services, the following conditions must exist: regulatory requirements (like those for pollutant discharges), financial incentives for entering into a trading market, technical feasibilities for trading, and existing models for trading.

Another similar approach is the development of site-specific restoration activities that directly link to desired ecosystem services. Depicted in the table below is a framework that was specifically applied to the Alcoa Anaconda site. Ecosystem services were grouped into four broad categories: regulating services, provisioning services, supporting services, and cultural services. The right column presents the specific actions agreed to with the project stakeholders that support creation of ecosystem value. Even though the benefits at this site have not yet been fully realized, there is already great success in three of the four categories:

Regulating	Freshwater regulation	Improved surface water quality through removal of contaminants and natural attenuation.
	Air quality	Improved air quality through addition of plants/trees on-site.
	Wildlife habitat	Nursery, feeding, and breeding ground for regional wildlife species.
		Riparian vegetation habitat for mammals, birds, amphibians, and insects.
		Pollinator garden.
Disturbance moderation	Invasive plant species, including Russian knapweed and purple loosestrife, are being controlled while native vegetation, including Virginia bluebells, are thriving.	
Supporting	Soil control	Moderate downriver soil erosion control.
Provisioning		N/A
Cultural	Recreation and amenity	Pedestrian paths on-site for exercise and enjoyment.
		Increased fishing opportunities by improving fish habitat through soil erosion control.
		Bird watching and other wildlife observation.
		Camping by scouting organizations.
		Improved aesthetics.
	Historic	Preservation of a historical Native American site.
	Educational	Indian Valley Local Schools will oversee wildlife observation area for environmental educational purposes.
Signage will inform visitors of partnership that developed the nature park.		

After the presentation, the discussion dialogue explored how the experts chose their projects with regard to the benefits stakeholders might obtain either directly or indirectly from the ecological systems. Several panelists agreed that in many cases projects choose themselves, that is, the sum of a site's intrinsic value,

economic value, and ecosystem services is 'intuitively known' and therefore one project takes priority over another.

The presenters agreed that stakeholders are critical to a successful project. Recommendations for working with multiple stakeholders included bringing them in early in the process, hiring a neutral facilitator to bring people to the table, finding common values, agreeing on key terminology, holding monthly community action panels to address public questions and concerns and staying active in trade associations.

Lunch Guests: Jim and Diane Nebel, Rosalia Visitors Resource and Interpretive Center

The Rosalia Visitors Resource and Interpretive Center won the 2005 Phoenix Award for Community Impact – UST. This is a success story of site selection, stakeholder involvement and management, and innovative resource identification.

Rosalia project leaders, Jim and Diane Nebel, presented a brief history of this project, which centers on an old Texaco gas station in Rosalia, WA. The Town of Rosalia consists of approximately 600 people whose leaders and citizens were determined to cleanup



Jim and Diane Nebel, Rosalia Visitors Resource and Interpretive Center.

the abandoned gas station site and restore the station's infrastructure. The station was jointly owned by several family members, none of whom had the interest or the resources to improve the property. The most daunting hurdle was the removal of the old buried gas tanks that were very likely leaking contaminants into the ground. It was discovered that if the property were publicly owned, grants would be available to help remove the tanks. The family donated the property to the Rosalia Chamber of Commerce and the project was funded in part through the EPA USTfields Initiative. This Initiative funds states and tribes to conduct pilot projects in brownfields communities to assess and cleanup petroleum contamination from federally-regulated underground storage tanks at idle or abandoned commercial properties. The project also received funding from the Washington Department of Ecology, Whitman County, and private donors to remove five underground storage tanks and petroleum contamination at the site, restore the old station, and create habitat for native species.

The Rosalia Team identified three priorities for the property:

- Establishing a learning landscape representing the Palouse ecosystem;
- Implementing low impact design as part of the redevelopment plan; and

- Sustainably managing the landscape through community partnerships and environmental education.

Jim and Diane acknowledged WHC for their assistance with the Rosalia project to develop opportunities for increasing the use of wildlife habitat enhancements and community partnerships in the redevelopment plan. In May, 2005, WHC made recommendations to the Rosalia site on how to identify and attract stakeholder groups and how to best implement wildlife habitat enhancements.

Closing Session: Making the Case for Ecological Enhancements: A Regional Action Plan

The dialogue was designed to assist attendees in identifying concrete, actionable next steps to promote regional ecological enhancements in the region. Attendees were given a summary of key themes and issues that were discussed in each session and field trip. This was followed by expert regional panelists, including Jon Sandoval (Idaho Department of Environmental Quality); Dr. David Tsao (Atlantic Richfield Company, a BP Affiliated Company); and Chuck Harman (Oregon Department of Environmental Quality), who offered their impressions of and thoughts from the conference and a robust plenary discussion, including audience members and panelists.

The conference plenary and breakout sessions addressed a wide variety of restoration issues and topics. In concert with the case studies presented during sessions and observed during the field trips, the following keys to successful remediation and restoration projects were identified:

- Educate early – build trust;
- Build plans collaboratively – act multi-laterally;
- Create credibility with each action – activities should be transparent;
- Find a champion for change – leadership and vision is critical;
- Identify what is good for the community, good for the ecology and good for the bottom line; and,
- How are projects chosen? Projects choose you.

The session continued with panelists offering the necessary ingredients for successful remediation and restoration projects and lessons learned in their areas.

Mr. Sandoval began by explaining that, when selecting remediation/restoration projects in Idaho, there are some unique challenges to consider, including the over 9000 abandoned mines, 66% land ownership by the federal government, and many areas that are costly to reach and restore. Additional challenges include mixed land ownership, institutional cultures, and managing investor risk. When choosing projects, planners have learned that it is important to go where the interest is even if it is not an ecological priority. It is also important to consider the availability of the resource, timing, and personal investments. Mr. Sandoval continued with an overview of two Idaho remediation and restoration projects.

At the turn of the century, Indian Creek in Caldwell, ID, was used as an agricultural and municipal drain. The creek was covered up with concrete, asphalt and steel, because nobody wanted to see it. More recently, people in the town became interested in urban renewal and decided that the uncovering and restoration of the creek would be in the community's best interest. Local residents came to the forefront and drove this

great example of successful remediation and restoration.

Past mining operations at the closed Stibnite Mine in Yellow Pine, ID, required the removal of over 35,000 cubic yards of mine waste. There were also cyanide leach ponds and significant arsenic contamination – the highest in the nation. Stakeholders agreed to improve and restore Meadow Creek, which was affected by contaminants from the mine. Remediation and restoration goals were identified to eliminate sediment and heavy metals, improve water quality and habitat, and remove fish passage barriers. The project is ongoing.

Mr. Sandoval concluded his presentation by stating that partnerships (development and long-term care) are critical to the success of remediation and restoration projects. When possible, conveners must find community residents and NGOs and bring them together. Policymakers must develop new tools and consider building incentives (e.g., Community Reinvestment Pilot Initiatives and Leadership Programs). Finally, we all must recognize that there are some real barriers to success.

Dr. Tsao opened his remarks by questioning attendees' positions on remediation and restoration activities. As expected, the audience unanimously responded in a positive vein. Taking this, Dr. Tsao spoke of the value of this conference as great places to learn and network. Participants leave reenergized with new tools and approaches. Participants gain skills and confidence in addressing impediments as well. This is a good place to focus. Unfortunately, only a few participants are the true decision makers for their organizations. This community should be talking to the people within their organizations who can really make remediation and restoration decisions.



Dr. David Tsao, Atlantic Richfield Company.

Dr. Tsao closed by stating that economics alone will not be a convincing argument alone for ecological restoration. He challenged the conference participants to consider twice the amount of emphasis be given to values other than financial ones with respect to some of our remediation and restoration sites.

Mr. Harman offered his perspective as a state Brownfields Coordinator on the keys to greenspace restoration successes. He believes strongly that a strong relationship is critical between agencies and land owners. It is important to create a common methodology and a common vocabulary for assessing ecosystem benefits. It is equally important to work with land owners as steward for a prospective purchaser.

Harman suggested identifying innovative resources and incentives, such as grants. There may be opportunities to move resources from an agency whose work is not typically associated with Brownfield

reclamation and remediation. We must learn how to attract more private support and find a way to get to the attention of corporate directors of these companies. One could also consider setting up an urban renewal organization or find an NGO that will take ownership and stewardship of a contaminated site. Also, consider greater reliance on self-implementation--environmental professionals have more ability to do things in the community without all the command and control.

Mr. Harman is developing an economic/partnering model in Oregon to drive Brownfields restoration. His goal is to engage as many organizations in the region as possible to do this. Oregon DEQ is now discussing several opportunities for greenspace reuse. The Oregon Brownfields into Greenspace (BiG) Workgroup will continue to evolve and identify opportunities. This work group will update its activities at the Oregon Brownfields Conference, March 1-2, 2007 in Salem, OR.

Mr. Harman closed his presentation with elements of a personal action plan:

- Form a Greenspace Workgroup. Hang out!
- Identify sites with Greenspace potential. Hike, bike, canoe! Call your friendly neighborhood regulator, engage them.
- Engage owners of Brownfields—what are their fears or interests? Build trust and credibility.
- Have a cup of coffee and make new friends.
- Connect with local community stewardship groups.
- Identify funding resources. Do some creative grant writing.
- Be persistent, make connections, and generate interest.



Chuck Harman, Oregon Department of Environmental Quality.

Following these three presentations, the plenary discussion centered on two questions with respect to habitat restoration:

“What’s in the way?” and “What do you need to move ahead?” The resulting dialogue revolved around the conference’s key themes of site selection, resources, and stakeholder identification and management.

Site Selection

Learn more about potential sites. Begin early in the selection process to include new stakeholders. A critical factor is to be open-minded about possibilities; look for ways to pool and prioritize projects and opportunities beyond your jurisdictional borders. Create a common method to assess potential sites and estimate restoration. This will create a common vocabulary to make a case for those who are not “the choir”.

Resources

Be innovative with resources. Examples offered by the presenters and audience included:

- Identify low interest start up loans;
- Apply for grants and incentives;
- Consider setting up urban renewal districts;
- Connect with other agencies to release money for green space use;
- Reduce costs through greater reliance on self implementation; and
- Learn to re-route/use funds originally designated for one type of site for green space/contaminated land.

In the longer term, work with jurisdictional leadership and stakeholders to afford appropriate protection from liability for investors and more regulatory flexibility to free up resources. Learn how to attract more private support and initiative; perhaps find a non-profit to take on contaminated site ownership.

Stakeholders

Partner with stakeholders before, during, and after (stewarding) a project. Broaden the stakeholder community by emphasizing early stakeholder identification and management. This expanded group should include early contact and education of decision makers (among the land owners and regulators), other agencies (for example natural resource and economic development agencies), and community members.

Additional recommendations offered by the presenters and audience included:

- Clearly identify and empower facilitators of key relationships;
- Learn how to create dialogue with stakeholders. Tap into those that feel confident about this skill;
- The broad base of decision makers should be supported to attend these types of conferences;
- Build skills to be better at relating and communicating with decision makers; and
- Go and ask for support!

Robert Johnson, Acting President, Wildlife Habitat Council, closed the conference.



WHC was saddened to learn that, shortly after the conference, Mr. John Beal, community activist and savior of Hamm Creek, passed away. We are grateful to have shared Mr. Beal's enthusiasm for his project on the King County Restoration Tour.

WHC respectfully dedicates this document to the memory of Mr. John Beal.



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