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State of Washington

FINAL REPORT

LINKING TOXICS CLEANUP AND REDEVELOPMENT ACROSS THE STATES: LESSONS FOR WASHINGTON STATE

Prepared for the Department of Ecology
Toxics Cleanup Program
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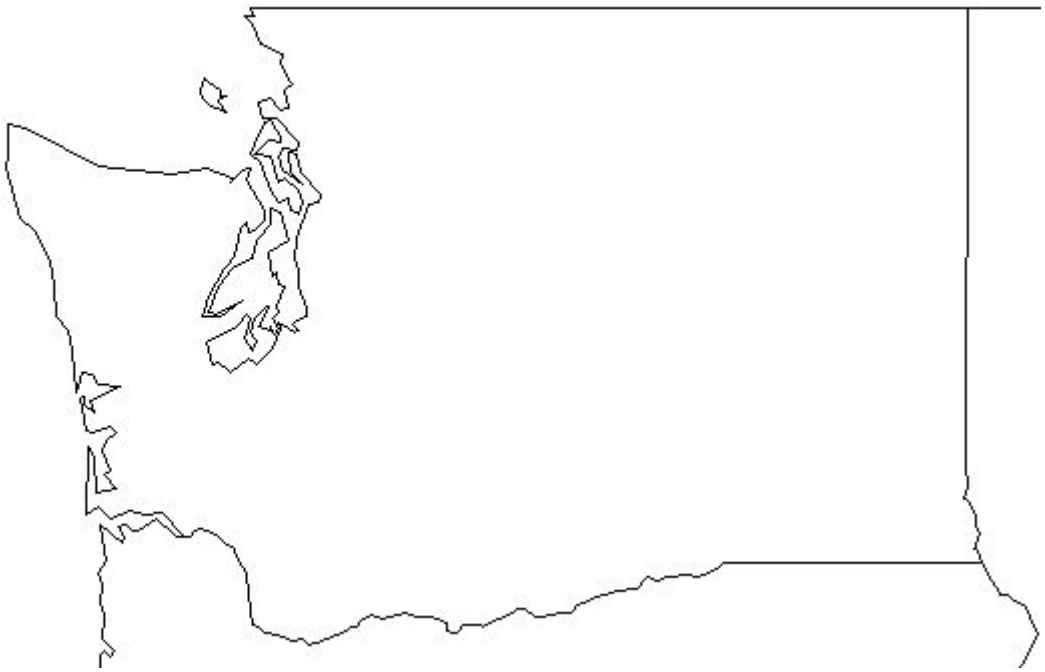

PREPARED FOR:

THE TOXICS CLEANUP PROGRAM,
WASHINGTON STATE DEPARTMENT OF ECOLOGY

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This final report is the result of a comprehensive study of the state government role in facilitating brownfields redevelopment in Washington State conducted under a grant from the Toxics Cleanup Program (TCP) in Washington State's Department of Ecology. We would like to thank Jim Pendowski, Manager of the Toxics Cleanup Program, for his support for the research, and John Means, the Brownfields coordinator at TCP for his continuous help throughout the research.

EXECUTIVE SUMMARY

Introduction

Toxics cleanup programs in state governments, the typical home of many brownfields programs, are situated within departments of environmental protection or ecology. State departments of environmental protection or ecology, developed in the 1970s spurred by the passage of the National Environmental Protection Act, were conceived primarily as regulatory agencies with a heavy orientation towards enforcement, monitoring and compliance. These first generation programs had little connection to state or local economic development departments or programs. By the 1990s, several states, recognizing the negative market impacts of inflexible programs and that brownfields policy requires an essential integration of cleanup and redevelopment efforts, began to develop "second generation" programs. These second generation programs, sharing the motivation and strategies of the reinventing government movement (Osborne and Gaebler 1992), incorporated more collaborative and market-oriented features. But several challenges remain, such as, administrative processes and adequate public incentives for multi-site community-wide efforts, and strategic, state-wide plans to address the backlog of brownfield sites. In this study, we develop the concept of "third generation programs", which incorporate features of first and second generation programs but emphasize community-wide planning and stakeholder involvement, state-level strategic planning for brownfields reclamation, as well as integration within a broader sustainable development agenda.

The purpose of this research was to examine how Washington State's regulatory processes and financial assistance as administered by the Department of Ecology's Toxic Cleanup Program (Ecology) effects the cleanup of brownfield sites and to make explicit recommendations for how this program might better facilitate integrated cleanup and redevelopment of Washington's brownfield properties and the necessary partnerships to accomplish this. In order to do this, the study investigated both federal and Washington state policies and processes; conducted studies of several state brownfields programs across the country to provide a basis for a comparative assessment of Washington's brownfields efforts; inventoried the financial programs available in the state for brownfields; and developed several case studies of recent cleanup and redevelopment efforts in Washington State to identify current issues and concerns.

The report is divided into six main sections or chapters: Federal Policy Overview; State Policy Overview; Financial Resources; State Profiles; Washington Case Studies; and, Recommendations.

Chapter 1. Federal Policy Overview

Origins

Federal policy on Brownfields grew out of federal Comprehensive Environmental Response Compensation and Liabilities Act (CERCLA) or Superfund legislation (1980). The US Environmental Protection Agency (EPA) administers CERCLA. CERCLA was aimed at cleaning up the most hazardous abandoned properties in the country, the National Priority List (NPL), which currently includes about 1,300 sites. It imposed strict, joint and several liability provisions, to ensure that "the polluter pays" and established a fund (Superfund) to help pay for the cleanup of these sites, if the responsible parties were not found.

States established state legislation and programs modeled on CERCLA to cleanup hazardous sites in their states not included in the National Priority List. Washington State enacted such a statute in 1989, and established a Toxics fund, like Superfund, and developed processes to prioritize the cleanup of hazardous sites posing the highest risk to public health.

CERCLA reform efforts have included several changes to liability provisions, establishing protections for innocent purchasers, conditional on conducting an "all appropriate inquiry", but this concept was not operationalized at the time.

Emerging Brownfields Policy

In 1993, EPA, through its Brownfields Economic Development Initiative, began to address the larger universe of contaminated or suspected sites not on the NPL and provided the first federal definition of brownfields: "abandoned, idled or under-used industrial and commercial facilities where expansion and redevelopment is complicated by real or perceived environmental contamination."

In the late 1990s, EPA also recognized voluntary cleanup programs (VCP), which had been established by several states beginning in the early 1990s to streamline the process of cleanup for less contaminated sites. These programs were closely aligned with brownfields efforts, but the two are not synonymous, since many VCP programs lack a redevelopment emphasis.

EPA's brownfields initiative provided the administrative foundation that led to the passage in 2002 of the Small Business Liability Relief and Brownfields Revitalization Act (the Brownfields Act) which authorized grants funds separate from Superfund.

With the passage of the Brownfields Act, several groups could claim liability protections: bona fide prospective purchasers, contiguous property owners, and innocent landowners, all contingent on the performance of an "all appropriate inquiry". The Brownfields Act also required that EPA establish a standard defining all appropriate inquiries by the end of 2006. Lender or creditor exemption from liability had been provided in another act of Congress in 1996. These liability protections have been driven by the economic development concerns raised by the development community.

Federal policy on Brownfields, VCP programs and other state initiatives represent "next generation" policies of environmental protection, in line with the reinventing government movement of the 1990s.

The Brownfields Problem: The Basics

In contrast to the 1,300 Superfund sites, the estimates of the number of brownfields across the country range from 400,000 to a million sites. Many of these sites suspected of contamination are the result of the de-industrialization of the economy, which began in earnest in the 1970s. Poor, and, often minority communities are disproportionately burdened with adjacent brownfields, adding an environmental justice dimension to the brownfields problem. Responsible brownfields redevelopment could address this issue as well. CERCLA itself is credited with unintentionally adding to the brownfields problem through its stringent liability provisions.

Brownfields must meet the same cleanup standards that Superfund sites meet, but because these sites are typically less contaminated, they can meet these standards at lesser cost. Brownfields range in size from gas stations and dry cleaners to large-scale manufacturing or agri-business sites. Not all brownfields are urban. Brownfields in small town and rural communities typically have a greater impact on the economic health of these communities than equivalent brownfields in cities. The more recent Brownfields Act definition of brownfields as "real property" expands the application of the term beyond industrial and commercial facilities.

Institutional Aspects of the Brownfields Problem

State toxics cleanup programs, modeled on Superfund, have a mandatory approach to contaminated sites with a single purpose—cleanup. This fails to address the dual nature of the brownfields problem—cleanup and redevelopment. An integrated approach to brownfields requires both and integrated process and staff trained to administer such a process. The American Society for Testing and Materials (ASTM) has provided an integrated model of brownfields cleanup and

redevelopment, which begins the process with collaborative community engagement and planning. Changing a traditional toxics program from a technical cleanup orientation to a more integrated, collaborative one is difficult, like most institutional change. In addition to leadership from the top, it involves changing the mission of the program to incorporate redevelopment, and ensuring that staff is trained to integrate these two purposes in their daily operations.

Public Policy Aspects of Brownfields

Costs of inaction on brownfields include: costs of damage to human health, ecosystem damage costs, fiscal costs in the form of revenue losses to local governments, social costs of environmental inequality, costs of decreasing urban densities, and long-term costs of sprawl. Estimates of lost tax revenues to local governments stemming from inaction on brownfields are significant.

Brownfields redevelopment instead of the development on greenfields offers substantial greenfields savings, and is a key strategy for both the sustainable development and the growth management movements. In addition, brownfields can also be returned to greenfields after cleanup.

Costs of brownfields redevelopment for would-be developers, public and private, are multiple: site assessment costs, remediation planning costs, remediation costs, risk management costs, present value of potential future costs. Brownfields redevelopment also face multi-faceted risks: re-openers, natural resource damages, variability of cleanup costs, reduction in development potential and third party liability.

The condition of the real estate market has a significant effect on brownfields redevelopment. In strong real estate markets, the additional costs and risks of brownfields redevelopment can become just another dimension of a real estate deal. In areas of economic decline or soft markets, the costs to address cleanup can outweigh the value of the land itself.

The multiple, negative, social and environmental spillover effects of brownfields establish a presumptive public interest in their cleanup and redevelopment. Prioritizing the cleanup of contaminated property can be guided by two complementary but separable public interests: the public interest in safeguarding public health and the environment, which leads to the prioritization of the cleanup of most hazardous sites, as in Superfund; and the public interest in metropolitan growth management, ecosystem protection, and environmental justice, which can lead to the prioritization of brownfields redevelopment, including the provision of public subsidies and liability relief.

Chapter 2 Washington State's Model Toxic Control Act (MTCA)

MTCA as a First Generation Statute

Although MTCA's purposes are six-fold, including the rights to a healthful environment and protection of the environment, as well as efficient use of land, it was developed primarily as a toxics cleanup policy. There is no definition of brownfields in MTCA, although the legislation does recognize the need to promote the cleanup and reuse of vacant commercial and industrial property.

The metropolitan growth management argument for the cleanup and redevelopment of brownfields is particularly relevant in Washington State, since the State has a strong state-wide growth management program. Brownfields redevelopment addresses all the substantive goals of Washington's Growth Management Act (GMA), although there is no mention of brownfields in GMA.

Features of MTCA

The powers of the Department of Ecology under MTCA include investigation of releases, conducting remedial actions, issuing orders and consent decrees, requiring property holders to conduct remedial actions, providing informal advice and assistance regarding requirements and technical requirements, including site-specific advice for independent remedial actions. More recently Ecology is required to develop 10-year financial reports in coordination with local governments to identify needs and funding for cleanup.

MTCA's cleanup process uses a ranking method similar to CERCLA's to prioritize sites in the state not on the federal list, allows for cleanup levels—unrestricted(residential) and restricted (industrial), and uses three methods to determine cleanup standards, one geared to "routine" cleanups (Method A).

Liability under MTCA is also similar to CERCLA's, strict, several and joint. Under MTCA there are now two major administrative pathways for conducting cleanups, *formal* sites (worst sites), and *independent* cleanups. These two pathways offer different levels of liability protection. The formal process, where Ecology staff guide the process can provide greater liability protections, through prospective purchaser consent decrees, consent decrees for potentially liable parties, and agreed orders for potentially liable parties and innocent purchasers. As in CERCLA, liability protections are also conditional on all appropriate inquiries.

Brownfields typically follow the independent administrative pathway through the VCP program, which was developed to deal with less contaminated sites, and provides staff consultation and

comfort letters. However, the VCP cannot be completely identified with brownfields, since the VCP does not focus on redevelopment .

Prospective purchaser consent decrees are the gold standard of liability protection in the State. Potentially liable parties can avail themselves of consent decrees or agreed orders through the formal process. VCP can offer opinion or comfort letters on the adequacy of the cleanup proposal and the likelihood of obtaining a No Further Action determination at the completion of the cleanup.

Although MTCA, like CERCLA, also requires an all appropriate inquiry to establish due diligence; unlike CERCLA, the state has not provided rule guidance on AAIs.

The source of MTCA's funds are taxes levied on the wholesale price of petroleum and hazardous substances. The revenues are deposited into two accounts, State and Local Toxics Control Accounts. The Local Toxics Account is used for grants and loans to local governments for cleanup. The State Toxics Account is used by Ecology to carry out the purposes of MTCA. With increasing petroleum prices, the revenue flowing into the accounts has been growing, increasing the funding for remedial action grants and site hazard assessments.

MTCA Reforms

MTCA has undergone a number of reforms since 1989, including integration with the State's environmental protection review process under the State's Environmental Protection Act (SEPA)(1994); independent remedial actions(1997); and increased focus on future land use as a driver of cleanup levels(2001).

Reforms in 2007 (Substitute House Bill 1761 or 1761 amendments) are aimed at expediting cleanup of hazardous waste and also at creating incentives for the cleanup of the Puget Sound. Ecology is empowered to partner with local communities to expedite cleanups. Changes to the remedial action grants following the legislation, such as potentially decreasing the local matching requirement for local governments, have increased incentives for cleanup. Although brownfields are not mentioned in the 1761 amendments, redevelopment is highlighted and new funds under a pilot project have been made available for integrated cleanup and redevelopment plans for local governments.

Institutional Arrangements

EPA plays an important role in the Brownfields Program in the State through its initial capitalization of the State's Brownfields Revolving Loan Fund, through direct assessment grants,

technical assistance, and through grants to the Department of Ecology from the State and Tribal Response Program (STRP), which has provided funds to staff the Brownfields Program in the State.

The State's Brownfields Revolving Loan Fund is housed in the State's Community Trade and Economic Development Department, managed by the Brownfields Coalition, and a staff member who collaborates with the Brownfields Program at Ecology. Thus, Brownfields administration in the State directly involves the departments of Ecology, and of Community, Trade, and Economic Development(CTED), although the brownfields staff, which reorganized in 2008 as the Cleanup Enhancement and Revitalization (CLEAR) team is small, a total of three staff members.

Initiatives of the Brownfields Team

The brownfields program in the state is currently involved in several initiatives (funded by STRP) including: the development of an inventory of brownfields for the State in the form of an interactive information portal; establishing local environmental task forces to aid in coordinating staff from different agencies involved in the cleanup and redevelopment; and Targeted Brownfields Outreach Teams to assist smaller or rural communities to plan and execute brownfields redevelopment, and an economic forecasting model to assist public and private parties to assess the potential revenue generation and opportunity costs of given sites.

Institutional Challenges

Institutional challenges to the Brownfields effort in the State include: the length of the cleanup process; staffing issues; lack of an area-wide multiple site approach to brownfields; lack of capacity in small towns and rural areas to undertake brownfields redevelopment; and lack of integration between cleanup and redevelopment.

A significant problem facing the program is the length of the cleanup process, which is greatest for complex groundwater and sediment sites, and for the remedial investigation/feasibility study/legal negotiations phase of the cleanup process for formal sites. In general, formal cases take more than two times longer than VCP cases. However, recent research finds that formal and VCP average cases do not differ significantly in length, when hazard rating is controlled for, and complex cases are excluded; and that staff availability is directly related to length of process. The lack of significant difference in the length of time between the formal process and VCP for comparable non-complex cases suggests that brownfields cases could benefit from the greater liability protections offered by the formal process. However, EPA requires that EPA brownfields grantees enroll in the VCP process.

During the 2007-09 biennium budget for the Toxics Cleanup Program in Ecology, 74% (of a total of 167.3 full-time equivalent staff) of the staff resources were dedicated to formal sites processing, 14% to VCP, and 12% for managing underground storage tanks to minimize releases. The brownfields program has two staff in Ecology and one in CTED. Lack of statutory recognition of brownfields impedes the assignment of staff to brownfields.

Despite the State Brownfields Program's efforts, Washington's Toxics Cleanup Program is still primarily a cleanup program and continues to face the challenge of developing a program that integrates cleanup and redevelopment. MTCA has a site-specific toxics cleanup approach, and the State lacks a planning-oriented, area-wide, multiple site approach to guide local governments in dealing with clusters of contaminated sites, although TCP's Puget Sound Initiative may offer an area-wide approach that could be adapted for the rest of the State. Small towns and rural areas lack administrative and financial capacity to undertake brownfields cleanup and redevelopment, although some of the initiatives currently under development, such as Targeted Outreach Teams, could address this problem.

Chapter 3 Financial Assistance and Risk Management

Primary Sources for Financing Brownfield Projects

Primary sources of financial assistance for brownfields projects in the State come from the federal government, through EPA grants and loans and the Department of Commerce, and from the State, through Ecology's Remedial Action Grants, and CTED's Brownfields Revolving Loan Fund. A majority of funds are available for one or two phases of a project, while a few, such as EDA and RLF loans are applicable to all phases. Most sources are available for local governments, with just a few, such as EDA, or SBA loans are available to the private sector as well. The State's Remedial Action Grants are a major source of funding for toxics cleanups, although there are no targeted funds for brownfields as such in the RAGs. Changes to the RAGs due to the 1761 amendments move the program towards a more integrated cleanup and redevelopment approach. These include requirements and funding for integrative project planning (up to $200K), increased subsidies for redevelopment elements, such as economic development or habitat restoration. These changes are likely to increase the number of brownfields projects in the State.

Multiple sources of funding are available, but the funding under the programs for each project are limited, and most projects require multiple funding sources to make them viable. No program

exists in the State to assist public or private developers to learn about these programs, or to review the programs for eligibility and provide assistance with applications.

Risk Management and Environmental Insurance

Environmental insurance protects against environmental risks by calculating risk, and transferring it to the insurer through payment of a one-time premium. Many different kinds of environmental insurance exist, but three main types have been the focus of federal and state programs: pollution liability, cost cap and lender liability insurance. While pollution liability insurance protects against liability and third party claims, as well as previously unknown pre-existing pollution, re-openers, etc., cost cap insurance protects against the uncertainty of cleanup costs. Lender pollution liability protects lenders in the case of loan defaults. Four states have developed environmental insurance programs. Massachusetts's program provides up to 50% premium subsidy for qualifying brownfields projects open to both public and private parties. Recent research confirms the preference of private developers for affordable pollution liability and cost cap insurance programs over other public subsidies.

In Washington State, developers of brownfields projects without environmental insurance can obtain very good pollution liability and cost variability protection through the formal process by entering into a consent decree. Agreed orders also provide some good measure of liability protection. Under the VCP approach, an NFA letter provides a good measure of protection from liability after cleanup, but opinion letters do not address cost variability or pollution liability issues before cleanup is completed. For these protections, developers must turn to environmental insurance. EPA grants and loans, and the State remedial action grants, as of 2007, recognize environmental insurance premiums as eligible expenses. Washington, however, lacks a program, such as Massachusetts's or Wisconsin's, to assist private developers with the costs of environmental insurance.

Chapter 4. State Profiles

California, Colorado, Massachusetts, New Jersey, Oregon, Wisconsin

California has a complex interagency program with two state agencies, the Department of Toxic Substances Control, and the State Water Quality Control Board and its regional agencies, as well as state authorized local agencies including redevelopment agencies, handling the cleanup aspect, and its financial incentives. The state offers a statutory definition of brownfields and

recognizes the importance of brownfields in several statutes. It provides liability relief for qualified innocent landowners, bona fide purchases, and contiguous property owners, as well as prospective purchaser agreements. It has a VCP program and a registry of environmental assessors (a variation of the Massachusetts Licensed Site Professionals (LSP) program), and authorizes these licensed professionals to conduct one or more aspects of site investigation and remedial action. It provides limited state funds for assessment and cleanup of petroleum USTs to owners and eligible prospective buyers (public and private), and loans for assessment and cleanup for both public and private parties, through its CLEAN program. Innovative programs include the Schools assessment and cleanup program, environmental justice pilot programs, and its devolution of cleanup authority to local agencies, including redevelopment agencies.

Colorado's brownfields program was established as a VCP program through its 1994 Voluntary Cleanup and Redevelopment Act. Legislative relief consists of No Further Action letters at the end of the VCP process. Since 1994, no new legislation on brownfields has been passed, and guidance documents use the older EPA definition of brownfields. The program performs targeted site assessments on a priority basis and has a revolving loan fund available to public and private parties. Colorado offers a brownfields tax credit. An innovative feature of the program is its use of the Colorado Brownfields Foundation, a non-profit to provide outreach, and other redevelopment assistance including an environmental resource hot line.

Massachusetts has no codified definition of brownfields, but the "so called" Brownfields Act (1998) sets out liability relief for several types of eligible parties, including innocent owners, tenants, municipalities, redevelopment agencies and secured lenders, as well as Covenants Not To Sue for temporary solutions to cleanup. Its voluntary program is privatized through the Licensed Site Professionals program, which licenses site professionals and devolves cleanup authority to these licensed professionals, retaining auditing oversight. Massachusetts provides several financial incentives, including its Brownfields Redevelopment Fund, which includes site assessment grants for local governments, a revolving loan fund for site assessments and remediation available to eligible parties, including private parties, as well as the state's Brownfields Tax Credits, and its subsidized environmental insurance program.

***New Jersey*'s** VCP program dates from 1992, and in 1998, the state passed the Brownfield and Contaminated Site Remediation Act, which uses the older EPA definition of brownfields. It provides liability relief through No Further Action letters and prospective purchaser agreements. Its Cleanup Stars Program is a registry of environmental professionals who are pre-qualified to investigate and remediate low-priority sites with limited oversight. Legislation introduced in the NJ

legislature is likely to move the Cleanup Stars program into a full-scale LSP program. NJ offers several financial incentives: grants for both municipalities and the private sector for assessment and remediation; loans for up to 100% of remediation with different loan caps for both public and private entities; Brownfields Development Area funding for municipalities and their partners to address multiple-site area wide revitalization efforts. NJ also developed the first tax reimbursement program in the country for non-liable parties. The state also maintains an inventory of brownfields, SiteMart, to facilitate the economic redevelopment of such sites. Most recently, the State's Economic Growth Strategy incorporates brownfields cleanup and redevelopment as a key strategy in its plans.

The home of ***Oregon's*** brownfields program is the Department of Environmental Quality. Like Washington State, Oregon has both a VCP program and an Independent Remedial Action pathway. Oregon's liability relief consists of No Further Action letters for VCP participants and prospective purchaser agreements. Oregon uses EPA's newer definition of brownfields. Financial incentives, primarily loans, are administered by the State's Community Development Division.

With the passage of its Land Recycling Act in 1994, ***Wisconsin*** began to integrate the cleanup and redevelopment of brownfields. It has developed several institutional innovations aimed at coordinating multi-agency functions, including a blue-ribbon committee, the Brownfields Study Group which provides recommendations to the Legislature and the Governor; an Interagency Policy Group which meets on a monthly basis; and interagency Green Team Meetings that provide coordinated outreach to local communities, their consultants, and private partners. It provides liability relief for local governments, lenders, neighbors, as well as a liability exemption for voluntary cleanups. In addition to more traditional financial incentives, the Wisconsin program has also developed an innovative Environmental Remediation Tax Increment District (ER TIF) program, and has negotiated an environmental insurance program which provides discounts on premiums.

Issues/Trends

Outreach, especially to rural communities, remains a problem for many of the programs studied. The state programs examined have developed several innovations to address this issue. Colorado uses a non-profit foundation, in contract to the State to provide outreach. In Wisconsin, the requirement that a minimum number of brownfields grant be awarded to communities with a population less than 30,000, has provided an incentive for program staff to conduct outreach and education in less urban areas.

Most programs remain site-specific. New Jersey provides an area-wide program for local communities with substantial financial incentives, the Brownfields Development Area Initiative,

which follows closely the ASTM Guide for sustainable brownfields cleanup and redevelopment, emphasizing community engagement and planning. Through less direct means, Wisconsin enables an area-wide approach through ER TIFs, and California does the same by enabling local governments, including redevelopment agencies to manage the cleanup process. The benefits of area-wide approaches are at least three-fold: economies of scale at the technical or engineering level, as well as from risk pooling; community-wide involvement and planning; public benefits, such as the increase in property values and tax revenues over an entire neighborhood.

State programs that license site professionals to undertake cleanup activities with minimum state oversight have been developed to tackle large backlogs in toxics cleanup agencies. The programs have two elements, the licensing of professionals, and the extent of privatization of cleanup activities. Separate from the privatizing aspect, the licensing of professionals addresses EPA's new AAI requirement that licensed environmental professionals prepare AAIs. The devolution of state oversight to such professionals can be determined by the state from nearly total to programs restricted to specific types of sites.

State programs examined have shifted from 1st generation strict state oversight programs to 2nd generation, more customer-oriented programs, such as Voluntary Cleanup Programs, and have achieved varying degrees of integration of their cleanup and redevelopment functions. Most programs have passed laws that emphasize reuse and redevelopment aspects of brownfields; provide a definition of brownfields in their statutes and guidance documents; and offer various measures of liability relief and financial incentives. Since cleanup and redevelopment efforts typically take place in different state agencies, interagency coordination remains a challenge for most programs. A third generation type of program may be emerging, e.g., New Jersey, with distinctive programs enabling area-wide, community planning efforts, and state-level strategies to return brownfields to community use.

Chapter 5 Brownfields Case Studies in Washington State

Summary of Cases

Broadway Crossing, Seattle. This small urban infill site (less than 1/3 of an acre), former gasoline station and convenience store on the corner of the main street in Seattle's Capitol Hill neighborhood was cleaned up and redeveloped into a mixed used project, with a new Walgreens on the ground level and 44 low-income rental units above. The soil on the site had been contaminated by leaking petroleum tanks, and the cleanup, which occurred in two phases after the gasoline station

ceased operations, was straight-forward since the level of contamination was low, and there was no groundwater involvement. The success of the project involved a unique private and non-profit partnership: Walgreens, who originally bought the site from the gas station owner, and intended the site for a new store; its local developer, Grainger, who understood Walgreens needs and the local planning and community development environment; and, CHH, a local community development corporation with solid experience in developing and managing affordable housing. Although Walgreens, at first, just wanted to develop the site as its typical one-story footprint, community opposition to this plan led to the project's revision. The local developer brought in CHH, which put together a financing package that included low-income tax credits for the housing part of the project. The cleanup was handled through the VCP process in two phases. Chevron excavated and disposed of much of the contaminated soil in 2003, after it ceased operations, and was granted a Partial Sufficiency with a Further Action letter. The local developer for Walgreens, Grainger, assumed responsibility for the final cleanup at the time of construction for the new development in 2005. The major glitch in the process was the discovery of more contaminated soil on the site, as the project site was being excavated for a two-story underground garage. This tripled Grainger's estimated cleanup costs. But the ability to excavate the contaminated soil in tandem with the excavation for the garage (a 'two-fer') and the strong market conditions, enabled the developer to complete the cleanup successfully. The public benefit, 44 low-income rental units, achieved by the redevelopment was to a large extent the outcome of Seattle's strong neighborhood planning and participation tradition. This tradition, brought home to the developers through the local design review board, convinced the local developer and Walgreens that, in order to win City approval for its new store, it needed to meet the neighborhood's planning objectives for denser, mixed use development, especially its need for low-income rental units.

J.H. Baxter Site, Renton. Industrial lumber uses contaminated the 20 acre J.H. Baxter site which is located on the eastern shores of Lake Washington in Renton. The site is the northernmost portion of a larger 60 acre site, called Port Quendell, which was divided into three main parcels sharing a common pollution history, and two owners during the 1990s. The cleanup and redevelopment of the J.H. Baxter site was likely delayed by the prospects of assembling and cleaning up the three sites making up Port Quendell to make way for a mega-project mixing residential and commercial uses on the lakefront. Serious plans for such a mega-project were developed in the early 1980s, but contamination discovered on the site put the project on hold, while EPA considered whether to declare the site a Superfund site. When EPA in 1986 decided against Superfund designation for Port Quendell, Ecology took jurisdiction and tried to enforce the owners

to undertake remedial investigations and cleanup the sites. In the late 1990s, Vulcan, Inc., a real estate development company owned by Paul Allen, revived the mega-project plans, and began to negotiate the acquisition of the 3 parcels. Vulcan established a subsidiary, the Port Quendall Company (PQC) to develop the project. But a mega-development on Renton's waterfront would have required addressing lack of highway interchange capacity and a railroad right of way slicing the eastern edge of all three properties. Enlisting Vulcan's help, the City of Renton went to work on this problem, conducting transportation studies and lobbying the state. It also devised a plan to buy the middle, most polluted parcel in Port Quendall for $0 in exchange for cleanup of the site, to ensure the assembly of the land for the project, and to reduce the cleanup burden of the developers. But it was not to be. Negotiations between PQC and the owner of the southernmost parcel broke down. However, PQC went forward with its interest in the Baxter property, entered into a prospective purchaser agreement with Ecology, and bought the J.H. Baxter site in 2000. PQC agreed to assume responsibility for cleaning up the site. The Baxter family had carried out remedial investigations on the site, and PQC was able to develop a CAP based on this earlier work. The site most likely would have been developed as a smaller-scale mixed used project, but then in 2001, the market suffered a recession, and it was no longer clear what would be feasible for the site. PQC, however, carried out the cleanup without a definite redevelopment plan, until another of Paul Allen's companies, the Seahawks, came up with the idea of a practice facility and headquarters for the property. In 2006, PQC announced these plans, and the Seahawks moved in for spring training in 2008. Around this time, the owner of the southernmost parcel cleaned up his land and sold it to a residential developer, who subsequently developed the site into luxury waterfront homes, while the most polluted middle parcel has been declared a Superfund site. The JH Baxter case illustrates the challenges local governments face in ensuring integrated redevelopment when facing large-scale, multi-property, multi-site brownfields. It also offers insights on the influence of market conditions, type of developer, and local strategies on brownfields redevelopment.

ASARCO, Everett. In this complicated and litigious case, the American Smelting and Refining Company (ASARCO) Incorporated, the responsible party in the case, acquired an existing smelter on a 44-acre site in 1903, ceased operations in 1912, and dismantled the smelter by 1915. Around this time, ASARCO began to sell off the property in several parcels to several buyers without informing them of the former use of the site. Over time, a neighborhood with residential and other uses developed on the former smelter site and its surroundings. In 1990, Weyerhaeuser, the owner of one of the parcels on the former smelter site discovered some suspicious slag and informed Ecology. Upon conducting an initial investigation, Ecology found that a total of 684 acres

showed some contamination, with the heaviest contamination around the historic site of the smelter. In 1992, Ecology issued the first of six enforcement orders to ASARCO, as the responsible party, requesting that the company conduct a full RI/FS. At about the same time, ASARCO began to buy back residences in the historic smelter tract, to tear down the houses, and to fence the area (the Fenced Area). In September 1995, ASARCO delivered the RI/FS which confirmed the presence of arsenic, cadmium and lead in the soil, and arsenic and lead in groundwater and surface water above standards, and continued to buy out residences. In 1996, ASARCO presented a phased framework for conducting cleanup on the site, Ecology agreed with much of the plan which called for removal of the most contaminated soil, but not with the phasing. This was followed by more enforcement orders, mediation, litigation, finally a court injunction for ASARCO to begin cleanup of the most contaminated soil by June, 2004 and to complete it by August of 2004.

ASARCO, at the time, was a besieged company, facing 25 lawsuits in 12 states. As a result of a federal EPA suit against the company, which had been bought in 1999 by Grupo Mexico(headquartered in Mexico City), ASARCO/Grupo Mexico had to pay $100 million into an Environmental Trust Fund with proceeds from Grupo Mexico/ASARCO to pay for ASARCO's liability claims in the U.S. At the same time ASARCO was dealing with the Everett case, it was also embroiled in the much larger and complex Superfund case in Ruston, WA, where it had formerly operated another polluting smelter. The Superfund case was led by EPA. The Everett smelter case became entangled with the Ruston case in at least two ways: first, ASARCO proposed to dispose of the excavated soil from the Everett case by disposing it in the Ruston site, after it disposed of the contaminated soil from the Ruston site (this disposal plan, according to ASARCO would save it $3 million), but the Everett disposal plan required EPA approval; second, ASARCO was counting on at least $1million to be released from its Environmental Trust Fund to conduct the cleanup at the Everett site, but EPA had to approve ASARCO's disposal plan for Ruston, and then its plan for Everett before it approved disbursal from the Environmental Trust Fund. Consequently, even though the Everett Asarco case was not a Superfund site with EPA oversight, it depended on EPA decisions in order for the responsible party to move forward with the cleanup.

ASARCO through the legal suits it brought against the State (which limited its liability to its historic smelter property), and finally by declaring bankruptcy (which prohibits expending cleanup funds on property the bankrupt company does not own) was able to avoid responsibility at the time for cleanup of the larger contaminated site. The company, did, however, finally clean up the most contaminated soils in its former historic property through the propitious intervention of the Everett Housing Authority (EHA). In December of 2003, EHA agreed to buy for $3.3 million the land

inside the fence and homes outside the fence that ASARCO had acquired, ASARCO agreed to remove the most contaminated land in the site, and EHA agreed to contribute to ASARCO's cleanup costs and to assume the remaining costs of the cleanup of the historic smelter area (not the greater site) after ASARCO's removal of the most contaminated soil. Ecology issued two prospective purchaser agreements with EHA providing it with liability protections in April 2004. The prospective purchaser agreements resulted in the release to ASARCO of $1M from the Trust Fund, and EHA contributed another $1million obtained as a match from Ecology to ASARCO's cleanup expenses. This infusion of funds helped ASARCO meet the deadlines in the injunction to begin cleanup in June 2004, and complete it by end of October 2004. None too soon, since ASARCO filed for bankruptcy protection less than a year later in August of 2005. The same month, the City approved EHA's sale of a seven-acre parcel of the land it bought from ASARCO to a developer for $3.2 million. In order for the developer to proceed with the medium density residential development he had proposed for the site, EHA had to complete the cleanup of the site. This cost an additional $900K to which the City of Everett and EHA contributed $450K and Ecology contributed $450K in matching grant funds. The sale went through in January of 2006, and the city approved the developer's plans. Bonterra Homes constructed a total of 90 units in 2-,3-,4-unit townhouses on the site. As to the larger, less contaminated site, much of it still remains contaminated. Ecology has proceeded to clean up this area at a manageable pace, since the State has had to assume the costs of cleanup.

Washington State has filed a total claim of $600 million against ASARCO, more than half of it associated with the Ruston Superfund Site. In the meanwhile, ASARCO's bankruptcy case has been wending its way through federal bankruptcy court and some relief may be in sight. In August of 2008, ASARCO agreed, pending federal bankruptcy court approval, to pay $200 million to Washington State to clean up the toxic contamination around the Ruston site, and six other sites in Washington State, including the Everett site.

Wyckoff Site, Bainbridge Island. This 50 acre upland property, including its aquifer, is part of a 500 acre Eagle Harbor/Wyckoff Superfund site designated by EPA in 1987 in the City of Bainbridge Island. The rest of the Superfund site is aquatic, including the East and West sides of Eagle Harbor. Lumber and shipbuilding activities using creosote from 1904 to 1988 contaminated the Wyckoff property, and the Harbor, primarily with PAHs. The Superfund site is a complex site in that it involves land, aquifers, marine sediments and aquatic areas. EPA held the Wyckoff Company, which had operated a wood treatment facility on the property from the mid-1960s to its closure in 1988, liable for the contamination. After the Wyckoff Company settled its liability with

EPA by transferring all its assets, including the land, into an environmental cleanup trust, the trust auctioned off the land to partly pay for the site's cleanup. This settlement left EPA responsible for the cleanup of the Superfund site, and the City of Bainbridge Island began a phased purchase of the Wyckoff property in 2001 after EPA had conducted a certain amount of cleanup. The City, which undertook a strong participatory visioning and planning process for the property, was successful in finding partners and funding for the purchase of the property and the redevelopment of the property into parkland, including a memorial park recognizing the internment of Japanese Americans during WWII. The City obtained prospective purchaser agreements from EPA and Ecology to protect its future liability. In this Superfund case, the City's redevelopment of this complex site has relied on EPA to carry out the remedial investigations and cleanup of the Wyckoff property. The cleanup is now complete, except for the final cleanup of the most polluted parcel, Bill Point. The City and Ecology on the one side and EPA on the other have disagreed over the final cleanup of this parcel. EPA, having spent over $125 million on the cleanup of the overall Superfund site, has selected a containment method for cleaning up the remainder of the Wyckoff property that will require maintenance and operations for decades and cost in the tens of millions. Maintenance and operations cost would be the responsibility of Ecology and the City. Ecology and the City have argued for more complete cleanup methods with fewer requirements for ongoing maintenance and operations. Although the City has purchased environmental insurance, insurance has a time limit, and depending on the final cleanup strategy, the City may be faced with additional costs for cleanup 20 or more years in the future. As a Superfund case with EPA managing the cleanup and a local government the redevelopment, this case illustrates the different and potentially conflicting interests of federal and state and local governments. As importantly, the case demonstrates the benefits of a strong participatory community planning process in the cleanup and redevelopment of a contaminated site. The City led and conducted an extensive citizen participation and visioning process, which led to successful negotiations with EPA on the purchase of the property, and in its ability to enter into useful partnerships, to raise funds, and obtain federal and state grants.

Custom Plywood, Anacortes. This waterfront site on the western shores of Fidalgo Bay in Anacortes has had multiple waterfront industrial uses since 1900, from sawmill, box factory, to its last use as a plywood mill, which ceased operations in 1992. Soon after, the site was devastated by a fire. The contaminated site is composed of 8 parcels and is estimated to be 6 acres of upland, and 28 acres of aquatics. Pollution from industrial operations included oil and gasoline, arsenic, cadmium, lead, chromium, and PCBs. Several scientific samples from 1993-2000 revealed levels of these toxics above MTCA standards. Since 2002, there have been several attempts to cleanup the site

without success thus far. In 2002, the City of Anacortes organized itself to develop a plan for cleanup and redevelopment of the site by establishing a public development authority for this purpose. The city devised a phased approach to the cleanup, partnering with the new development authority and the landowners to cleanup first the upland area, sell the land after cleanup, and then use the City's portion of the land sale to clean up the aquatic part of the site. In order to do this, the City needed Ecology to provide liability protection through a consent decree, but Ecology did not agree, and the City also failed to come to an agreement with the landowners. Subsequently, a new owner, Concorde, was willing to cleanup the site through a consent decree, but needed financial help. Lacking funds, at first, Ecology steered him to the VCP pathway, but within a year decided that the site was too complex to handle through the VCP. Confusion over eligibility for grant and loan funds from CTED under the two administrative pathways also played a part in delaying the process. Finally, in late 2007, Ecology negotiated an Agreed Order with Concorde that the company would conduct an RI/FS and draft a CAP. But by December of 2007, another company acquired the site, and this new company is currently negotiating an Agreed Order with Ecology.

Jimmycomelately Creek, Jamestown S'Klellam Tribe. The Jimmycomelately Creek (JCL) cleanup and restoration was part of a larger restoration project of wildlife habitats in Sequim Bay, off Washington's Olympic Peninsula. From 1892-2001, the mouth of the JCL Creek was used for storage and shipping of logs. Logs were tied to pilings, and pilings (about 100), were treated with creosote, which is composed primarily of PAHs. This area comprised 7.6 aquatic acres out of the 15.4 square miles of the total JCL watershed. In the late 1990s, the Tribe, with the assistance of Washington's Department of Fish and Wildlife, and of Transportation began to acquire land and easements with the purpose of restoring the Creek. The cleanup phase of the project took about two years to complete (2003-2005). The site was cleaned up under Tribal jurisdiction with US EPA and other federal agencies' oversight. This is a case illustrating the restoration of a rural industrial site to improve the aquatic environment for endangered salmon, and other species. It involved the Tribe's collaboration with multiple state and federal agencies in a multi-phased area-wide planning financing process. The case also indicated the lack of State water quality standards for total PAH contamination levels—the project used NOAA standards, and the lack of information on the horizontal distribution of contamination in aquatic sites.

Kendall Yards, Spokane. Operated as a Union Pacific locomotive repair and servicing complex from 1914 to 1955, the 78 acre Kendall Yards site was primarily contaminated by leaks and spills of Bunker C oil. The site was also contaminated with metals such as arsenic, cadmium, and lead. After Union Pacific ceased operations, the rail corridors were abandoned over a period of time

through the 1980s. The 14-parcel property then came under the ownership of Metropolitan Mortgage and Securities Company. Planning for a mixed development on the site, Metropolitan conducted a Phase I and II ESA for parcels 1-2 in 1990-91, and in 1992, conducted additional sampling for most of the 14 parcels. Independently from Ecology, and without its supervision, Metropolitan developed a Cleanup Action Plan in 1993-94 for the site, and some remedial activities took place at the time. In 2004, Metropolitan declared bankruptcy and the site was auctioned off in bankruptcy court to Marshall Chesrown of River Front Properties. Chesrown planned to reuse the site as a mixed use development, very much in line with Metropolitan's plans for the site, and began to plan the cleanup for unrestricted uses on the site right away. In May of 2005, the site began the cleanup process by entering the VCP pathway. The developer obtained a $2.4 M loan from CTED's Revolving Loan Fund, and the planning of the cleanup was completed within 6 months. Cleanup began on September 2005, and was completed in January 2006. 22,000 tons of contaminated soil was removed from the site. The site was removed from the State's Hazardous Sites list in May of 2006. At the time, the developer planned 2,600 units and one million square feet of retail and commercial space. The cleanup and redevelopment of the site is an excellent example of collaboration between a private sector developer and state and local agencies, and EPA in 2006, gave the project a national award for outstanding remediation activities. The positive relations with the City, and other city and civic entities led the City to approve in 2007 a tax increment district to finance part of the cost of the development's infrastructure. The softening of the real estate market in the past year or so, however, has delayed the start of construction of the project to at least 2009, and forced the cutting back of phase I. Site preparation and construction of infrastructure, including streets is proceeding through the end of 2008.

Chevron Bulk Terminal, Morton. The Chevron Bulk Terminal site is a one-acre site divided into two parcels with different owners in the small rural town of Morton. Chevron maintained a bulk facility with rail and then truck distribution facilities from 1929 to 1982. Twenty years after Chevron ceased operations on the site, in 2003, a citizen call alerted Ecology to potential pollution on the site. Once Ecology conducted an initial investigation, it took about three and a half years to cleanup one of the parcels on the site for which Chevron assumed liability under an enforcement order. The other parcel, with unknown and deceased PLPs, is also contaminated, but has not been cleaned up. At the time of discovery, the city had various community plans for economic revitalization, including the attraction of tourists. Two of the town's economic development goals were to restore a historic train depot as part of its tourism strategy (a project of the Cowlitz River Valley Historic Society (CRVHS)), and to expand rail service through the area. The location of the

historic train depot, however, stood in the way of train service expansion, and the CRVHS seized the opportunity to relocate the train depot to one of the parcels, the one undergoing cleanup. CRVHS bought the parcel in 2005. The Morton site was processed through the formal pathway, and facilitated on the town's side by a project coordinator hired by the Historic Society, who coordinated the process with Ecology and the town's multiple agency partners, as well as secured funding for the project.

Length of the Cleanup Process

The cases varied in length from initiation to completed cleanup, with two of them taking about 3 years, Broadway Crossing, Seattle, a VCP case, and the Chevron, Morton case, a formal case. The ASARCO, Everett case, from the first enforcement order in 1992 to the completed cleanup of the most polluted area of the site took 12 years, but most of the site is still polluted, and Ecology is still cleaning up the larger site. Scientific samples showing contamination above standards began to be drawn at the Custom Plywood site from 1993, but it was first listed on the State's Hazardous Sites List in 2001. Thus, depending on when initiation is perceived to begin, the site has been in process 15 or 7 years. The Wyckoff site was listed as a Superfund site in 1987, and cleanup continues as of 2008; the site has been in process 21 years and counting. The results of scientific samples drawn at the larger Port Quendall site in 1983, of which the JH Baxter property was part, indicated severe pollution. This prompted EPA to consider listing the site as a Superfund site. In 1992, Ecology decreed formal orders on the Baxter property, and the property was cleaned up by a new owner by 2005. Depending on when initiation is perceived, the site was in process either 22 years, or 13 years. Quendall Terminals, the most polluted property in the site, now a Superfund site is still not cleaned up, and thus it has been in process for 25 years and counting. Kendall Yards, under a new owner, entered the VCP process in 2005, and completed cleanup in 2006, record time. However, Metropolitan, the previous owner of the Kendall Yards site began an independent site assessment in 1990, and conducted considerable cleanup of the site. This previous work is an important factor in explaining the subsequent fast cleanup of the site.

Issues Raised by the Cases

1. ***Community Planning and Stakeholder Involvement.*** Community planning and stakeholder involvement, in various forms, were part of most of the successful cases studied. In the Broadway Crossing case, community-wide planning had taken place sometime before the

case, but a community group--a local design review board--brought the plan to bear on the developer's project, and successfully changed the project to provide a substantial public benefit. Community planning and stakeholder involvement was extensive in the Wyckoff, Jimmycomelately Creek, Kendall Yards, and Chevron cases. Community planning and stakeholder involvement was not as significant in the ASARCO, Everett case, the Custom Plywood case and the JH Baxter case, although the developer in the JH Baxter case conducted its own community involvement process.

2. ***Applicability of Area-wide, Multiple Site Approach.*** Several of the cases would have benefitted from an area-wide approach led by the city involved and benefiting from public incentives, e.g., JH Baxter; Custom Plywood, Anacortes; Chevron, Morton; Kendall Yards; and Wyckoff site. In effect, many of the cities involved in these cases developed their own area-wide processes, with uneven success, to deal with these sites.
3. ***Public-private Partnerships.*** Most of the cases involved beneficial public-private partnerships. In the ASARCO, Everett case, the Everett Housing Authority and the City of Everett negotiated a purchase deal with ASARCO that resulted in the cleanup of the most polluted area of the site. In the Broadway Crossing case, a national retailer, a local private developer, and a local community development corporation entered into a partnership resulting in the cleaning up of the site, and a successful redevelopment. In the Kendall Yards site, the partnership between the private developer and the City of Spokane led to the forming of a tax increment finance district to finance the infrastructure for the site. In the Morton case, the City and a non-profit, a local historical society entered into a successful partnership that managed the cleanup and redevelopment of part of the contaminated site.
4. ***Use of Financial Tools.*** Several cases illustrated the use or need of financial tools. A TIF used by Kendall Yards to partially finance the infrastructure needed for its redevelopment is a tool that could be used by other projects during strong market conditions. EHA obtained a remedial action grant from Ecology for $1.45 million to purchase the ASARCO property. Kendall Yards obtained a $2.4 million RLF loan from CTED, the largest EPA brownfields loan at the time. But this also indicates the lack of sufficient RLF capacity to help finance large-scale projects, for example, EHA's purchase of the ASARCO site. Instead, EHA obtained a line of credit for over $5 million from a private bank.
5. ***Market Conditions.*** Market conditions played an important role in several projects. Strong market conditions led EHA to purchase the ASARCO property, and enabled it to turn around and sell part of it to a private developer; the same strong conditions led the Kendall Yards

developer to purchase the property and clean it up with his own funds and Vulcan to pursue a mega-project in the 1990s in Port Quendall. Downturns in the market led to the abandonment of the mega-project at Port Quendall, and currently, are delaying or stopping the redevelopments at Kendall Yards and at the Everett site.

6. ***VCP versus Formal Process.*** Broadway Crossing benefited from the VCP process, it was a small site, with only soil contamination, and was able to complete the process in three years. The Morton site, although a small site benefited from the formal process in terms of liability protection. The new owner of the Kendall Yards project was able to complete the process in record time, but the site had already undergone a formal process and much cleanup in the 1990s. Thus, it is not clear whether a large site without such previous work could undergo the VCP process in such record time.
7. ***Issues of Coordination.*** Ecology led the ASARCO, Everett case, while EPA led the ASARCO, Ruston case. The two cases were intertwined, and it is not clear the extent of coordination between Ecology and EPA. In the Wyckoff case, there have been disagreements between Ecology and EPA on the final remedy for the most polluted parcel. In the Custom Plywood case, there was a lack of coordination between Ecology and CTED on which administrative pathway would be best for the owner to follow.
8. ***Infrastructure Limiting Redevelopment Options.*** In several of the cases studied, infrastructure capacity set limits to redevelopment options. In the JH Baxter case, transportation infrastructure problems were main obstacles to the mega-project concept. In Kendall Yards, infrastructure deficits would have been a problem, but the developer and the City agreed to designate the area a tax increment finance district to partly pay for the infrastructure required. The Wyckoff site lacked adequate infrastructure capacity for significant residential or commercial development.
9. ***Containment Strategies and O & M Costs and Risk.*** The Wyckoff site makes clear that containment strategies can have considerable operations and maintenance costs for owners for long periods of time, and face considerable risk of reopeners and natural resource damages. This is of particular concern for local governments that assume ownership of a site after cleanup.
10. ***From Brownfields to Greenfields or Bluewaters.*** Two of the cases, the Wyckoff property and the Jimmycomelately Creek site are good examples of contaminated areas returned to parklands or clean shorelines.

11. ***Lack of Power to Force Cleanup before Property Transfers.*** All the cases studied demonstrate the lack of statutory power to force the cleanup of, or at least to identify, brownfields before property is transferred. And yet all of the cases studied had historical industrial uses that release toxic pollutants. This lack of statutory power makes it more difficult to identify responsible parties early on, as well as allows the pollution to threaten public health and the environment for long periods of time.
12. ***Large Complex Sites with High Cleanup Costs.*** Large, complex sites with high cleanup costs are often beyond the ability of responsible parties, EPA and Ecology to cleanup. The Eagle Harbor/ Wyckoff site has cost EPA over $125 million so far, and the operations and maintenance costs for Ecology and the City are projected to be in the tens of millions. The ability of these agencies to clean up such sites may also depend on the lack of effective cleanup technology, as in the Eagle Harbor/Wyckoff site. Quendall Terminals, another heavily contaminated shoreline site may be very costly to cleanup. At the time of the mega-project concept, the cleanup was estimated to be more costly than the price of the land.

Chapter 6. Recommendations

Drawn from the findings on Washington State's program, the other state programs studied, and the Washington State case studies, the recommendations aim to shift Washington State's Toxics Cleanup Program from a first generation program with several second generation features, such as the VCP, to a third generation program with a strategic approach to brownfields at the state level, and a set of programs that enable local communities to deal comprehensively with the brownfields in their midst, and that facilitate cleanup and redevelopment by the private sector. A major objective of the recommendations is to address the length of the cleanup process and the backlog of brownfield properties in the State.

Recommendations on Statutory Changes

The State should develop and enact a new statute, a Brownfields *Revitalization Act*, to include :

1. *A definition of brownfields, following EPA's most recent definition, which acknowledges that any type of property can be a brownfield, not just industrial or commercial. Such recognition will enable the State program to provide staffing and direct funds for brownfields cleanup and redevelopment from the Toxics Accounts.*
2. *In general, the new Act should recognize the dual nature of the brownfields challenge, and the clear purpose of the statute should be to ensure the cleanup and reuse of brownfields.*
3. *The independent remedial action clause should be incorporated into the new Act and revised to include staff advice and assistance on redevelopment.*
4. *Transfer and Closure Clause. At minimum, this clause should require that prior to sale of property, or closure of operations, an owner with property used for industrial or commercial activities likely to release hazardous substances (a list of such activities should be pre-specified by the State) should notify Ecology of their intent to sell or close operations, of the contamination status of their property certified by an environmental professional (see Recommendation 7), and of the plans for cleanup of the property. Ecology can review and approve such transfers through a permit. More ambitiously, MTCA could require that property owners with contaminated properties cleanup such properties at the close of operations or before transfer, or certify that the buyer would cleanup such properties.*
5. *The proposed Brownfields Act should make a strong statement in its objectives and throughout the Act of the connection between the cleaning up and reuse of brownfields and the goals of growth management, as well as the brownfield connection with sustainable development. GMA should also be revised to acknowledge the problem of brownfields.*
6. *The proposed Act should include a clause establishing a community-wide process for local governments that face multiple brownfields and providing public incentives for this purpose, in particular, a new category of Remedial Action Grants. This community-wide program should be accompanied by a revision to GMA to include an optional brownfields reuse plan element for local comprehensive plans.(RCW36.70A.80)*
7. *The proposed Act could include liability relief as broad as protection for innocent brownfield redevelopers within areas designated by community brownfields plans, as well as to innocent redevelopment agencies, public authorities, and community development corporations. In the alternative, more particular forms of liability relief could be fashioned to address situations considered appropriate after careful study.*

8. *The State should establish a state licensing program for environmental site professionals. This will ensure the quality of site professionals through testing and continuing education and respond to EPA's new AAI Rule.*
9. *Beyond the licensing of professionals, the State should consider devolving the power to investigate, cleanup and certify simple cases of soil contamination that meet the standards of Method A for unrestricted uses, with the State retaining auditing authority.*

Recommendations on Administrative Changes

10. The State should consider establishing a one-stop shop for brownfields incorporating VCP technical staff from TCP, the current brownfields staff and CTED staff (both from the economic development and growth management divisions), to provide assistance with both cleanup and redevelopment aspects of the process, including permitting assistance.

11. To accomplish such an end, TCP should provide training on brownfields reuse and redevelopment, including on financial issues, to the more technically oriented site managers in the VCP and throughout TCP.

12. TCP should establish regular monthly meetings between brownfields staff in both Ecology and CTED, other relevant CTED staff and site managers to discuss status of cases and issues raised by the cases.

13. TCP should consider establishing a partnership with a non-profit, such as ECOSS, to provide brownfields outreach services throughout the State for both public and private parties.

Recommendations on Financing

14. CTED and Ecology should seek to substantially increase the capitalization of the State's Revolving Loan Fund.

15. The State should consider targeting a certain percentage of remedial action grants for small towns and rural communities.

16. The State should consider establishing an environmental insurance program.

17. The State should consider establishing a new brownfields reclamation purpose for tax increment financing districts. This can be accomplished by including the cleanup of contaminated land as a public improvement eligible for financing (RCW 39.89.02). Such

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Recommendations for a State Brownfields Strategy

18. The State should develop a State Brownfields Strategy to identify and cleanup and redevelop or return to their natural state the backlog of brownfields in the State. The Plan should set a timeline, increase funding, and financial tools to accomplish this.

National Initiative

19. The State should propose and lobby for a Brownfields Reclamation Corps as part of a national works program. The mission of the Corps would be to cleanup large, complex sites on the NPL list or which rank 1 and 2 in states' hazardous sites list.

The strategies included in the recommendations are meant to reduce the backlog of brownfields in the State, by requiring owners or operators as they stop activities that release hazardous substances to report and cleanup their sites, by licensing and authorizing site professionals to investigate and cleanup simple, lightly contaminated sites, by providing a process and public incentives for local governments to deal with multiple sites through a community planning process, by increasing staff focused on both cleanup and redevelopment, and by advocating the establishment of a National Brownfields Reclamation Corps to clean up large, complex sites. The State itself can coordinate and prioritize its own resources to confront the brownfields challenge by developing a state-wide strategy incorporating many of the recommendations proposed above. We see the reduction of the backlog of utmost importance for the sake of a more sustainable future where use and release of hazardous substances is minimized, and addressed as they occur, as well as to prepare for climate change, which is likely to increase the risks from contaminated sites.

INTRODUCTION

Toxics cleanup programs in state governments, the typical home of many brownfields programs, are situated within departments of environmental protection or ecology. State departments of environmental protection or ecology, developed in the 1970s spurred by the passage of the National Environmental Protection Act (NEPA), were conceived primarily as regulatory agencies with a heavy orientation towards enforcement, monitoring and compliance. These first generation programs had little connection to state or local economic development departments or programs. By the 1990s, several states, recognizing the negative market impacts of arguably inflexible programs and that brownfields policy requires an essential integration of cleanup and redevelopment efforts, began to develop "second generation" programs. These second generation programs, sharing the motivation and strategies of the reinventing government movement (Osborne and Gaebler 1992), incorporated more collaborative and market-oriented features. But several challenges remain, namely, administrative processes and adequate public incentives for multi-site community-wide efforts, and strategic, state-wide plans to address the backlog of brownfield sites. In this study, we develop the concept of "third generation programs", which incorporate features of first and second generation programs but emphasize community-wide planning and stakeholder involvement as well as state-level strategic planning for brownfields reclamation.

The purpose of this research is to examine how Washington State's regulatory processes and financial assistance as administered by the Department of Ecology's Toxic Cleanup Program (Ecology) effects the cleanup of brownfield sites and to make explicit recommendations for how this program might better facilitate integrated cleanup and redevelopment of Washington's brownfield properties. In order to do this, the study has investigated both federal and Washington state policies and processes; conducted studies of several state brownfields programs across the country to provide a basis for a comparative assessment of Washington's brownfields efforts; inventoried the financial programs available in the state for brownfields; and developed several case studies of recent cleanup and redevelopment efforts in Washington State to identify current issues and concerns.

This report is divided into six main sections or chapters as well as several appendices, including Appendix A, which provides an inventory and description of brownfields funding sources in Washington State:

- **Federal Policy Overview:** Chapter 1 provides the overall federal statutory and procedural framework, for current brownfields efforts in the State. It begins with a review of federal hazardous waste policy and its relation to brownfields policy, and then discusses the nature, definitions and policy issues concerning brownfields.

- **State Policy Overview:** Chapter 2 includes discussion of state statutes, reform efforts, and institutional challenges

- **Financial Resources:** The financial resources and risk management tools available for brownfields redevelopment in the State are briefly summarized in Chapter 3.

- **State Profiles:** Chapter 4 profiles brownfields program in the following states: California, Colorado, Massachusetts, New Jersey, Oregon and Wisconsin. These states were selected in consultation with the Department of Ecology, on the basis of proximity or maturity and innovativeness of programs. These profiles include key features of the programs including legal liability relief and financial incentives.

- **Washington Case Studies:** Chapter 5 presents case studies of the following: Broadway Crossing Broadway Crossing, Seattle; JH Baxter Property, Renton; Custom Plywood, Anacortes; Eagle Harbor/Wyckoff, Bainbridge Island; Holly Street Landfill/Whatcom Creek Restoration, Bellingham Bay; Kendall Yards, Spokane; Chevron Bulk Plan, Morton; Everett Smelter/Asarco Site; and the Jimmycomelately Creek Restoration Project. The case studies provide site and contamination history, key arrangements in the cleanup and redevelopment processes, including main parties involved, liability issues, cleanup, funding and development strategies, as well as an assessment of the strengths and weakness and lessons learned.

- **Recommendations:** Chapter 6 presents recommendations drawn from the issues and concerns emerging from the assessments of the policy context, case studies, state profiles, and existing funding.

Chapter 1. Federal and State Policy Overview

1.1 Superfund origins of brownfields policy

Brownfields policy must be understood in the broader context of the federal policy related to hazardous materials from which it evolved. Three major federal laws address the use, storage and disposal of hazardous substances:

- Toxics Substances Control Act of 1976, which regulates the registration and use of new hazardous chemicals manufactured by the chemical industry

- Resource Conservation and Recovery Act (RCRA) of 1976, which regulates the current disposal of hazardous waste into the air, water and land. It put into place tracking and permitting mechanisms and focused on enforcing responsible parties to clean up sites they contaminate.

- Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA) of 1980 or Superfund, prompted by several environmental disasters, in particular, the public outrage over the Love Canal incident, where a community was built atop a chemical waste dump site. CERCLA authorized the United States Environmental Protection Agency to respond to the release of hazardous substances into the environment, initiate investigations and cleanups, and take enforcement action against responsible parties.

The Resource Conservation and Recovery Act amended the Solid Waste Disposal Act of 1965, and gave EPA the authority to manage waste from "cradle to grave". (CFR Title 40, Parts 260-279; US EPA 2008d). The Act prohibited all open dumping of waste, provided guidelines for the safe management of municipal waste and encouraged recycling and source reduction. RCRA also authorizes EPA to cleanup environmental problems caused by the mismanagement of waste, and its corrective actions cover facilities that treat, store, and dispose of hazardous waste. Generally, RCRA cleanup actions are limited to facilities that have viable operators and ongoing operations.

CERCLA or Superfund is of particular importance for brownfields, because federal brownfields initiatives stem from Superfund amendments. The Superfund legislation was intended to address the problem that RCRA could not address—abandoned sites. Because no cleanup funds existed before Superfund, government could not do anything about contaminated sites where owners could not be found. Taxes on petroleum products and chemicals funded the initial $1.6 billion fund (Superfund) that was authorized under CERCLA. Superfund excludes petroleum products from the list of hazardous materials to which it applies.[1] The fund could only be used if EPA could not find the parties responsible for the contamination. (US EPA 2008c)

CERCLA was the first federal legislation to empower the federal government (EPA) to directly respond to uncontrolled releases of hazardous substances. EPA was authorized to respond directly through emergency cleanup actions or by ordering potentially responsible parties (PRPs) to respond. CERCLA also authorized EPA to conduct emergency cleanup at a site and then later sue PRPs for the costs associated with the cleanup and for natural resource damages. In the case of non-compliant PRPs, CERCLA authorized EPA to penalize up to three times the response and damage costs. EPA can attempt to collect any funds expended through demand letters, negotiations, administrative settlement, judicial settlement, and litigation. (US EPA 2008c)

Instead of direct regulation, whenever possible, CERCLA uses a liability regime historically applicable to "unduly dangerous activities" to ensure that the polluter or the responsible party pays. Under CERCLA, potentially liable parties fall into four main categories: a) current owners and/or operators; b) past owners and operators at the time of disposal of a hazardous substance; c) persons who arranged for treatment or disposal of hazardous substances; d) transporters of hazardous substances who selected the disposal site. Once potentially liable parties are identified, EPA can then impose strict, joint, and several liabilities. Strict liability means that "legal responsibility is imposed without regard to fault, and diligence generally is no defense." (US EPA 1992) Joint and several liability means that EPA can sue any individual for the entire costs of the cleanup regardless of the existence of other potentially liable parties. Concerns for potential liability under CERCLA continue to cloud the cleanup and redevelopment of contaminated property, although recent amendments have provided liability protections for innocent and other parties, as discussed below.

[1] RCRA addresses the storage and cleanup of underground storage tanks (USTs) containing petroleum and natural gas.

Because the funds were limited, Superfund required that eligible sites be identified and prioritized.[2] (US EPA 2008c) Several groups contributed to the list of sites that were identified as potentially eligible for cleanup under Superfund: state and local government officials, private citizens and citizen groups, hazardous waste handlers, and the EPA itself, which administers the program. At first, 8,000 sites were identified across the country, and compiled into an inventory called CERCLIS (Information Systems). This list was narrowed and sites were designated to a National Priorities List (NPL) through a hazardous ranking system (HRS), which is primarily based on existing or potential impact on groundwater.[3] Sites scoring 28.5 or higher qualify for the NPL, and those below the HRS threshold are left to the states for cleanup.[4] (US EPA 2008e; Rahm 1998) There are currently about 1,300 sites listed in the NPL, and 48 NPL sites in Washington State (US EPA 2008e). It is clear that the federal Superfund program is only dealing with a small fraction of total contaminated sites in the country, which are estimated in the hundreds of thousands. (US GAO 1987)[5]

Under CERCLA, states were allowed to create standards for cleaning up hazardous waste sites within their borders which were not included in the National Priority List. In addition, several states enacted "mini-Superfund" legislation which applied CERCLA principles under state law. Some states adopted standards even more demanding than the standards used to create CERCLA's NPL. Washington State, like many states across the country passed its version of Superfund in 1989 (through a voter initiative) entitled the Model Toxics Control Act (MTCA), which governs the toxics cleanup program administered by Ecology. MTCA established a Toxics fund, like Superfund, funded by a tax on petroleum and hazardous substances, and established processes to identify and prioritize the cleanup of hazardous sites posing the highest risk to public health. Notably, unlike CERCLA, MTCA included petroleum products within the focus of the Act, thereby defining countless additional sites, such as gas stations, as candidates for legally required cleanups.

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[2] CERCLA required that the National Oil and Hazardous Substances Pollution Contingency Plan, called for by the 1973 amendments to the Clean Water Act, include a list of national priorities among the known or threatened releases of hazardous substances, pollutants or contaminants in the US. NPL is that list. It is incorporated into the Plan as Appendix B of 40 CFR Part 300.

[3] NPL requires an annual update and report to Congress.

[4] There are two other ways for sites to be listed in the NPL: a) Each state can designate a single site regardless of HRS score that it deems of highest priority; b) regardless of HRS score, if the Agency for Toxic Substances and Disease Registry (ATSDR) of US Public Health Service issues a health advisory that recommends human evacuation and EPA agrees. Qualifying for the NPL on the basis of HRS score does not guarantee a listing on the NPL. EPA requires concurrence from a state's governor to list a qualifying site on the NPL. (US EPA 2008e)

[5] Note also that CERCLA does not incorporate a process for discovering contaminated sites; it relies on the reports of various interested parties, including EPA, and state and local governments, among others.

1.1.1 CERCLA reform efforts

CERCLA was amended in 1986 through the Superfund Amendments and Reauthorization Act (SARA), which increased the trust fund to $8.5 billion, reauthorized the program through 1991, broadened public participation, and established strict cleanup goals, including the use of permanent solutions. States and local governments were required to pay 10% of cleanup costs for private sites, and 50% for sites operated by contractors for state or local governments. SARA also added a liability protection for innocent purchasers who acquire real estate without knowledge of hazards on the site and who do nothing to contribute to contamination of a site. To qualify for the innocent landowner defense, a purchaser must have undertaken at the time of acquiring the property an "all appropriate inquiry" (AAI) into previous ownership and uses of the property. (US EPA 2007c) What constitutes an "all appropriate inquiry" was addressed further in the 2001-2002 CERCLA amendments.

SARA introduced other changes to the Superfund program based on the lessons learned during the program's first six years. The 1986 Superfund amendments had the following impact on removal actions:

- Raised the limits on removal actions from six months to one year and from $1 million to $2 million;
- Authorized a waiver to the new time and cost limits if an added expenditure of time or money would be consistent with the long-term goals of a planned remedial action;
- Introduced a provision that all short-term removal actions must be designed to contribute to efficient performance of any long-term remedial action;
- Mandated that hazardous waste targeted for removal to a new site should go only to sites in compliance with strict Resource Conservation and Recovery Act standards.
- Authorized EPA to reimburse local governments for costs incurred in carrying out temporary emergency measures in response to hazardous substance incidents. (US EPA 2007c)

1.1.2 Brownfields initiatives under CERCLA

In 1993, EPA developed a Brownfields Economic Development Initiative to address sites that may be contaminated by hazardous substances but do not pose the type of public health risk as the sites listed in the NPL. EPA defined brownfields as "abandoned, idled or under-used industrial

and commercial facilities where expansion and redevelopment is complicated by real or perceived environmental contamination". (US EPA 1995) For the next four years, EPA funded its brownfields initiative through the Superfund appropriations. Beginning in FY1997, the EPA brownfields program received its own line in EPA appropriations. (Reisch 2001)

In addition, in 1997, EPA also recognized the utility of the voluntary cleanup program (VCP) approach initiated by several states to deal with the sheer number of brownfields by disseminating a Guidance document. (US EPA 1997) State voluntary cleanup programs, which began emerging in the early 1990s, were created by the states to address contaminated property which posed lower public health and environmental risk. These programs permitted "private-initiated cleanups" to proceed with varying levels of state oversight and enforcement conditions. VCPs provided less extensive administrative processes than the State statutory programs modeled on Superfund which targeted the higher priority sites. In essence, VCPs were widely seen as programs addressing the brownfields problem on smaller, more easily managed sites. However, it was not until the passage in 2002 of the Small Business Liability Relief and Brownfields Revitalization Act (BRERA but also known as the Brownfields Act) that a separate brownfields program was established at EPA. The Act authorized $250 million in grants funds each year through 2006. (US Public Law 2002)

The Brownfields Act also provided liability safeguards to bona fide prospective purchasers (BFPP) of potentially contaminated sites who acquired ownership of such properties after the passage of the Brownfields Act, provided such prospective purchasers met several conditions.[6] With the passage of the Brownfields Act, several groups could claim liability protections--bona fide prospective purchases, contiguous property owners and innocent landowners--if they met the threshold criteria of performing an "all appropriate inquiry". In addition, another act of Congress in 1996 had provided a secured creditor exemption, which removed lenders from the definition of "owner" or "operator" under CERCLA, as long as the lending agency did not participate in the management of the facility.[7] The creditor exemption is crucial for brownfields redevelopment since without it, banks faced the risk of becoming potentially liable parties as holders of mortgages upon

[6] The conditions are the following, a prospective purchaser: 1) purchased the property after the disposal of the hazardous substance; 2) make an all appropriate inquiry regarding prior use and ownership of the site; 3) provide all legally required notices of discovery or release of contaminant; 4) exercise appropriate care in preventing continuing release, potential release, or environmental and human exposure to previous releases of hazardous substances; 5) provide access and cooperation to individuals cleaning up the site: 6) not impeding the performance of a response action on the site; 7) comply with requests and subpoenas issued under the Act: and 8) is neither directly nor indirectly liable for response costs associated with the facility. (US Public Law 2002)

[7] The Asset, Conservation, Lender Liability, and Deposit Insurance Protection Act (Asset Conservation Act) of 1996. (US Code 1996)

foreclosures. [8] The Brownfields Act, also, required EPA to develop a permanent "all appropriate inquiry" standard by January 2004, which actually became effective on November 1, 2006. (US Public Law 2002)

The criteria contained in the "all appropriate inquiry" standard are crucial for reducing liability risks in the cleanup and redevelopment of brownfields. Before the enactment of the standard, an "all appropriate inquiry" was defined in terms of whether the inquiry was conducted "in accordance with generally accepted good commercial and customary standards and practices".[9] The AAI standard includes several major changes from previous practice. Under the new standards, the initial investigation is to be conducted by an Environmental Professional[10]; the interviews to be conducted include a broader range of individuals with experience on the property; visual inspections of the adjoining properties are also required; the environmental professional needs to take into account other factors in his inquiry, such as the relationship of the purchase price to the value of the property; and the AAI has a defined shelf life (if the report is older than 6 months, then additional inquiry needs to be performed, if older than one year, then all the information needs to be updated), By following the AAI rule, buyers and neighbors of potentially contaminated property can qualify for liability protection under CERCLA[11], and the rule is also being used by EPA to judge eligibility for brownfields site characterization and assessments grants. (US EPA 2008a; Winston and Strawn 2005; Schnapf 2007)

Brownfields federal policy thus grew out of the recognition that Superfund cleanup funds could only be applied to a fraction of contaminated sites, those that posed the highest risk to public health. Since state programs closely mirrored the Superfund program, both federal and state programs were aimed at responding to the worst contaminated sites, and neglected the less contaminated ones. In addition, the early liability requirements of Superfund geared to ensure that the "polluter pays" had the unintended consequence of aggravating the brownfields problem by

[8] Lenders were apprehensive to lend to industrial and commercial properties during the 1980s and 1990s due to the liability protections under CERCLA until the 1996 amendments. (Ireland 1991)

[9] In effect, the condition was met if the investigation met the standard promulgated by the American Society of Testing and Materials for initial investigations of potentially contaminated property (ASTM E 1527-00). The new AAI standard expanded the scope of the ASTM standard and ASTM had to revise its old standard to achieve compliance with EPA's new standard. EPA recognizes the new ASTM standard (ASTM E1527-05) to be consistent with the AAI Rule. (ASTM 2000, 2005; Winston and Strawn 2005)

[10] Defined as "a person who possesses sufficient specific education, training and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases…on, at, in, or to a property, sufficient to meet the objectives and performance factors." US EPA 2008a)

[11] As already indicated these liability protections extend to "innocent purchasers"; "bona fide prospective purchasers"; and for property owners where the contamination stems from "contiguous property". 42 U.S.C. § 9601 (35), (40) (A)-(H), § 9607 (q)(1).

discouraging parties interested in redeveloping such sites, including lenders. In contrast to the original CERCLA legislation, which was driven by environmental values, brownfields policy has been driven by constituents concerned with blight, abandonment, and economic decline.

Brownfields initiatives at the Federal level, state VCPs and other state initiatives to be discussed in Chapter 4, represent so called "next generation" policies of environmental protection ((Enterprise for the Environment, 1998; National Academy of Public Administration, 1997; Wernstedt and Hersh 2006), which obtained their impetus from the reinventing government movement in the 1990s (Osborne and Gaebler 1992). Compared to more centralized and regulatory government programs, such innovations sought to be more collaborative, customer-friendly, using market-type incentives to achieve the goal of more results-oriented programs. Washington State has not yet adopted a new, comprehensive brownfields approach, but has preferred step by step amendments on issue-specific, incremental brownfields issues.

1.2 Brownfields in the federal policy context

Over the last decade, considerable attention has been directed to brownfields as the nexus of several policy concerns—including, the protection of human health and environment needs and the legacies of environmental neglect; as simultaneously the cause and effect of economic decline in urban and rural areas; as well as a prime strategy for achieving sustainable development. The EPA has recently defined brownfields as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant" (42 *U.S.C.* §9601, amended 2002). In part, the sheer number of brownfields can convey the scope of the problem. The U.S. General Accounting Office (1987), for example, concluded that there may be between 130,000 and 450,000 contaminated commercial and industrial sites located within the United States based on data collected from several federal agencies in the 1980's. Later estimates have placed this figure in the range of 400,000 – 600,000 (Browner 1998), or even as high as 1 million sites (Simons 1998; US EPA 2008b).

The sheer magnitude of the brownfields problem stems from the economic restructuring which occurred in the country, beginning in the early 1970s, and continuing through today, as the U.S. economy has shifted from an industrial to a services and information economy. Deindustrialization led to the widespread abandonment of industrial and commercial property. Most heavily impacted initially, Northeast and Midwestern metropolitan areas first lost jobs and industries to Sunbelt and Western locations, and later to foreign competitors. Later waves of

deindustrialization also affected Sunbelt and Western regions. Because the products used in industrial processes were not regulated by the federal or state governments until the 1970s, there is a high likelihood that these properties, already idled by economic forces, held some level of contamination.

The disproportionate location of contaminated properties near or in poor, and often minority communities has been identified as a major instance of environmental injustice. Industrial zones are most often adjacent to poor, and minority communities. Deindustrialization, and the abandonment or underutilization of these properties, often added to the social burdens of the surrounding neighborhoods leaving behind blighted and contaminated areas, and increasing unemployment. Responsible brownfields redevelopment holds the promise of redressing these environmental justice concerns. (National Environmental Justice Advisory Council 1996)

CERCLA's initial strict and joint liability provisions threatened potential investors with liability for the entire cleanup of past contamination, even if they had no hand in generating it. As a result, many potential investors in the redevelopment of such properties, who may have been willing to accept a portion of the cleanup costs as part of redevelopment costs, turned away from such investments. The uncertainty regarding the extent of contamination on a previously industrial or commercial site, combined with the liability provisions aggravated the problem for would-be developers. If prospective purchasers or developers could count on firm estimates of cleanup costs, they could incorporate these costs into their financial calculations, and even obtain reasonable reductions in the purchase price to, at least, partially compensate them for the cleanup costs. But the lack of information on the extent of contamination made it difficult to calculate cleanup costs and profits margins on brownfields projects. In turn, this often made such projects too risky for lenders. CERCLA's most negative unintended impact on brownfields redevelopment was the potential liability it placed on lenders. Brownfields projects were already risky investments for lenders due to the unknown and variable costs of cleanup, and this greater risk would tend to increase the likelihood of foreclosures on such projects. Lenders thus faced the additional risk of strict and joint liability upon foreclosure of such projects. Until liability protections for several categories of potential investors in brownfields properties and lenders were put into place beginning in the late 1990s, it is likely that CERCLA contributed significantly to the idling of the stock of brownfields for close to two decades. (Rubenstein 1997; Wolfe and Delecki 2004) As already indicated, reacting to these dynamics, the stakeholders impacted by the decline and blight associated with brownfields objected strongly to the early versions of CERCLA, and successfully lobbied Congress to make changes in the liability provisions and to provide incentives for brownfields redevelopment.

Although the magnitude of the brownfields problem is great, the majority of contaminated brownfields sites are, though clearly of significance to human health and the environment, not of the highest rank in threat. This is not to imply that the environmental concern for protecting public health and the environment is less for brownfields properties. The standards that brownfields cleanups must meet for safeguarding public health and the environment are the same standards that Superfund sites must meet. Brownfields, typically, meet such standards at a lesser cost than more highly contaminated properties. The interplay of environmental and redevelopment concerns in brownfields redevelopment is an issue not of relaxing environmental protection standards, but rather of facilitating development through incentives and appropriate safeguards from liability claims.

Brownfields sites range in size from former gas stations and dry cleaners to manufacturing, light industrial, or agri-business sites. Frequently these sites are often tax-delinquent or have been left inactive by property owners, complicating the identification of a probable liable party. Although urban brownfields are the focus of attention in brownfields discussions, not all brownfields are urban. Of particular concern are brownfields in rural or small towns, mainly the result of the closing of natural resource-based industries, such as lumber mills, or of gas stations or landfills. Rural areas or small towns, often in depressed economic areas, face the dilemma of not being able to generate a return on investment to attract developers or lenders, yet have the need to cleanup and revitalize the sites. This is an area of concern for many states, including Washington State, that experience double economies where wealth and economic activities are concentrated in cities. Also important to note here is that the redevelopment of brownfields is not just significant for real estate markets focused on housing and industrial and commercial uses. Brownfields redevelopment can achieve other substantive state goals in the areas of habitat restoration, public recreation and open space.

Against this broad policy backdrop of public attention to brownfields, recent initiatives in Washington State are beginning to highlight brownfields. Revisions to federal legislation of contaminated sites has followed suit in state legislation in 1994, 1997, and again in 2004. More recently, the State Legislature passed House Bill 1761, introducing new programs and reforms to existing financial assistance and incentives for brownfields cleanup and redevelopment specifically. Additionally, the Governor's Puget Sound Initiative, is an ambitious program established to clean up both land, and aquatic sediments in the Puget Sound region. The initiative aims to begin the cleanup of all major contaminated sites along the Puget Sound shoreline and upland up to one-half mile by 2020. Washington State policy on this issue will be more fully discussed in Chapter 2.

1.2.1 Evolving Concepts of Brownfields

In her article arguing for a universal conceptual definition of brownfields, Yount (2003) uncovers several variations in the definition of the word among the states that differ primarily on the characterization of brownfields as "abandoned or underutilized." This definition was first established when the EPA launched its Brownfields Action Agenda in 1995, which used the words "abandoned, idled, or under-used industrial and commercial facilities" (USEPA 1995) to define brownfields and this definition was largely adopted by other levels of government. The current definition introduced by BRERA (2002) marks an evolution in the concept of brownfields, where brownfields are defined as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant"

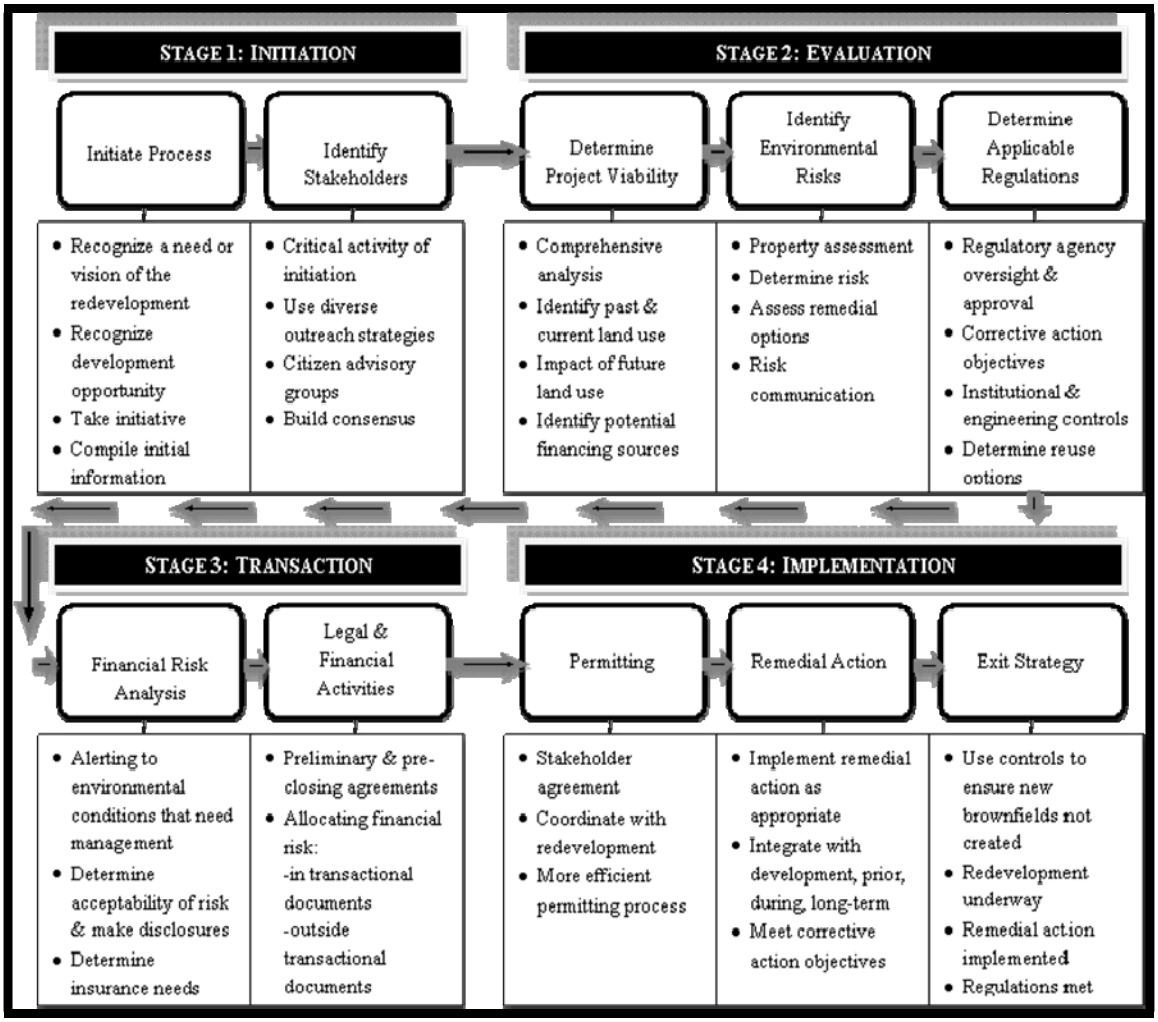
Changing "abandoned, idled, or under-utilized commercial or industrial properties" to simply "*real* property"(emphasis added) reflects the broad view that real or perceived contamination complicates the use or redevelopment of many types of properties, and not exclusively properties in commercial or industrial use. Note also, that under this later definition, both the activities that may be complicated, and the type of contaminant are broader, and that mention of "active potential for redevelopment or reuse" is absent. The BRERA definition also leaves out any mention of other laws and programs, unlike the previous federal definition, which excluded listings in the National Priority List. Yount, in her definitional article (2003), argues not only that the BRERA definition is superior than other definitions on the grounds that it is more encompassing, but also emphasizes that a definition should not include eligibility criteria, and that instead these should be addressed separately.

1.2.2 The Brownfields Challenge for Environmental Protection Agencies

Modeled on CERCLA, state environmental protection agencies have a traditional mandatory approach to contaminated property, with a single purpose: cleaning up contaminated sites. From the standpoint of public health and environmental protection, this is the right strategy. But this approach does not address adequately the dual nature of the brownfields problem—cleanup and redevelopment--as well as the sheer size of the brownfields problem. As discussed above, the redevelopment of brownfields is vital for the economic health of local communities, as well as for other public purposes. How then can an integrated process of cleanup and redevelopment be conducted? An integrated brownfields policy and practice requires both an integrated process and a staff that can guide such a process.

With respect to the process, the American Society for Testing and Materials has developed a guide for a sustainable brownfields redevelopment process which integrates these two aspects of brownfields. The guide stresses that such an integrated process requires community planning that involves stakeholders, including state and local officials from pertinent agencies, the local community, and the private sector as first steps in the process, before scientific investigations and feasibility studies of a site are undertaken. (ASTM 2000) See Figure 1 below.

Table 1. Standard Guide for Process of Sustainable Brownfield Redevelopment.



Source: ASTM. E1984-98 Standard Guide for Process of Sustainable Brownfield Redevelopment. West Conshohocken, PA: ASTM International, 2000, 17

The ASTM model incorporates several important elements: stakeholder involvement throughout, especially at the beginning of the process; an integrated process of cleanup and redevelopment; and,

a community planning and visioning orientation. These elements are important to stress when dealing with brownfields, because brownfield sites require more than statutory cleanups. Key to community redevelopment efforts, brownfields redevelopment requires the type of upfront planning and community engagement that has been common practice for the redevelopment of any type of property. (Fitzgerald and Green 2002; Green and Haines 2008)

The ASTM model provides guidelines for how an integrated process should proceed. However, adding redevelopment to the original cleanup mission of toxics programs is a major institutional challenge for such programs. The extent and path to integrating these two missions varies by state program. As an example, let us briefly review Wisconsin's experience in facing this challenge. In 1994 Wisconsin replaced its traditional Spill Law with its new Land Recycling Law. This led to great initial resistance and significant resignations from the site cleanup staff at WI's Department of Natural Resources (DNR), who saw some of these changes as "corrupting DNR". (Hersh and Wernstedt 2003, 41) Wisconsin went on to redefine the mission and organization of the cleanup program, stressing a partnership approach and integrating cleanup with reuse of land. The staff, which had been previously separated into programs to deal with Superfund sites, underground storage sites, sediment sites, state superfund sites, etc., were combined into one bureau, significantly named the Bureau of Remediation and Redevelopment. Recognizing the need for staff to change the often adversarial way it dealt with the private sector, recommendations were implemented "to broaden staff skills beyond just technical proficiency to include the secondary consequences of making particular cleanup decisions. Developing a better understanding of the timing of property transactions, lender concerns, neighborhood and community groups, etc. should also be incorporated into staff training plans." (Hersch and Wernstedt 2003, 42) The case of Wisconsin, which we will further discuss in Chapter 4, demonstrates the difficult institutional challenges, in terms both of mission and staff training that brownfields programs face in traditional state environmental protection agencies.

1.3 Public cost and benefit considerations

The cleanup and redevelopment of brownfields can be costly, but inaction on brownfields also bears costs. Meyer (2003) provides an inventory of these costs:

- The economic costs of damage to human health, e.g., loss of life, morbidity;

- Ecosystem damage costs, .e.g., potential loss of species, additional costs for water treatment;
- Fiscal costs to local governments associated with revenue losses due to reduced real estate values of brownfields as well as adjacent properties;
- Social costs associated with environmental inequality;
- Costs of decreasing urban densities, and its impact on the quality of life, e.g., increase in travel time, vehicle use, air pollution
- Long-term costs of sprawl, i.e., capital costs of underutilized and redundant infrastructure, increased costs of delivering police, fire, and other emergency services to a larger geographic area, and potential adjustment costs of serving an aging suburban population with transportation services not now available.

Among these costs, much attention has been focused on the fiscal and economic development impacts of brownfields on local governments. Considering that these sites are often considered underutilized, if not idle, tax revenues are a tangible measure as well as a powerful indicator of the spillover effects of those properties. For example, in the Conference of Mayors' sixth survey of cities on brownfields (2006), more than 200 cities responded. Fifty-two percent (52%) of the respondents to the survey estimated that lost tax revenues from idled brownfields range between $958 million to $2.2 billion per year in these cities alone. On a national scale, local governments "could be losing billions of dollars each year in local tax receipts resulting from their failure to restore brownfields to economic viability" (Browner 1998). But these are not just problems affecting cities, rural areas are facing similar issues. Arguably, the ripple effects may be more acute in rural areas simply because of the small size of those communities.

Based on these potential costs of inaction, economic development experts (Hise and Nelson 1999; Meyer, Williams, and Yount 1995) argue that the redevelopment of brownfields will have significant positive economic benefits by creating new employment opportunities, improving quality of life and increasing the municipal tax base once redeveloped properties are returned to the tax rolls. The very presence of brownfields can undermine the economic competitiveness of a region by damaging its image and making it less attractive. As urban or town centers hollow out, commuting distances grow; expanding new construction takes farmland and open space; and major investments in infrastructure are required to serve new areas while existing infrastructure in developed areas is underutilized and may deteriorate over time due to underfinanced and inadequate maintenance. Hence brownfields redevelopment has been claimed as a key strategy from both the sustainable development and the urban growth management perspectives. (Greenberg et al. 2001)

Brownfields redevelopment instead of greenfield development are part of the agenda of both sustainable development and the growth management movements because of the land conservation benefits. Greenfields refer to undeveloped areas that have never been built upon, such as farmland or natural resource areas. An EPA study (Deason et al. 2001) concludes that the amount of land used in greenfields development is greater than in brownfields redevelopment because of lower density regulations in rural areas. They calculated, based on a study of 48 brownfields redevelopment cases in several metropolitan areas across the country, that greenfields development would have used 4.5 acres to every 1 acre of brownfields land. The term greenfield is often used specifically to denote public open space, parks and recreation areas, as well as habitat conservation areas. Cities are beginning to consider redeveloping brownfields into greenfields, primarily into parks and open space.[12]

1.3.1 Cleanup costs

We have already discussed the many *social* costs of inaction and the benefits of brownfields redevelopment. The redevelopment of brownfields, however, also has associated multiple costs for *developers*. Redevelopment itself, even if a site is not contaminated, is often more costly to a developer than undertaking new development on greenfields. Unless redevelopment involves the rehabilitation of existing structures, it often incurs demolition costs in addition to land and construction costs. Because redevelopment can be more costly for a developer than new development, it tends to occur when the supply of land in a metropolitan area is relatively tight and the demand is high, that is, in strong property markets. (Urban Institute et al. 1997)

Brownfields redevelopment is additionally burdened by the following costs:

- Site assessment costs, i.e., costs of investigation aimed at determining the extent or absence of contamination on suspected sites;
- Remediation planning costs, e.g., determining the remediation strategies and costs;
- Remediation costs themselves, which can range widely;
- Risk management costs, e.g., legal advice on liability, insurance costs, reserves;
- Present value of potential future costs involving remediation costs. (Meyer 2003; Wolfe and Delecki 2004)

[12] See The Greening of Brownfields in American Cities by Christopher A. De Sousa. *Journal of Environmental Planning and Management*. July 2004. 47 (4): 579. De Sousa examines 20 greening projects, including the issues involved, the benefits of such projects, and the specific planning processes involved.

Brownfields redevelopment faces multi-faceted risks. We have already discussed the potential liability stemming from contributing to or ownership of a contaminated site, and some of the liability protection measures that CERCLA has incorporated for innocent and bona fide prospective purchasers as well as property owners of contiguous sites. But there are several other risks that merit a brief discussion: "re-openers"; natural resource damages; variability of clean-up costs; reduction in development potential; and third party liability.

A prospective purchaser or owner of a brownfield site is subject to changes in regulations, technological advances, or findings of previously unknown contamination. Such changes can trigger a re-opener of any agreement the prospective purchaser may have obtained from the enforcement agency. Regulatory re-openers are incorporated into all federal and state agreements, so that even if a prospective purchaser obtained a consent decree from an enforcement agency, the agency still has the authority to require further cleanup or to recover costs for further cleanup. Although a study of VCPs across the country estimated that the probability of re-openers is small, estimated at 0.1-0.2 % of cases (Simons, Pendergrass, Winson 2003), the risk may be higher for sites with greater levels of contamination. (Buttitta 2007)

Potentially liable parties can also incur natural resources damages (NRD) claims, which can be added to cleanup costs. According to CERCLA, the term "natural resources" refers to: land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources. CERCLA authorizes EPA to conduct assessment and restoration of natural resources that have been injured, destroyed, or lost due to contamination of a site. "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. (USEPA 2007b) Natural resource damages costs can be significant and the uncertainty regarding their extent can impede brownfields redevelopment. (Buttitta 2007)

Estimating the cleanup costs of redevelopment of a brownfields site is difficult. The AAI rule, which provides liability protections for innocent and bona fide prospective purchasers, does not require the type of investigation that can generate a good estimate of cleanup costs. Environmental engineers typically provide such estimates, but these estimates are highly variable, a "most probable cost range" for cleanup of a contaminated property can vary from $1 to $12 (Wilson 1992; Buttitta 2007).

Institutional controls or land use controls, i.e., controls placed on a site's use or activities, which can require monitoring or maintenance, may also be a source of risk in the future. Land use

controls through zoning limit the use of redeveloped land to control human exposure to toxics. (LUCs 2008) If a contaminated site can only achieve an industrial level of cleanup as defined by risk-based corrective criteria (RBCA)[13], the site could not be developed as a residential site in the future. Typically, land use controls are placed on a site when cleanup actions only reduce or contain the contamination instead of fully cleaning it. These controls typically require periodic monitoring of the site. Since sites with institutional controls have not achieved the highest cleanup standards, there is a greater risk of future discoveries of harmful contamination. (Buttitta 2007)

In addition, although any developer can face third party claims for bodily injury, property value diminution, property damage, and interruption of business due to site contamination, third party risks can be greater for a prospective developer of a contaminated site, since, e.g., the contractors who work on a contaminated site, or adjacent property owners could be affected by the contaminants or pollutants on the site.

Although insurance instruments have been developed to address these types of risks, which we will examine in Chapter 3; these additional costs put urban brownfields at a competitive disadvantage compared to undeveloped land in the suburban or rural fringe of a metropolitan area. Unsubsidized, the redevelopment of brownfields is likely to occur mainly under very favorable urban property market conditions, such as many metropolitan areas experienced during 2001-07.

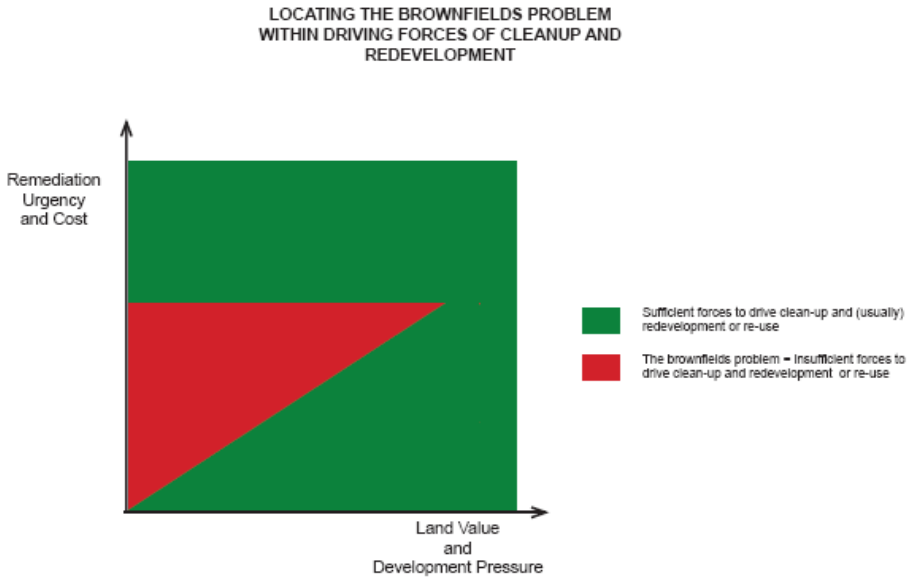
1.4 Brownfields redevelopment, market conditions, and the public interest

Land values and development pressures play a significant role in contaminated site cleanup and redevelopment. As these increase in strong real estate markets, site cleanup can become "just another dimension" of the real estate deal (Urban Institute 1997). Quite simply, this occurs as the investment opportunity presented by a contaminated site located in a favorable market overcomes the additional costs and risks of the environmental issues that it bears. However, in areas of economic decline, perceived or real threat of contamination often leaves property values "upside down," where the costs to address the real or perceived contamination exceed the value of the land itself. In areas where there are concentrations of multiple contaminated sites, the negative economic effects are cumulative, such that brownfields are often thought of as both cause and effect of the economic decline that blocks cleanup and redevelopment. This stylized description, see Figure 1 for a graphic depiction, distinguishes brownfields from the universe of contaminated sites, and identifies

[13] ASTM (2004) provides a guide for developing risk-based corrective criteria based on site characteristics.

the constellation of environmental and economic factors that characterize the brownfields problem. These have led to legislative reform relaxing liability at brownfields sites and creating financial assistance to push and pull attention to brownfields towards cleanup and redevelopment.

Figure 1. Brownfields problem: Remediation Costs and Market Conditions



Brownfields, defined as properties whose potential contamination complicates their reuse or redevelopment, pose both environmental and economic problems for governments, as well as their would-be developers, both private and public. From the perspective of government's role in protecting the public interest, these are properties that have multiple, negative, social and environmental spillover effects (market imperfections) beyond the specific public health risk that they pose. The spillover effects of brownfields establish a presumptive public interest in their cleanup and redevelopment. Thus, we can argue that prioritizing the cleanup of contaminated property can be guided by two complementary but separable public interests: the public interest in safeguarding public health and the environment, which leads to the prioritization of the cleanup of most hazardous sites, including their public funding; and the public interest in effective metropolitan management, ecosystem protection and environmental justice, which leads to the prioritization of brownfields redevelopment, including the provision of public subsidies and liability relief.

1.5 Findings

1. Federal policy on Brownfields grew out of federal CERCLA or Superfund legislation (1980). US EPA administers CERCLA. CERCLA was aimed at cleaning up the most hazardous abandoned properties in the country, the National Priority List(NPL), which currently includes about 1,300 sites. It imposed strict, joint and several liability provisions, to ensure that "the polluter pays" and established a fund (Superfund) to help pay for the cleanup of these sites, if the responsible parties are not found.

2. States established state legislation and programs modeled on CERCLA to cleanup hazardous sites in their states not included in the National Priority List. Washington State enacted such a statute in 1989, and established a Toxics fund, like Superfund, and developed processes to prioritize the cleanup of hazardous sites posing the highest risk to public health.

3. CERCLA reform efforts have included several changes to liability provisions, establishing protections for innocent purchasers, conditional on conducting an "all appropriate inquiry", but this concept was not operationalized at the time.

4. In 1993, EPA, through its Brownfields Economic Development Initiative, began to address the larger universe of contaminated or suspected sites not on the NPL and provided the first federal definition of brownfields: "abandoned, idled or under-used industrial and commercial facilities where expansion and redevelopment is complicated by real or perceived environmental contamination."

5. In the late 1990s, EPA also recognized voluntary cleanup programs (VCP), which had been established by several states beginning in the early 1990s to streamline the process of cleanup for less contaminated sites. These programs were closely aligned with brownfields efforts, but the two are not synonymous, since many VCP programs lack a redevelopment emphasis.

6. EPA's brownfields initiative provided the administrative foundation that led to the passage in 2002 of the Small Business Liability Relief and Brownfields Revitalization Act (the Brownfields Act) which authorized grants funds separate from Superfund.

7. With the passage of the Brownfields Act, several groups could claim liability protections: bona fide prospective purchasers, contiguous property owners, and innocent landowners, all contingent on the performance of an "all appropriate inquiry". The Brownfields Act also required that EPA establish a standard defining all appropriate inquiries by the end of 2006. Lender or creditor exemption from liability had been provided in another act of Congress in 1996. These liability protections have been driven by the economic development concerns raised by the development community.

8. Federal policy on Brownfields, VCPs and other state initiatives represent "2nd generation" policies of environmental protection, in line with the "reinventing government" movement of the 1990s.

9. In contrast to the 1,300 Superfund sites, the estimates of the number of brownfields across the country range from 400,000 to a million sites. Many of these sites suspected of contamination are the result of the de-industrialization of the economy, which began in earnest in the 1970s.

10. Poor, and, often minority communities are disproportionately burdened with adjacent brownfields, adding an environmental justice dimension to the brownfields problem. Responsible brownfields redevelopment could address this issue as well.

11. CERCLA itself is credited with the unintended effect of adding to the brownfields problem through its stringent liability provisions.

12. Brownfields must meet the same cleanup standards that Superfund sites meet, but because these sites typically pose less risk to human health and the environment, they can often meet these standards at a lesser cost.

13. Brownfields range in size from gas stations and dry cleaners to large-scale manufacturing or agri-business sites. Not all brownfields are urban. Brownfields in small town and rural communities typically have a greater impact on the economic health of these communities than equivalent brownfields in cities.

14. The more recent Brownfields Act definition of brownfields as "real property" expands the application of the term beyond industrial and commercial facilities.

15. State toxics cleanup programs, modeled on Superfund, have a mandatory approach to contaminated sites with a single purpose—cleanup. This fails to address the dual nature of the brownfields problem—cleanup and redevelopment.

16. An integrated approach to brownfields requires both and integrated process and staff trained to administer such a process. ASTM has provided an integrated model of brownfields cleanup and redevelopment, which begins the process with collaborative community engagement and planning.

17. Changing a traditional toxics program from a technical cleanup orientation to a more integrated, collaborative one is difficult, like most institutional change. In addition to leadership from the top, it involves changing the mission of the program to incorporate redevelopment and ensuring that staff is trained to integrate these two purposes in their daily operations.

18. Costs of inaction on brownfields include: costs of damage to human health, ecosystem damage costs, fiscal costs in the form of revenue losses to local governments, social costs of environmental inequality, costs of decreasing urban densities, and long-term costs of sprawl.

19. Estimates of lost tax revenues to local governments stemming from inaction on brownfields are significant.

20. Brownfields redevelopment instead of the development on greenfields offers substantial greenfields savings, and is a key strategy for both the sustainable development and the growth management movements. In addition, brownfields can also be returned to open space, green space, after cleanup.

21. Costs of brownfields redevelopment for would-be developers, public and private, are multiple: site assessment costs, remediation planning costs, remediation costs, risk management costs, present value of potential future costs.

22. Brownfields redevelopment also face multi-faceted risks: re-openers, natural resource damages, variability of cleanup costs, reduction in development potential and third party liability.

23. The condition of the real estate market has a significant effect on brownfields redevelopment. In strong real estate markets, the additional costs and risks of brownfields redevelopment can become just another dimension of a real estate deal. In areas of economic decline or soft markets, the costs to address cleanup can outweigh the value of the land itself.

24. The multiple, negative, social and environmental spillover effects of brownfields establish a presumptive public interest in their cleanup and redevelopment.

25. Prioritizing the cleanup of contaminated property can be guided by two complementary but separable public interests: the public interest in safeguarding public health and the environment, which leads to the prioritization of the cleanup of most hazardous sites, as in Superfund; and the public interest in metropolitan growth management, ecosystem protection, and environmental justice, which can lead to the prioritization of brownfields redevelopment, including the provision of public subsidies and liability relief.

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Chapter 2. Washington's CERCLA: The Model Toxics Control Act (MTCA)

After providing an overview, this chapter summarizes the operation of Washington's statutory cleanup model and its evolution into a more integrated model combining cleanup approaches with the site development process and emphasizing cleanup activities consistent with future land use. It concludes by identifying several key issues posing a challenge to brownfields redevelopment in the State: the length of the cleanup process, budget and staffing, remaining concerns over a more integrated model of cleanup and redevelopment, and lack of an administrative mechanism for addressing multiple sites.

2.1 Overview[14]

The Model Toxics Control Act (MTCA) (Chapter 70.105D RCW) authorizes the Department of Ecology (Ecology) to investigate, provide for investigations, or require potentially liable persons to investigate any releases or threatened releases of hazardous substances. The law also authorizes Ecology to conduct, provide or require potentially liable persons to conduct remedial actions to remedy releases or threatened releases of hazardous substances. MTCA is primarily administered by the Toxics Cleanup Program, one of 10 divisions in Ecology. Unlike CERCLA, MTCA defines petroleum products as hazardous substances and brings a substantial number of additional cleanup sites under the purview of cleanup regulation. As in CERCLA, MTCA employs a hazardous ranking system to prioritize the most hazardous sites for cleanup. The law authorizes Ecology to provide site-specific advice to persons who are conducting or otherwise interested in cleaning up a contaminated site on a voluntary basis. The MTCA Cleanup Regulation (Chapter 173-340 WAC) establishes the procedural and technical requirements for the cleanup of contaminated sites in Washington.

Over the last fifteen years, many cleanup actions in Washington have occurred in conjunction with independent efforts by property owners or prospective purchasers to redevelop contaminated properties or areas. Ecology's Toxics Cleanup Program plays a significant role in the cleanup of these properties by providing technical assistance, oversight and certification that cleanup actions meet the MTCA regulatory requirements. The Toxics Cleanup Program includes a specially

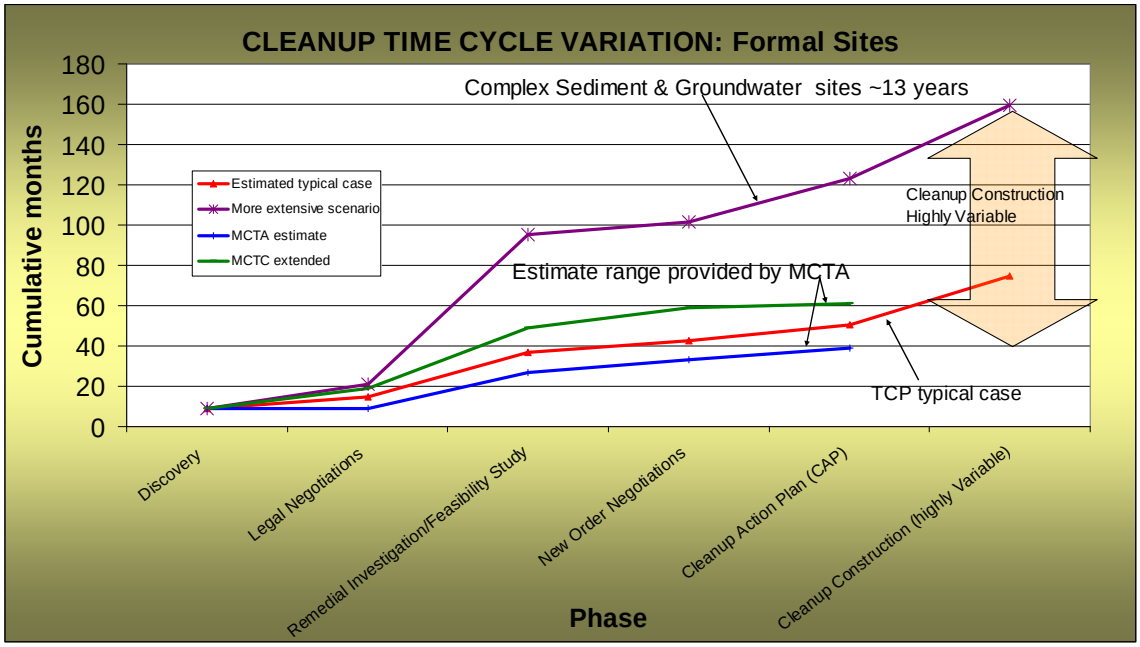
[14] Most of this section was provided by Jim Schwartz, Attorney General's Office, Washington State Department of Ecology, in a memo dated April 21, 2006.

targeted effort designed to facilitate the return of Brownfields properties to productive use. This program is carried out in coordination with the state of Washington Department of Community Trade and Economic Development (CTED) and the U.S. Environmental Protection Agency (EPA).

Efforts to develop and extend Washington's Brownfields activities have been enhanced by grants awarded under EPA's State and Tribal Response Program (STRP), to be discussed in section 2.7.

Ecology uses two basic approaches to cleanup property: supervised cleanups (Formal Sites) and independent cleanups (including VCP Sites). Both must meet the MTCA requirements. The main difference is the level of involvement of Ecology staff in the process. Historically, contaminated sites were identified and prioritized by Ecology for cleanup based on the severity of the contamination and threat to public health. A site manager would be assigned to formally oversee the process as it went from remedial investigation through final cleanup. The entire process varied by the complexity of the site, but in general such supervised cleanups could average seven years for sites without groundwater contamination. Figure 2 below provides an average estimate of cleanup time for typical and more complex sediment and groundwater sites. Section 2.10.1 provides a discussion of the factors underlying the length of the process.

Figure 2. Cleanup time, case complexity and MTCA deadlines for formal sites



Source: John Means, TCP

In 1997 the Legislature authorized Ecology to implement a voluntary (independent) cleanup process by which a potentially liable party or other person could take charge of the investigation and cleanup without formal Ecology supervision. The person handling the cleanup could then present the evidence of their cleanup efforts to Ecology for an opinion that the cleanup met the requirements of MTCA. The PLP could also seek technical guidance from Ecology on such independent cleanups during the course of the cleanup process. The PLP would be billed for this technical service. The entire process varied by the complexity of the site, but in general such independent cleanups take less time to complete, including review by Ecology. See section 2.10.1 for a fuller discussion of time differences between the formal and VCP process.

Regarding brownfield redevelopment, the independent cleanup approach has been the preferred option from the market perspective because of the short timeframe in which the process can be completed. VCP facilitates redevelopment by allowing the owner to conduct the investigation and cleanup without Ecology supervision, by providing owners with technical advice from Ecology when requested by the owner, and by giving comfort letters to the owner (and prospective purchasers or banks) that Ecology deems the cleanup to meet the substantive requirement of MTCA and that no further action is necessary at the site.

Although the VCP approach was designed for simpler, less complex sites, the VCP option has also been used to facilitate the cleanup at large complex sites. Two examples of these redevelopment efforts are the Rainier Court project in Seattle and Kendall Yards in Spokane. Rainier Court consisted of a mix of dilapidated buildings, oil drums, tires, old cars, and fenced-off lots. It is being redeveloped into housing and commercial space. Kendall Yards is an old contaminated railroad property that is to be developed into residential and retail space.

Rainier Court started in 2001 when a non-profit company (SEED) approached TCP for Brownfields funding. SEED intended to buy up parcels with dilapidated buildings and unused lots for redevelopment into commercial space and various forms of housing. SEED was directed to the Department of Commerce and Economic Development (CTED) for the Brownfield funding portion of this project. A VCP site manager was assigned. The developer retained a respected consultant to handle the cleanup. The project required more Ecology staff time than most VCP projects but less supervision than most formal sites. The project received no special priority from Ecology. The cleanup process has taken several years. The redevelopment is well underway.

With Kendall Yards a developer approached the City of Spokane with an idea to develop the abandoned railroad property. The City received Brownfield funding for assessment of the project from CTED. The region gave the site a higher priority in terms of staff time by assigning a site manger

outside the VCP to assist the developer's consultants with the process from remedial investigation through cleanup. A site manager not assigned to the VCP was selected because of the size of the project and her experience. The site manager met with the consultant regularly billing her time through the VCP. The entire cleanup process took approximately 13 months to complete.

The formal site process has also been used to facilitate redevelopment. The advantage to formal review is the potential to settle liability through a consent decree or prospective purchaser consent decree, or to achieve agreed upon cleanup approaches through administrative orders known as Agreed Orders. An owner or prospective purchaser can approach Ecology with a proposal for cleanup and development. If the State accepts such a proposal, the parties negotiate a site-specific agreement that describes the owner's commitment to cleanup or the prospective purchaser's contribution to cleanup and settles the owner's or purchaser's liability. Based on data provided, Ecology has executed 117 consent decrees and 21 prospective purchaser consent decrees as of January 2006 (Means 2008). The data does not indicate whether all these decrees led to redevelopment.

Over the last several years, some developers have preferred to move even large complex projects through the VCP because of the (1) relatively short timeframe needed to complete the process and (2) lower cost associated with the voluntary process. For these projects the comfort of a no further action opinion letter from Ecology appears to offset the limitation of liability contained in a consent decree or prospective purchaser consent decree approach,[15] which increases the time and cost to complete the cleanup project.

The Model Toxics Control Act (MTCA) was amended over the years to help further Brownfields redevelopment: prospective purchaser consent decrees (1994), clarity for lender liability (1995), independent remedial actions (1997), and plume clause exclusion (1997). Two rules address some of these provisions: independent remedial actions (WAC 173-340-515); and prospective purchaser consent decrees (WAC 173-340-520). Amendments to MTCA will be further developed in section 2.6 below.

2.2 MTCA Legislative Policy

MTCA, the result of a voter initiative in the State, was passed into law in 1989. The intent of the law is cleanup, as the title of the legislation makes clear, "Hazardous Waste Cleanup—Model Toxics Control Act." The legislative policy of MTCA sets out MTCA's six primary purposes in

[15] The consent decree "limit on liability" is not absolute and is subject to a reopener, so neither MTCA approach (the NFA letter nor the consent decree approach) provides complete immunity from further liability.

cleaning up sites: 1) the rights to a healthful environment and the state's obligation of beneficial stewardship of land, air and waters of the state; 2) the state's healthful environment is threatened by irresponsible use and disposal of hazardous waste sites; and, since costs of eliminating threats beyond the financial means of local governments and ratepayers, the main purpose of Chapter 2 of MTCA is to raise sufficient funds to clean up all hazardous waste sites and prevent future ones due to improper disposal; 3) the need to assist law-abiding farmers and small business owners who have used pesticides that have contaminated the environment or water supplies; 4) efficient use of a finite land base is in the public interest; 5) each responsible person should be held liable jointly and severally; and 6) affected communities should be notified of location of releases and what is being done to clean them up. (Revised Code of Washington (RCW) 70.105D.010).

Significantly, MTCA's fourth policy goal proclaims an underlying redevelopment emphasis, and highlights how: (4) It is in the public's interest to efficiently use our finite land base, to integrate our land use planning policies with our clean-up policies, *and to clean up and reuse contaminated industrial properties in order to minimize industrial development pressures on undeveloped land and to make clean land available for future social use*. [RCW 70.105D.010, Emphasis added].

This redevelopment goal has become overarching in the brownfields context. The goals of protecting human health and the environment, as well as promoting reuse are here recognized as interdependent, and the legislation has charged Ecology with the responsibility for pursuing these goals simultaneously and in an integrated fashion.

2.2.1 The nature and recognition of brownfields under MTCA

As discussed above, MTCA's policy intent includes redevelopment of contaminated sites (RCW 70.105D.010 (4). Further, as Cunningham (2007) points out, MTCA, in a later section, provides a de facto definition of brownfields where "the primary purpose of this subsection is to promote the cleanup and reuse of vacant and abandoned commercial or industrial contaminated property. The attorney general and the department (Ecology) may give priority to settlements that will provide substantial public benefit, including, but not limited to, the reuse of a vacant or abandoned manufacturing facility or the development of a facility by governmental entity to address an important public purpose." (RCW 70.105D.010 (5) (b)) Despite this policy intent, the brownfields program in Washington State currently operates without a statutory definition of brownfields. According to John Means, the State's Brownfields Manager, the closest definition of brownfields in the state is the phrase, "a vacant, abandoned, commercial or industrial, contaminated property." (Cunningham 2007) Further, the Department of Ecology does not distinguish between

brownfields assistance and other contaminated site remediation under the state's Local Toxics Cleanup Account[16], and does not provide targeted brownfields assistance using state funds. Even the 2007 amendments to MTCA included in HB 1761, to be discussed in section 2.6.1, do not directly mention brownfields, although HB 1761 does provide increased funding for strategies to assist local governments in integrating site clean up with economic development, public recreation, and habitat restoration that would not otherwise occur. A statutory definition for the State could provide both conceptual clarity and a basis for targeting financial and technical assistance to brownfields.

2.2.2 The growth management argument for brownfields redevelopment

The metropolitan growth management argument for the cleanup and redevelopment of brownfields is particularly important for Washington State, since Washington is a leader among the dozen states in the country with strong state-wide growth management legislation. The State's Growth Management Act (RCW 36.70A) passed in 1990 has 13 statewide goals. Out of these 13 goals, three are procedural, dealing with property rights (Goal 6); permits (Goal 7), and public participation (Goal 11), and the rest are substantive dealing with various aspects of the natural and built environment. Brownfields cleanup and redevelopment efforts advance most, if not all, of these substantive goals. The first goal of GMA is "to encourage development in urban areas where adequate public infrastructure is in place or can be provided in an efficient manner" (RCW 36.70A.020) This goal is implemented through a policy that requires growing counties and cities to identify a boundary for their urban growth areas within which urban infrastructure and services are currently provided or are planned to be provided, and to permit urban densities within these urban growth areas and not outside their boundaries. In effect, this goal encourages infill development. Infill development refers to the development of vacant or under-utilized properties within existing urban areas that are mostly developed. Brownfields redevelopment is a major infill strategy. The urban growth boundary strategy of GMA is aimed at protecting greenfields through a policy of infill development. As mentioned in the previous chapter, the land conservation benefits of brownfields redevelopment instead of greenfields development is significant. (Deason et al. 2001)

The urban growth boundary approach is also meant to enable the efficient provision of infrastructure (which is linked to ensuring adequate infrastructure for development (Goal 12) and encouraging efficient multimodal transportation (Goal 3) as well as the conservation of undeveloped

[16] The Local Toxics Cleanup Account is one of two accounts funded by the state tax on petroleum and hazardous substances authorized by MTCA to fund grants and loans for local governments. These accounts will be discussed in sections below.

lands in the State, which also addresses the goals of retaining open space (Goal 9) and protecting the natural environment (Goal 10). Reducing sprawl (Goal 2) is also directly connected to a brownfields strategy. Brownfields often make up a significant proportion of land in cities, already equipped with urban infrastructures. Once cleaned up, such sites could become competitive with suburban locations, and reduce the attractiveness of suburban sites for developers. Brownfields efforts could be key elements of economic development strategies (Goal 5) by removing blighted areas, and by increasing the supply of urban land available for new economic activities. Although there is no mention of brownfields in GMA, it is clear that brownfields redevelopment is not only consonant with, but fulfills the multiple purposes of growth management in the State. Stronger and more explicit linkage between GMA and brownfields reclamation could be a key element in shifting the State's toxics program towards a more sustainable approach.

2.3 Department of Ecology powers under MTCA

MTCA (RCW 70.105D.030) empowers the Department of Ecology to:

1) Exercise the following powers: a) investigate releases; b) conduct remedial actions; c) indemnify contractors retained by the Department to investigate and carry out remedial actions; d) carry out federal programs; e) classify substances; f) issue orders or enter into consent decrees; g) enforce application of institutional controls; h) require property holders to conduct remedial actions; i) provide informal advice and assistance regarding the administration and technical requirements of MTCA, including site-specific advice to persons conducting independent remedial actions (can recover costs of assistance); and j) any other actions necessary to carry out provisions of MTCA, including power to adopt rules.

2) Implement immediately all provisions, including adopting and enforcing rules on the following: public participation, hazard ranking system, requirements for reporting of releases, reasonable deadlines for initial investigations, and publication of minimum cleanup standards;

3) Prioritize sufficient funding and prevent creation of future hazards, and develop financial tools to cleanup hazardous sites which require multi-year commitments, and develop a comprehensive 10-year financial report;

4) Prior to Dec. 20 of even years, to: a) develop a 10 year report in coordination with local governments to identify needs to be funded from local toxics account; b) work with local governments to develop working capital reserves to be incorporated in the 10-year plan; c) identify remedial action needs for orphaned, abandoned and other sites eligible for funding from the state toxics control account; d) project (to the next biennium) needs, costs, revenue, and recommended capital reserve estimate, and a ranked list of remedial action projects for both local and state toxics control account, and provide information to appropriate committees of legislature; e) provide the legislature and public with an accounting of the Department's activities supported by the toxics accounts, including a list of known hazardous waste sites, their hazard rankings, actions taken and planned at each site, and how the Department is meeting priorities of MTCA and all funds expended.

5) establish a scientific advisory board;

6) establish a program to identify potential hazardous sites; and,

7) periodically review environmental covenants issued under an order, agreed order, consent decree or as a condition of a written opinion.

2.3.1 Cleanup Process

MTCA Cleanup Regulation (Chapter 173-340 WAC) establishes the procedural and technical requirements for cleanup of contaminated sites in Washington State. Table 2 below outlines the cleanup process according to the regulation (RCW 173-340.120), including the steps and deadlines. Several points are worth discussion, including site discovery, the hazards ranking system, unrestricted and industrial cleanup levels, cleanup standards and cleanup methods. Note, first, that the identification of contaminated property is left to owners, operators and other interested parties. The legislation does not require or empower Ecology to establish a proactive program for site discovery. We will discuss the Department's current efforts to identify and track contaminated sites in a later section.

Ecology uses a hazards ranking system, the Washington Ranking Method (WARM) to prioritize state sites which are not on the federal list. WARM does not provide a quantitative risk assessment of a site, but rather an estimate of the potential threat a site poses to human health and the environment. It takes into account the primary exposure paths for humans or the environment. In addition to soil exposure, these include air, surface water, ground water and marine sediment routes.

Table 2. Overview of Toxics Cleanup Process			
Steps in the Cleanup Process (WAC 173-340)	***Description***	***Regulation section***	***Deadlines (WAC 173-340-140)***
Site discovery	a. Owners and operators required to report releases of hazardous substances. b. Dept. will conduct an initial investigation; if site requires remedial action, notice to owners or potentially liable persons.	a. WAC 173-340-300 b. 173-340-310	b. Within 90 days of learning of a release, Dept. to conduct initial investigation.
Site Priorities—sites to be prioritized for further remedial action	a. A site hazard assessment to be conducted (based on results of initial investigation; if no further action, notify public through the Site Register b. Dept. to maintain a hazardous site list for sites where further investigation required. Sites on list to be ranked using Dept.'s hazardous ranking method. Sites can be removed if sites meet requirements. c. Prepare biennial program report every even numbered year. Hazardous ranking and other factors to be used to identify projects and expenditure recommendations for appropriations	a. 173-340-320 b. 173-340-330 c. 173-340-340	a. Twice a year, Dept. to determine which sites with completed initial investigations are high priority for further investigation within 6 months b. For high priority sites, Dept. to complete site assessment and ranking within 180 days of scheduled start date. Sites not designated as high priority, to be scheduled for further investigation and listed in biennial report. Dept. to conduct at least 35 site hazard assessments each FY Within 30 days of ranking, designate sites high priority for RI/FS, and sites of lower priority, and provide opportunities for public to comment as part of biennial report
Detailed site investigation and cleanup decisions using these steps:	a. Remedial investigation (RI)—to be performed at ranked sites. Purpose of remedial investigation to collect data and information necessary to define extent of contamination and to characterize the site. b. Feasibility study (FS)—conducted for ranked sites. Purpose to develop and evaluate alterative cleanup actions. Dept. to evaluate remedial investigation/feasibility study to establish cleanup levels and select cleanup action protecting human health and environment and based on the remedy selection criteria and requirements, and where appropriate, conditions for institutional controls to ensure continuous protection of	a. 340-350 b. 340-350 Cleanup levels (700-760) Institutional controls (340-440)	a-b. For high priority sites, RI/FS should be completed within 18 months of signing order or consent decree (but may extend another 12 months—public comment required on any extension) Dept. to initiate RI/FS on 10 sites per FY

	human health and the environment c. Cleanup action plan—to address requirements for hazardous substances at the site. Final plan to be issued by Dept. after a period of public comment on the draft plan.		
Site cleanup—once action selected, actual cleanup to be performed	a. Cleanup actions to take place, including design and construction requirements for implementation b. Compliance monitoring and periodic review	a. 340-400 b. 340-410-420	Dept. to select cleanup action and file a consent decree or issue an order for all sites designated high priority within 6 months of completion of RI/FS (may extend four months for consent decree)
Interim actions	Under certain conditions (immediate threats to public health), appropriate to take actions before completing process outlined above	340-430	
Leaking underground storage tanks	UST owners and underground storage tank operators (regulated under 90.76 RCW) are required to perform specific actions for leaking USTs	340-450	
Remedial action procedures	a. Dept. authorized to undertake remedial actions and to order such, but Dept. encourages agreements for investigations and cleanups in appropriate cases in form of agreed orders and consent decrees b. Independent remedial actions—persons may conduct investigations and cleanups without department approval. Dept. to use appropriate requirements in chapter when evaluating adequacy of independent remedial action, except as limited by 515(2). Nothing prevents persons from conducting actions at site before Dept. is ready. But all interim and cleanup activities must be reported (515). Independent remedial action conducted at PLP's own risk and Dept. may require additional remedial actions at site at any time	a. authorization 340-510-540 agreed orders and consent decrees (520 and 530) b. 515 and 545	
Public participation	If sites where Dept. conducting cleanup or overseeing cleanup under order or consent decree, public is to receive notice and opportunity to comment on most of the steps.		

For each exposure route, the method evaluates substance and site characteristics, as well as the exposure potential on the site. For example, under substance characteristics, the method considers factors such as the toxicity and quantity of a substance. Under site characteristics, the method estimates the migration potential of a substance, soil permeability, and distance to ground water, etc. Under exposure potential, the method estimates the population exposed, the sensitivity of the environment, surface water uses, etc. (WADOE 1992, 2003, 2004).

The regulation allows for cleanup levels based on two types of land use, unrestricted and industrial. The unrestricted land use is based on residential use, and provides the most protective cleanup levels based on child exposure assumptions (WAC 173-340-740). Industrial land use cleanup levels are based on adult worker exposures, and require that the site in question qualifies as industrial property. Typically, this requires the site to be zoned for industrial uses. (WAC 173-340-745)

Once a site has undergone a remedial investigation and feasibility study, appropriate cleanup standards need to be determined in order to develop a cleanup action plan. Standards have two major components, cleanup levels—the level at which a particular hazardous substance no longer threatens human health or the environment, and points of compliance—the location on the site where the cleanup levels must be met. Points of compliance can be standard or conditional. The standard point of compliance is generally defined as throughout the site for each medium (ground water, surface water, soil, and air). For certain media, such as groundwater and air, the regulation allows for less stringent "conditional" points of compliance when it can be demonstrated that it is not practicable to attain a point of compliance throughout the site. In such cases, Ecology may allow a point of compliance as close to the source of contamination as possible (WADOE 2007, 4). Ecology has three major methods for determining cleanup levels, entitled Methods A, B, and C. See Table 3 for a simplified summary of the three methods, and their applicability. Method A relies on tables of cleanup levels that protect human health for 25-30 most common hazardous substances found in soil and groundwater at sites. "The Method A cleanup level for a substance must be at least as stringent as the concentration in the Method A table and the concentrations established under applicable state or federal laws." (WADOE 2007, 1) Method A is used for cleanups that are routine[17] or "straight-

[17]A routine cleanup action is defined in WAC 173-340-200 to mean, "a remedial action meeting all of the following criteria:

- Cleanup standards for each hazardous substance addressed by the cleanup are obvious and undisputed, and allow for an adequate margin of safety for protection of human health and the environment;
- It involves an obvious and limited choice among cleanup action alternatives and uses an alternative that is reliable, has proven capable of accomplishing cleanup standards, and with which the department has experience;
- The cleanup action does not require preparation of an environmental impact statement; and

forward or involve only a few hazardous substances", as well as "in smaller sites that do not warrant the costs of conducting detailed site studies and site-specific risk assessments." (WADOE 2007, 2)

Table 3. Methods for determining cleanup levels, Washington State

Comparison of MTCA Risk Based Cleanup Methods			
Media	**Method A (T. 740-1 & 745-1)**	**Method B**	**Method C**
Soil	Available for unrestricted & restricted land use	RME defined for a residential land use & child exposure	RME defined for a industrial land use & adult exposure
	Designed to cleanup simple sites, few chemicals, know what to do and how	Target risk for individual carcinogens 10^{-6} For multiple chemicals/exposure pathways risk not to exceed 10^{-5}	Target risk for carcinogens 10^{-5} For multiple chemicals/exposure pathways risk not to exceed 10^{-5}
	No further action required if Method A level achieved at points of compliance	Non-carcinogens HQ = 1	Non-carcinogens HQ = 1
		Soil ingestion rate for child 200mg/d	Soil ingestion rate for adult 50 mg/d
Ground Water	**Method A (T. 720-1)**	**Method B**	**Method C**
	Table cleanup values may be applied to GW	RME defined for use of potable (drinking water) for a child	RME defined for use of potable (drinking water) for an adult
	Designed to cleanup simple sites, few chemicals, know what to do and how	Target risk for individual carcinogens 10^{-6} For multiple chemicals/exposure pathways risk not to exceed 10^{-5}	Target risk for carcinogens 10^{-5} For multiple chemicals/exposure pathways risk not to exceed 10^{-5}
	No further action required if Method A level achieved at points of compliance	Non-carcinogens HQ = 1	Non-carcinogens HQ = 1
		Drinking water ingestion rate for child 1 liter/d for NC; 2 liter/d for adult for C	Soil ingestion rate for adult 2 liter/d for an adult
Surface Water	**No Method A Table**	**Method B**	**Method C**
		RME defined for fish consumption & ambient water quality criterion	RME defined for fish consumption & ambient water quality criterion
		Target risk for individual carcinogens 10^{-6} For multiple chemicals/exposure	Target risk for carcinogens 10^{-5} For multiple chemicals/exposure

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• The site qualifies under WAC 173-340-7491 for an exclusion from conducting a simplified or site-specific terrestrial ecological evaluation, or if the site qualifies for a simplified ecological evaluation, the evaluation is ended under WAC 173-340-7492(2) or the values in Table 749-2 are used.

Routine cleanup actions consist of, or are comparable to, one or more of the following remedial actions:

• Cleanup of above-ground structures;
• Cleanup of below-ground structures;
• Cleanup of contaminated soils where the action would restore the site to cleanup levels; or
• Cleanup of solid wastes, including containers.

		pathways risk not to exceed 10^{-5}	pathways risk not to exceed 10^{-5}
		Non-carcinogens HQ = 1	Non-carcinogens HQ = 1
		Fish consumption rate is 54 g/day; fish diet fraction is 0.5	Fish consumption rate is 54 g/day; fish diet fraction is 0.2

Source: Dr. Craig McCormack, Toxicologist, WADOE 2008

Instead of the tables used in Method A, Method B or the Universal Method uses risk assessment equations, applicable state and federal laws, and other requirements to establish cleanup levels for each contaminant. This method can be used at any site, and is typically used when sites are contaminated with substances not listed under Method A. Method B cleanup levels are based on reasonable maximum exposures expected to occur in residential land uses, the conditions requiring the most protective cleanup levels. Sites cleaned up under Method B "generally do not need future restrictions on the use of the property due to the small amount of residual contamination typically left on the property. " (WADOE 2007) Method C is typically used to establish soil cleanup levels for industrial land uses (although it can also be used to establish cleanup levels for other exposure pathways and for unrestricted uses). This method relies on risk assessment equations, in the same way as Method B, but uses the less stringent exposure levels for industrial uses. For industrial land uses, Method C is typically used rather than Method A, when the contaminants are not included in Method A tables, or when there are many contaminants on a site.

2.4 Administrative Pathways and Liability under MTCA

MTCA largely replicated the liability scheme put in place at the federal level with the passage of CERCLA, also incorporates a strict, joint and several liability scheme. Under MTCA, cleanup is invoked by a release or threatened release of a hazardous substance from a vessel or facility. Such liability creates responsibility for associated "response costs" by potentially responsible parties ("PRPs") under CERCLA or potentially liable persons ("PLPs") under MTCA. Like CERCLA, MTCA provides liability protection for lenders, although the criteria differ,[18] as well as exemptions for local governments that acquire property through involuntary acquisitions. Note, however, that meeting the CERCLA requirements for liability protection does not necessarily meet

[18] MTCA exempts lenders who acquire property through foreclosure and take part in the management of a site, as long as they do not contribute to a release, for up to one year before and five years after taking possession of a site.

MTCA requirements for such state liability defense. In order to obtain liability defense and/or relief from both CERCLA and MTCA, one must satisfy the requirements of each.[19] (RCW 70.105D.040)

MTCA differs from CERCLA in allowing independent remedial actions, which are typically coordinated through the Voluntary Cleanup Program. This leads to two different administrative paths for liability protection, the path for formal sites and the one for independent cleanup. The statutory or formal process focuses on "cleaning up the worst sites first". Liability protections under the formal process are greater, including Prospective Purchaser Consent Decrees (for non-liable parties), consent decrees (for potentially liable parties), and Agreed Orders for both potentially liable and innocent purchasers. MTCA, like CERCLA, conditions its liability protection for prospective purchasers on the conduct of an all appropriate inquiry. Unlike CERCLA, however, it has not provided an updated standard, which we will discuss in a section below.

Independent cleanups typically focus on less contaminated sites, and prospective purchasers or property owners can follow two paths under this option: the Voluntary Cleanup program, or the truly independent option. Ecology has established a policy on independent remedial actions, Policy 120A (WAS DOE undated B). According to Ecology, "Independent cleanups are cleanups conducted without Ecology oversight or approval and not under an order or decree. Voluntary cleanups are cleanups initiated by a person other than Ecology. Voluntary cleanups can be conducted completely independent of Ecology, independent with some Ecology assistance or review, or with Ecology oversight under a signed legal agreement (an agreed order or consent decree)." (WAS DOE 2001)

Although MTCA does not directly address the cleanup and redevelopment of brownfields as such, the statutory process or formal process was originally intended for sites with the highest hazardous rankings, 1 or 2 under the WARM system, while the independent cleanup option including the Voluntary Cleanup Program was intended to deal with less contaminated sites. But the VCP cannot be completely identified with state brownfields programs. As the Environmental Law Institute put it:

Typically, voluntary programs do not focus on redevelopment nor do they target urban sites specifically. Rather voluntary programs are more often aimed at getting simple, less contaminated sites cleaned up regardless of whether they are reused. Brownfield programs, on the other hand, are more likely to focus on redevelopment and be part of a broader State strategy or set of social policies aimed at improving distressed urban areas. (Environmental Law Institute 1998)

[19] Unless it is an NPL site, sites do not need to meet CERCLA requirements for liability defense. Recipients of EPA grant funds need to meet EPA's all appropriate inquiry standards for prospective purchaser defense.

The Voluntary Cleanup Program provides interested parties with TCP staff consultation at various points in the process at the discretion of the interested party. Under VCP, interested parties can also obtain opinion letters at various points in the process, and can obtain a *No Further Action* letter upon completion of site cleanup. Under the non-consultation independent option, an interested party can investigate the potential contamination of a site and arrange for remedial action without any interim consultation. Property owners who arrange for independent cleanups under the non-consultation option must report their remedial action to Ecology within 90 days. The downside of the truly independent option is that the potentially liable party or prospective purchaser does not have the legal comfort of opinion letters.

Owners or prospective purchasers of sites that are not ranked with the highest priority for cleanup in the state can also enter into an agreement with Ecology to prepay for Ecology services to expedite the cleanup process. This offers another option for brownfields sites in addition to the independent cleanup options, both under the VCP, and the more independent, non-VCP option. (WAS DOE 2001)

2.4.1 Liability Protection Options for Formal Sites

Under the formal process, once a site has been deemed contaminated, remedial investigation and a feasibility study are conducted, leading to cleanup implementation steps, including remedial design, cleanup construction, and cleanup operation and maintenance, as described in Table 3 above. During the remedial investigation and feasibility study phase, in the case of an innocent or non-liable prospective purchaser, Ecology can enter into a prospective purchaser consent decree, which can settle liability with the State and protect the PLP from contribution claims at the State level before purchase. According to Ecology's Interim Policy on Prospective Purchaser Agreements (WAS DOE Undated A), the intent of such agreements is to expedite the cleanup of contaminated sites which would provide substantial public benefits. Ecology enters into such agreements with prospective purchasers who have substantial resources to ensure the quicker cleanup of a site. The prospective purchaser agrees to a set cost for cleanup of the contaminated site, as well as the scope of work and schedule. Ecology supervises the cleanup, and there is public involvement in cleanup decisions. The agreement may also include mixed funding, if Ecology has funds available. There is a no further action (NFA) determination when the cleanup is completed. At the state level, the prospective purchaser consent decree, which includes a covenant not to sue, is the gold standard of liability protections.

A consent decree can also be issued to a potentially liable party with the same protections. With potentially liable parties, in cases where there is no settlement of liability, Ecology can issue an Agreed Order to formalize the agreement on specified cleanup plans. An agreed order is a legally binding contract that Ecology will not carry out further enforcement action on actions specified in the contract. But it does not prevent Ecology from future actions, and does not offer protection from contribution claims.

Once the site has been cleaned up and standards have been met under a consent decree or agreed order, the site can be removed or de-listed from the Hazardous Site List. At various stages of the Ecology-supervised process, public review and comment is required.

2.4.2 Liability Protection Options for Voluntary Cleanups

In 1997 the Legislature authorized Ecology to implement a voluntary cleanup process by which a potentially liable party or other person could take charge of the investigation and cleanup without formal Ecology supervision. The person handling the cleanup could then present the evidence of their cleanup efforts to Ecology for an opinion that the cleanup met the requirements of MTCA. The PLP could also seek technical guidance from Ecology on such independent cleanups during the course of the cleanup process. The PLP would be billed for this technical service.[20] The entire process varies by the complexity of the site, but in general such independent cleanups take less time to complete than formal sites, including review by Ecology. Ecology combines all services provided to persons conducting voluntary cleanups under the Voluntary Cleanup Program. If a prospective purchaser or owner of a suspected site initiates the process of cleanup, the first contact may be with the VCP program. However, if subsequently, the individual decides to take advantage of the prepaid oversight agreement option or pursue a consent decree or agreed order, then the cleanup of the site would come under formal supervision by Ecology.

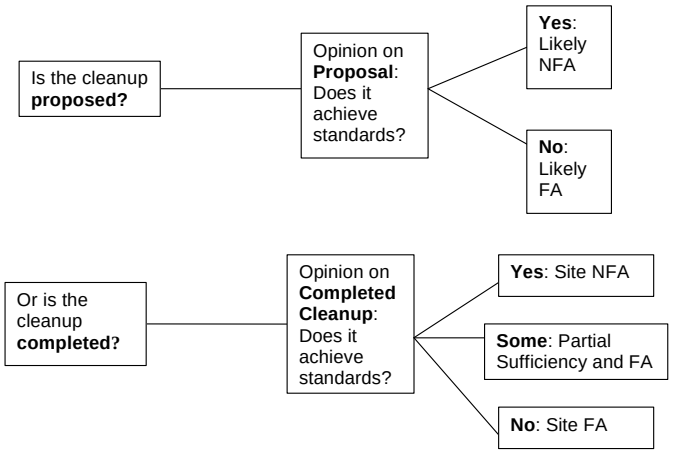
If the prospective purchaser or owner wants to conduct remedial actions at the site independently, then the individual hires environmental consultants that conduct site investigations, and prepare and carry out cleanup plans. Under the Voluntary Cleanup Program, site managers review proposed cleanup plans and completed cleanups and issue opinion letters regarding whether or not the cleanup meets or the cleanup plan would meet compliance requirements. If the cleanup meets state and federal compliance requirements for the site, the opinion letter will be a determination of No Further Action upon completion of site cleanup. Once the site has obtained an

[20] The billing is per hour (the first hour of advice is free) and is based on the salary of the staff providing the assistance plus Ecology overhead.

NFA determination, it would be delisted from the State list. Under this option, there is no settlement of liability with the State and no protection from contribution claims. See Figure 3 for a depiction of the various junctures in the process and the type of opinion letters likely to be issued by Ecology, characterized by NFA, further action (FA) and partial sufficiency and further action.

Independent cleanups with no consultation from the VCP may obtain eventual NFA determination and delisting of the site, if Ecology determines that the independent cleanup meets MTCA substantive requirements with respect to environmental investigation and cleanup process. But the timing of Ecology's review is at the discretion of the State. (WAS DOE Undated A)

Figure 3. Types of Ecology Opinion Letters under VCP



Source: Modified from WASDE, Michael Feldcamp, presentation, June 26, 2007

2.4.3 Liability Protection and All Appropriate Inquiries

According to MTCA (RCW 70.105D.040), persons are not liable, if the release of a hazardous substance occurred under acts of God, war or through an act or omission of a third party. MTCA also exempts from liability any person who is an owner, past owner or purchaser who can establish "with preponderance" that the person had no knowledge or reason to know of the release of hazardous substances on the site. "To establish that a person had no reason to know, the person must have undertaken, at the time of acquisition, *all appropriate inquiry* into the previous ownership and uses of the property, *consistent with good commercial or customary practice* in an effort to minimize liability. Any court interpreting this subsection (b) shall take into account *any specialized knowledge or experience on the part of the person, the relationship of the purchase price to the value of the property if uncontaminated, commonly known or reasonably ascertainable information about the*

property, the obviousness of the presence or likely presence of contamination at the property, and the ability to detect such contamination by appropriate inspection." (Emphasis added)

An indicated above, however, the State has not provided rule guidance on all appropriate inquiries or due diligence, although the Dept. of Ecology has published a report that provides advice on real estate transactions and liability. This 1999 publication highlights all appropriate inquiries as protection against liability claims for prospective purchasers and leasors of suspected property and states that "a thorough environmental site assessment can minimize potential liability under MTCA". Although the publication points out that "there is no universally accepted industry standard to clarify how in-depth an investigation must be to satisfy this requirement" (WASDOE 1999,3), it does identify elements of an environmental site assessment:

a) checking site lists, such as the State's Confirmed or Suspected Contaminated Sites Report, the Hazardous Site List, etc.;
b) personal interviews of present and former owners, operators, and employees, of regulatory agency personnel, and neighboring residents or businesses;
c) Review of regulatory records of EPA, the Department of Ecology, County Health Department, local planning offices for environmental permits, inspections, spill reports, zoning, etc.
d) Review of other public records, such as titles, environmental liens, etc.
e) On-site inspection of the property for signs of contamination, such as lack of vegetation, unusual or noxious odors, stained soil, etc.

In addition, the publication lists a number of questions to guide the investigation, such as, "What were the past uses? What hazardous substances has the owner/operator generated, managed, manufactured, treated, or stored?" As discussed in section 1.1.2, the new federal standard for all appropriate inquiries has a more stringent set of requirements for all appropriate inquiries, including requiring the conduct of such inquiries by an environmental professional. Accordingly, this is a policy area that the State may consider for revision.

2.5 The Toxics Accounts: Major Funding Sources for Cleanup in the State

Under MTCA, since 1989 the State has levied a tax on hazardous substances and petroleum based on the wholesale value of the substances. The revenues from the taxes are deposited into two

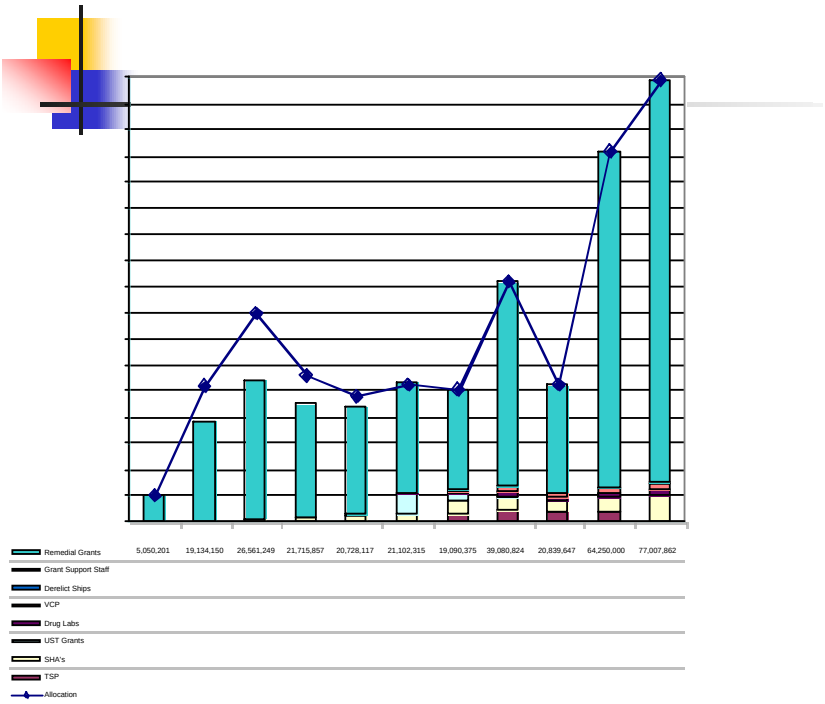
accounts, the State Toxics Control Account (47.1% of the revenues from the taxes) and the Local Toxics Control Account (52.9% of the revenues from the taxes). Funds to clean up sites in the State come from the Local and the State Toxics Accounts. Since the price of oil has been increasing over time, the revenues from this source have been increasing. The State Toxics Control Account can be used only to carry out the purposes of MTCA, including carrying out the State's responsibility for hazardous waste management, regulation, enforcement, technical assistance, and public education. (RCW 70.105D.070) The Local Toxics Control Account could be used by Ecology for grants or loans to local government remedial actions, hazardous waste programs, solid waste programs, cleanup of the hazardous substances associated with methamphetamine sites, and cleanup of derelict vessels. In the last few years, even as the amount of revenue has been increasing, the demand from local government has exceeded the available dollars. As the wholesale price of oil increases, the Toxics Accounts, as dedicated sources of revenue for TCP, are significant resources for increasing the rate of brownfields cleanup and redevelopment in the State. The graph below depicts the trends in funding remedial action grants for local governments from the Local Toxics Control Account. Notice the large increase in funding for remedial action grants (in blue) since 2005, as well as the increase in site hazard assessment (SHA) grants (in yellow).

2.6 MTCA Reform Efforts[21]

As discussed in Sections 1.1.1-1.1.2, CERCLA has undergone several revisions, which have included liability protections, a new AAI standard, and brownfields initiatives. MTCA has not been amended in the same fashion as CERCLA, but certain reform features are similar. MTCA was amended in 1994 to allow preemption of certain agency and local government permits that would be otherwise required for cleanup activities, thereby eliminating time consuming multiple layers of approval for development projects that contain cleanup components. Amendments to SEPA regulations allowed for a flexible approach to integration of review of a cleanup action under MTCA, combining what would previously have been two sets of environmental review for cleanup and development components. The 1994 amendments to MTCA also enabled prospective purchaser agreements, which have become an often-cited component of successful brownfields redevelopment in Washington and other states.

[21] Part of this section was provided by John Means (2007).

Figure 4. Local Toxics Control Account Trends, by Type of Grant, 1987-2009



Source: Dawne Gardiska/Joe Crossland Ecology TCP

Prospective purchaser agreements were first pioneered at the federal level in the late 1980s. As previously discussed, they allow a purchaser of contaminated property to pre-negotiate cleanup obligations and largely eliminate environmental liability if the terms of the agreement are complied with. Such agreements require a showing that the property will be cleaned up rapidly, using more significant financial resources than usual. They formerly required a showing of a substantial "public benefit." The 1997 MTCA amendments relaxed the "public benefit" qualifying standard and clarified the assignability to future owners of the associated court-approved consent decree device, which assures that environmental liability protections will carry forward upon sale of the property. Prospective purchaser agreements, unforeseen just a decade ago, have been successfully implemented for special projects in the Puget Sound area, often in a residential context.

The 1997 MTCA amendments also enabled independent remedial actions, which opened the way for Ecology's Voluntary Cleanup Program (VCP). In 2001, TCP revisions to MTCA rules increased the focus on future land use as a complement to cleanup policy. As have many states, Washington also enhanced the role of site-specific risk assessment, ensuring that sites are treated flexibly and that overly restrictive "one size fits all" cleanup approaches are avoided. Significantly, as already indicated, brownfields have not been directly addressed in MTCA amendments, but the most recent amendments to MTCA contained in House Bill 1761 passed in 2007 contain significant

funding opportunities for brownfields cleanup and redevelopment. These are discussed in the section below.

2.6.1 MTCA 2007 Amendments: SHB 1761[22]

The Washington legislature passed and the Governor signed into law in July, 2007, Substitute House Bill 1761.SL, (1761) which amends MTCA to expedite the cleanup of hazardous waste and to create incentives for Puget Sound cleanups.[23] In particular, 1761 calls for Ecology to "prioritize sufficient funding to clean up hazardous waste sites and prevent the creation of future hazards due to improper disposal of toxic wastes, and create financing tools to clean up large-scale hazardous waste sites requiring multi-year commitments. To effectively monitor toxic accounts expenditures, the department shall develop a comprehensive ten-year financing report that identifies long-term remedial action project costs, tracks expenses, and projects future needs." (SHB 1761.SL)

Under HB 1761, Ecology is empowered to partner with local communities and their partners to expedite cleanups. To do so, the Director of Ecology is authorized to alter the grant matching requirements to create incentives when: a) Funding would address unfair economic hardship imposed by the cleanup liability (distressed areas); b) Funding would create new substantial economic development, public recreation, or habitat restoration that would not otherwise occur; and, c) Funding would create an opportunity for acquisition and redevelopment of vacant, orphaned, or abandoned property that would not otherwise occur. Typically, grant matches have been up to 50% of the cost of the cleanup, an additional 15% for innovative technologies use (only 1 given); and another 25% for distressed counties. Now Remedial Action grant matches can be for as much as 90%, and loans may be available for amounts not covered by a grant match. Ecology is also enabled to enter into contracts to conduct studies, and purchase remedial action insurance for multi-party cleanup efforts. Under the 1761 amendments to MTCA, remedial action cost-cap insurance and Pollution Legal Liability, or a combination may be eligible expenses to help acquire property for cleanup and reuse.

In addition, the 1761 amendments directly encourage brownfields redevelopment. Remedial action grants are primarily awarded to local governments' most contaminated sites regardless of redevelopment plans, and, according to Ecology (Gardiska, 2008), the majority of remedial action

[22] Part of this section was provided by John Means(2007), TCP, Department of Ecology

[23] The original intent of the bill was to clean up all currently known hazardous waste sites in the State within 10 years, but this ambitious intent was changed during the political process, and the intent became to expedite the cleanup of hazardous waste and create incentives for Puget Sound cleanups. See Original Bill, HB 1761 found at the webpage of the Washington Legislature: http://apps.leg.wa.gov/documents/billdocs/2007-08/Pdf/Bills/House%20Bills/1761.pdf

grants are currently going to Ports. Thus, it is not clear what proportion of funding has been awarded to brownfields projects. The 1761 amendments, however, highlight redevelopment as a key objective of the grants, and changes to the grant guidelines provide funds (up to $200K without match requirements) for communities to develop plans for integrating redevelopment into cleanup plans. These changes will likely increase the proportion of funding for brownfields projects in the State, although the grants for integrated plans are part of a pilot project and awarded on a case by case basis. A fuller discussion of the changes to the remedial grant program follows in Chapter 3, section 3.2.

2.7 EPA's Role in Ecology's Brownfields Program

The Environmental Protection Agency provides a variety of grant and loan funds for assessment, cleanup and training through its Brownfields program. EPA can also provide technical assistance, but its primary function is to empower state cleanups through partnerships and funding. EPA has been allocated $200,000,000 each year through 2006. The funds are typically distributed to state and local government (and in some circumstances, non-profits) for use by government to cleanup government property or assess cleanup of private property. With limitations, federal funds are also provided to state and local government to finance cleanup of private land through a revolving loan program, such as discussed above. EPA also provides direct technical assistance through Targeted Brownfields Assessments (TBA). Through TBAs, EPA's staff provides assistance primarily to small or rural communities which lack administrative capacity to assess suspected sites. The program also helps communities identify brownfield grants for which they are eligible. EPA also provides a number of other grants which are discussed in a section below (Reisch 2006; US EPA 2008).

Table 4. EPA Funded Brownfield Projects in Washington State, Types and Amounts, 2006

Types of Projects	**Number(Percent)**	**Amount (in millions)**
Assessment Grants	38 (61%)	$6.5
RLF Assessments	7 (18%)	$ 341
Cleanup Grants	21 (34%)	$2.7
Cleanup RLFs	3 (4%)	$4.
Total of Projects	62	$13.5
Assessments and Cleanups by Region		
Northwest 41 Southwest 16 Central 2 Eastern 8		

Source: John Means Ecology TCP

Table 4 above provides some basic statistics on the number of EPA funded brownfields projects, including assessment grants, cleanup grants and Revolving Fund Assessment and Cleanup Loans, as well as the amounts, and the regional breakdown. As indicated in the table, the Northwest Region has the lion's share of such projects, 41 out of a total of 62. The major portion of funding has been provided in the form of assessment grants, $6.5 million, with cleanup loans from the Revolving Fund Program coming in second, for a total of $4 million. This is in comparison to the $64 million in remedial grants provided to local governments through the State's Local Toxics Account in 2007.

Also, Ecology's Toxics Cleanup Program includes a targeted effort, in coordination with the state of Washington Department of Community Trade and Economic Development (CTED) and the U.S. Environmental Protection Agency (EPA), designed to facilitate the return of brownfields properties to productive use. This effort has been supported by EPA's State and Tribal Response Program (STRP), with a grant amounting from $1.3 M in FY 2006, to $1.3 in FY 2008. This grant currently provides funding for a CTED brownfields coordinator, whose role is described below, and two staff positions in Ecology's Toxics Cleanup Program, including a brownfields manager.

2.7.1 Ecology's Toxics Cleanup Brownfields Program

In 2008, the Ecology Brownfield Program, recognizing an emerging need to establish brownfield reuse linked to land use planning as a strategic community or regional investment, reorganized itself into the Cleanup Enhancement and Revitalization team (CLEAR). Its mission is to assist brownfield stakeholders in developing projects that integrate remedial actions with a larger community vision of restoration, recreation, or economic benefit. This approach can often solve multiple problems, leverage multiple funding sources, and keep stakeholder focus on the end goal. The team blends policy and planning expertise with technical remediation expertise to provide a holistic approach to project development. The CLEAR team is developing tools to aid local communities in using the concepts of Integrative Project Planning that are based on four fundamental principles: developing vision, understanding risk, respecting time, and leveraging money. For example, the group has begun the development of an economic forecasting model to measure potential revenue generation and opportunity costs. Public and private investors can use this model to project long-term revenues, thereby, refocusing decision makers on the longer-term advantages for revitalization. The Economic Forecasting Model provides a tool to overcome several

barriers that impede efforts to revitalize contaminated properties. In particular, project proponents are often uncertain or unaware of the potential net return on investment associated with the remediation and redevelopment of property brownfields. The first phase of model development has been completed.. Ecology will initiate the second phase under the 2008 STRP grant. This will entail the development of software application and beta testing on several brownfield projects.

It is the intention of all three initiatives to significantly speed the cleanup of brownfield properties while providing enhanced environmental benefit through sustainable reuse. Emphasis is placed on developing additional environment benefits from green building, livable communities, and ecological enhancement/restoration.

2.8 CTED's Role in Redevelopment

Through federal funds provided by the Environmental Protection Agency, Ecology supports a brownfields position at Washington State's Community Trade and Economic Development Department (CTED). The redevelopment coordinator at CTED works on brownfields issues through a coordinated approach with Ecology and EPA to streamline the cleanup process and increase the number of sites being cleaned up. The coordinator at CTED performs several tasks, including: providing technical assistance to local governments, non-profit agencies, and private borrowers to identify potential sites; performing site and borrower eligibility determinations, Section 106 and Endangered Species Act determinations and oversight of project cleanup activities; conducting public outreach about the federal Brownfields program and increasing private investment by outreach to banks and developers; working with potential applicants for Brownfields Revolving Loan Fund (BCRLF) assistance, to determine eligibility, execute loans in conjunction with the CTED Business Finance Unit loan staff, and oversee project cleanups in accordance with the BCRLF Implementation Manual and Cooperative Agreement between CTED and EPA; and coordinating cleanups with regional Ecology Toxics Cleanup Program staff.

A major task of the redevelopment coordinator at CTED is to manage the brownfields revolving loan fund for the state. The loan fund, which provides loans for cleanup of contaminated property[24] was capitalized with several million dollars provided by USEPA and currently holds a $5.9 M capacity. The redevelopment coordinator manages the fund in conjunction with the

[24] CTED Brownfields Loan Fund Web page: http://www.cted.wa.gov/portal/alias__cted/lang__en/tabID__790/DesktopDefault.aspx

Brownfields Coalition. The Brownfields Coalition is a partnership of CTED and Ecology with King County, and the cities of Seattle, Spokane, and Tacoma including an environmental service non-profit: Environmental Coalition Of South Seattle (ECOSS). ECOSS performs a valuable "go between broker" role with property owners and prospective purchasers who fear the State's involvement early in the process. The loan fund is available for publicly owned and privately (non-liable parties)- owned properties throughout the state. Cleanups must be done through the State Voluntary Cleanup Program and must meet additional federal cleanup and public involvement requirements. Government jurisdictions and non-profit entities can receive a loan/grant combination. The maximum loan amount under this program is $425,000 (WAS CTED 2008).

2.11 Brownfields Administration in the Washington Context

Brownfields, as we have seen, are excluded from the universe of Superfund sites, and typically excluded from the highest ranking priority sites in the state programs. We can infer from this that brownfields typically fall outside of the formal site cleanup process, and are typically handled through independent cleanups. However, as we learned in a section above (1.4.3), owners or prospective purchasers of brownfields sites that are known to have a lower ranking in the State's Hazardous Sites List, can avail themselves of the formal process by making a pre-payment to Ecology. Moreover, what is first perceived as a less contaminated site, may upon environmental investigation, become a high ranking hazardous priority site, requiring a formal process. Nevertheless, we can expect that the independent path to cleanup, especially the Voluntary Cleanup Program, is an often used administrative pathway for brownfields remediation. In addition, currently, in order for brownfields sites to be eligible for EPA grants and loans administered by the state, they need to be enrolled in the Voluntary Cleanup Program. However, recent research conducted by Means (2008) concludes that the formal administrative process for brownfield cleanups may not differ significantly from the VCP process in terms of overall length[25], and may be particularly beneficial for rural governments with limited administrative and technical capacity to undertake brownfields redevelopment. And thus the issue of whether brownfield projects are best administered under the VCP or the formal process is an open issue, which we will further discuss in section 2.10.1 below.

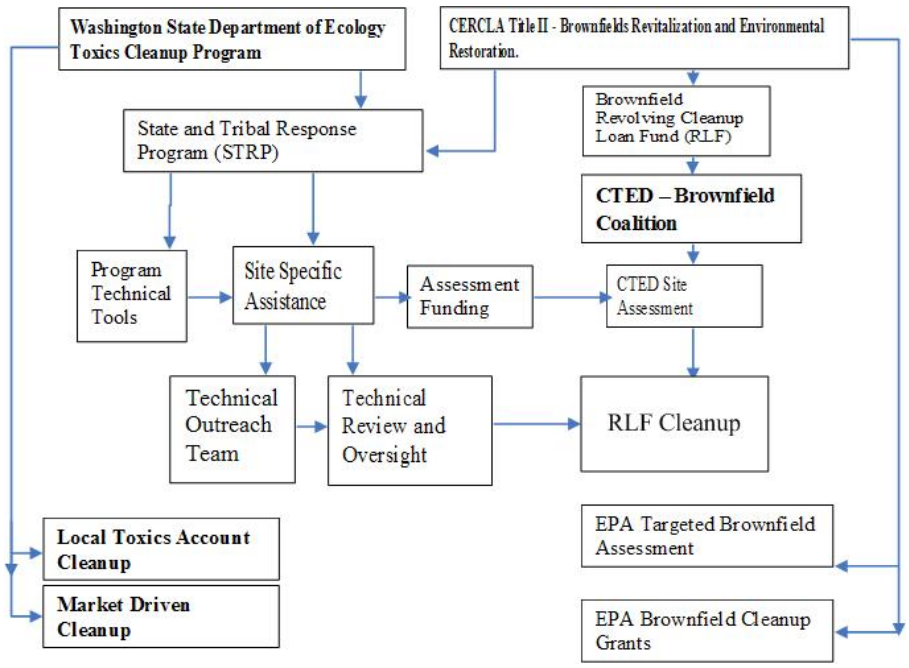
[25] Controlling for the length of the RI/Feasibility Analysis and Legal Determination phase of the cleanup process, as well as complexity of contamination. John Means, Masters Thesis (2008),

Figure 5 below summarizes the organizational relationships between the federal brownfields program, Ecology, and CTED. As depicted, there is a direct relationship between EPA and Ecology through the STRP grant program, which provides operational assistance for brownfields cleanup and redevelopment. CTED, in addition the Brownfields Coalition, administers the state's Brownfields Revolving Loan Fund, whose initial capital was provided by EPA. But CTED also benefits, through Ecology, from EPA's STRP grant, which provides funding for a staff position at the agency. STRP also funds two staff positions at Ecology to administer program activities, including technical tools, site specific assistance, assessment funding, and technical outreach, review and oversight. The State's Local Toxics Account, administered by Ecology, is the source of funds for the Remedial Action Grants to local governments.

2. 9.1 Aspects of TCP Administration Currently in Development[26]

In this section, we will review several initiatives underway in the state's brownfields program, including improvements in inventorying sites, county interagency environmental task forces, brownfields outreach teams, and assistance with Phase II assessments/cost analysis for prospective purchasers.

Figure 5. EPA and Washington State Brownfield Organization Relationships



Source: John Means (2007) TCP, Ecology.

[26] John Means (2007) contributed most of this section.

Brownfield Inventories

In their applications for EPA's STRP brownfields grants, states must demonstrate that they include or are taking reasonable steps to include timely surveys and inventories of brownfields sites. Brownfield inventories can serve two major purposes. An inventory, which includes information on the site and tracks the stages in cleanup and redevelopment, can be useful for internal administrative purposes, for identifying delays in the process, or staff needs, as well as for public information purposes. An inventory, which includes site information related to potential use, can be employed as a marketing tool, such as New Jersey's SiteMart. Ecology's information management system or Integrated Site Information System (ISIS) contains a list of sites that are undergoing cleanup and sites that are awaiting further investigation and/or cleanup. Many of these sites are brownfields sites, as defined by EPA. ISIS is continually updated by Ecology staff and is currently downloadable to the public as a pdf file or as an Excel spreadsheet, entitled Confirmed and Suspected Contaminated Sites Report (CSCS 2008).[27]

The database contains all State contaminated and suspected sites which are identified through the Ecology-supervised cleanup or independent cleanup processes. Through EPA's STRP grants, ISIS continues to be improved. ISIS database is now capable of querying brownfields sites throughout Washington by a number of parameters, such as location and general characteristics of a brownfields site. Under the current EPA STRP grant, TCP proposes to enhance the existing program by compiling brownfields inventories from Tribal, county, and city governments into a common data base. The inventory of known brownfield sites is to include acreage, time-cycle/phase completion, prior-use/re-use, finance, and demographic characteristics. The information will allow the identification of trends and common characteristics as well as monitor redevelopment progress of projects underway. The project will identify sites with Environmental Covenants and Institutional Controls, update ISIS, and compile site records in preparation of periodic review. This type of enhancement will enable TCP to track progress in its project development more effectively.

In addition, the current EPA STRP grant will also be used to develop an information portal that will enable internet access to information on contaminated sites. The new system will be conceptually similar to the Internet Site (Remediation Site Finder) developed by the Idaho

[27] WAS DOE webpages, Confirmed & Suspected Contaminated Sites (CSCS) Report Data Files for Download webpage: http://www.ecy.wa.gov/programs/tcp/cscs/CSCSpage.HTM

Department of Environmental Quality[28] and expand upon it by adding more information. Phase I of this project, which is complete created an interactive, web-based interface to the Program's most prominent, publicly accessible reports to include: the Confirmed & Suspected Contaminated Sites (CSCS) list; No Further Action (NFA) Site list; and Underground Storage Tank (UST) ;Leaking Underground Storage Tank (LUST) lists; and known brownfield sites. Persons desiring "custom" reports or data sets (internal staff, managers, public) have the ability to interactively select only the data they need (by region, county, zip code, etc.) and generate their own reports. After retrieving the selected data, users would have the option of viewing the data on-line, printing it, or saving the results to a file[29].

Phase II of this project will enhance public access to information by adding an advanced interactive Geographic Information Systems (GIS) analysis tool, which will allow advanced geo-spatial analysis such as proximity analysis (all sites within ½ mile of Puget Sound) or intersecting site data with geo-spatial features (LUST sites in wellhead protection zones). This information portal, once fully developed could be used for marketing purposes. But the ISIS database does not include all potential brownfields in the State. There are abandoned, vacant, and underutilized industrial or manufacturing properties that have not been reported to Ecology nor undertaken investigative or remedial actions to trigger inclusion in the State's database, and thus the total number of sites that are suspected of contamination is not known. To obtain a good estimate of the total universe of brownfields, Ecology would need to identify all the underutilized, vacant, and abandoned properties industrial and manufacturing properties in the State and investigate the types of uses that occurred on these sites.

Environmental Task Forces

Based on the success of a King County-based environmental task force, TCP proposes to assist other counties or combinations of counties to establish such task forces. These taskforces provide coordination of staff from various agencies, state and local to prevent contamination. The King County task force, called the Interagency Compliance Team (ICT), started in 2002, and now has a county funded coordinator and has strong support from local communities. Due to ICT's success, other counties have requested Ecology's support to set up similar task forces. Ecology is proposing to provide such assistance to at least two consortia of counties in 2008-2009.

[28] See Idaho Department of Environmental Quality webpage, Waste Remediation Site Locator http://mapserver.deq.idaho.gov/Website/Brownfields/viewer.htm

[29] The Webportal is found at https://fortress.wa.gov/ecy/tcpwebreporting/

Targeted Brownfields Outreach Teams

TCP is developing outreach that will assist communities in getting through the redevelopment process. Strategic outreach activities include: creating partnerships and building relationships among stakeholders; creating publications; providing educational workshops; and developing a Targeted Brownfield Outreach Team. The latter, a Targeted Brownfield Outreach Team will be able to provide project specific assistance.

Recognizing the lack of staffing and professional experience, which are necessary to plan and execute brownfield redevelopment in smaller or rural communities, TCP is also proposing to establish Targeted Brownfields Outreach Teams. Providing assistance at key phases of the redevelopment process will help achieve outcome goals. Key phases of the redevelopment process include: Education, Project Initiation, Evaluation, Planning and Design, Risk Analysis, Cleanup, Redevelopment, and Post Development. Within each of those phases there are critical steps in the redevelopment process where outreach could be provided either technical or funding to help the project move to the next step. These teams would be able to assist such communities with an array of already existing analytic tools such as EPA's Smarte, Economic Development Assistance, US Green Building Council Leadership Energy Efficient Design (LEED) program, Interstate Technology & regulatory Council (ITRC) Net Environmental Benefit analysis modeling. Currently, TCP is preparing the guidance document for coordinating such teams. Such a team-based approach will significantly speed the cleanup of brownfield properties while providing enhanced environmental benefit through sustainable reuse. Emphasis will be placed on developing additional environment benefits from green building, livable communities, and ecological enhancement/restoration.

2.9.2 Related State Initiatives – Puget Sound Initiative

The Governor's Puget Sound Initiative is an ambitious program established to clean up both land, and aquatic sediments in the Puget Sound region. The aim is to begin the cleanup of all high priority contaminated sites along the Puget Sound shoreline and upland up to one-half mile by 2020. The initiative incorporates an area-wide, multiple sites coordinated approach which calls for the inclusion of multiple levels of government agencies, private parties, and the communities involved in creating a vision or plan for the contaminated areas early on in the process. The emphases are on setting goals and schedules early, forming public-private partnerships for cleanup and redevelopment, undertaking parallel investigations and feasibility studies, the greater use of interim and remedial actions, and restoring habitats. Many of these measures are geared to save time.

Another key feature of the initiative is the leveraging of financial resources, using remedial action grants, and TCP capital budget funds, and other sources available for cleanup.

2.10 Institutional Challenges to Brownfields Redevelopment

In this section, we will focus on several institutional issues vital to the future of brownfields redevelopment in the state. These issues include: the length of the cleanup process; staff resources; the lack of an administrative process for handling multiple sites; the capacity needs of small towns and rural communities to undertake brownfields projects; and integration of the cleanup and redevelopment process,.

2.10.1 Length of the Cleanup Process

The length of the cleanup process is an impediment to the cleanup and redevelopment of brownfields in the State. Recent research (Means 2008) provides statistics on the length of the process for brownfields sites falling under three categories: VCP typical cases, complex groundwater and sediment sites, and average formal brownfield sites, and compares these types of cases to the phases set out in the MTCA deadlines. See Table 5 below for a summary of length in months to completion of the various phases of cleanup for these different types of cases.

Table 5. Brownfield Legal Pathways and Phase Comparison

Types of Cases	Length of Process by Phase in the Cleanup Process (in months)[1]				
	Discovery	**RI/FS Workplan/Legal Negotiations**	**R I/FS /Legal Negotiations**	**New Order Negotiations**	**Cleanup Action Plan (CAP)**
VCP typical case	9	15	37	43	51
Complex Groundwater and Sediment Sites	9	21	95	101	123
Mean Formal Brownfield	9	14	57	58	61
Maximum MTCA Deadline	9	19	49	59	61

Source: John Means (2008) Masters Thesis

[1]Months are cumulative.

As evident from the table above, VCP typical cases compared to average formal sites conducted under Consent decrees and Agreed orders, fall within the MTCA deadlines, although VCP cases still average ten months less than formal sites. The main difference between these two is the length of the Remedial Investigation/Feasibility Study/ Legal Negotiations phase, because no legal negotiations take place under the VCP program. Complex sites, which often involve groundwater and sediment contamination, multiple PLPs or complications, average over 10 years to complete the Cleanup Action Plan phase. In these complex sites, it is clear that the RI/FS/Legal Negotiations phase takes up about 40 months more than the amount of time that average formal sites take to complete this phase. Cleanup itself may add several more years to the process.

In his recent research on the performance of the various administrative pathways to cleanup of brownfields sites, Means (2008) focused on the issue of length/cost of the process. Several

Table 6. Summary of research on factors influencing brownfields cleanup in Washington State

Research Question	Results ($p > 0.05$)	Sample	Statistical Test
1. On Formal sites, is there a significant difference in length of process between Enforcement, Agreed, vs. Consent Orders?	Yes, significant difference. Agreed orders average 108.1, Consent 91.4, and Enforcement 74.8 months	N = 36 formal brownfield sites completed or planned for redevelopment	ANOVA single factor
2. Is there a significant difference between MTCA timeline and average time to completion?	Yes, significant difference (See Table above)	"	AT test
3. Is there a significant difference in average cleanup of site based on site hazard ranking (1 most hazardous, 5 least)?	Can infer no difference in mean cleanup time when controlled for site hazard ranking	"	ANOVA single factor
4. Do legal mechanisms, when controlled for site ranking, explain the difference between mean cleanup time and mean statistical time?	Can infer no difference in mean cleanup time when controlled for hazardous ranking (although unequal sample sizes)	"	ANOVA two factor w/o replication
5. If no difference between mechanisms, when controlling for site ranking, do one or more phases of the process deviate from MTCA steps?	Yes, there is a statistical difference between one phase—RI/FS/Legal Negotiation, typically under Agreed Orders--and the MTCA timeline, and a statistical difference within the groups. (See Table above)	To the above sample, added 36 VCP sites to compare formal vs. VCP (which have no negotiation phase)	ANOVA single factor
6. Is there a statistical relation between staffing levels and the number and length of time to complete RI/FS?	Yes, there is a strong positive correlation (R^2 =0.87) between number of staff allocated and number and length of time to complete RI/FS. Mean time to complete doubled from 1988-1999 from 31 months to 57 months from 2000-2008.	Sample of n = 94 over a 20 year period	Regression analysis on number of RI/FS completed and number of staff

Source: John Means (2008) Masters Thesis.

statistical tests were conducted to narrow down the significant variables. The research questions, statistical tests conducted and conclusions are summarized in Table 6 below.

The research suggests the following:

a.) The perception that VCP is a shorter process than the formal process is confounded by the inclusion of complex sites, and by not controlling for hazard ranking. If complex sites are excluded, the difference in total time up through the completion of the Cleanup Action Plan between VCP versus the formal process is not as great, averaging less than ten months[30]. According to the research, when controlling for hazard ranking, there is no mean difference. Yet there are substantial liability protection advantages for a developer to pursue a formal process for brownfields redevelopment, which, in cases where the hazard ranking is high, may outweigh the mean time difference. But, as discussed in previous sections, the formal process is not as accessible to brownfields projects, because EPA grants and loans require such projects to go through the VCP.

b.) The Remedial Investigation/Feasibility Study/Legal Negotiation phase is significantly greater (about 20 months) under the formal process than the VCP process, since there are no legal negotiations in the VCP process. Thus, the Legal Negotiation phase of the process in the formal process may be an important phase to focus on in efforts to shorten the formal process.

c.) The relation between staffing levels and the number and the length of time to complete an RI/FS is a direct positive one: the more staff dedicated, the greater the number completed, and the shorter the length to completion.

2.10.2 Staff Resources

Brownfields efforts in the State can benefit from more staff dedicated to both the VCP and the formal process for brownfields projects. Table 7 below provides a breakdown of the Toxics Cleanup Program operating budget for the 2005-2007, and 2007-09 biennia by major programmatic activity, funding, and full-time equivalent staff. Three major programmatic activities were reported: cleaning up the worst sites first, which refers to the formal sites or the statutory program; services to site owners that volunteer to cleanup their contaminated sites, which refers to the independent cleanup options, including the Voluntary Cleanup Program; and, managing underground storage

[30] And falling within MTCA statutory timelines.

tanks. As evident, oversight of the formal sites employs 71 to 74% of the staff, and services to site owners who undertake voluntary cleanups employed from 17-14% of the total staff.

Table 7. TCP Budget and Staff by Programmatic Activity, 2005-07, 2007-09

TCP Programmatic Activities	2005-2007		2007-2009	
	Budget	Staff	Budget	Staff
Cleanup the Most Contaminated Sites First (Formal Sites)	$ 33	102	$34.4	124.2
Services to Site Owners that Volunteer to Cleanup their Contaminated Sites	$ 5	24.8	$ 9.4	23.5
Manage Underground Storage Tanks to Minimize Releases	$ 3.5	17	$ 4.4	19.6
Total	**$41.5**	**144**	**$48.4**	**167.3**

Source: Department of Ecology. Budget and Program Overview 2005-2007 and 2007-2009.

In the previous section, we discussed the importance of staff availability for the timely completion of the cleanup process for brownfields projects. We also discussed the advantages of the formal process for brownfields projects, although the EPA requirement that grantees enter the VCP remains an obstacle for brownfields developers to take advantage of greater liability protections of the formal site process. Another obstacle to brownfields cleanup and redevelopment is the lack of statutory recognition of brownfields in MTCA. Without this recognition, Ecology's TCP is limited in its ability to prioritize brownfields projects amongst other the universe of cleanup projects in the state.. (Means 2008)

Increasing the number of brownfields staff in both the formal site and VCP administrative paths is one approach to establish a more integrated process of cleanup and redevelopment. Another approach would consist of training existing staff in both administrative pathways to understand the redevelopment process, such as timing issues, lender concerns, and community process.

2.10.3 Integration of Cleanup and Redevelopment

The Toxics Cleanup Program has undertaken several initiatives to move towards a more integrated program, including both technical and financial assistance to several small towns to undertake integrated planning, STRP funded initiatives reviewed above, and recent changes prompted by the 1761 amendments already discussed. The assistance to small towns, such as Skykomish and Morton, have been great successes, illustrating the potential for communities to engage in an integrated process of planning and implementing a collaborative, community plan to clean up long-standing toxic sites, reuse those sites to generate economic development, and improve

the town's infrastructure. This planning effort has received wide recognition, including a 2006 Puget Sound Regional Council 2020 Vision Award for its outstanding community planning process. (Puget Sound Regional Council 2006). However, even such practices and new initiatives have not been fully institutionalized, and the program remains primarily cleanup-oriented. VCPs, across the states, were developed to a large extent to address the sheer magnitude of the brownfields problem that neither Superfund nor Superfund-type state programs could address. In Washington State, the VCP can shorten the process of cleanup, and provide some liability protection. But the VCP was not envisioned as a brownfields program with a clear focus on reuse as well as cleanup. For example, a program with a dual focus on cleanup and redevelopment would include elements of community planning, including public participation. In the State today, the formal process requires more community input than the VCP, since the VCP requires no community input.[31]

The 1761 amendments to MTCA move the State's program in the direction of a more integrated approach. However, the grants that encourage an integrated process are part of a pilot program. Overall, the shift of focus from cleanup oriented site management to integrated site management is in essence a paradigm shift for traditional toxics cleanup programs. An integrated cleanup and redevelopment process has yet to be broadly institutionalized in Washington State. In order for the State program to move towards a more sustainable agenda, it needs to incorporate not only environmental objectives, but also economic and social. This would require, in addition to more direct linkages with the State's growth management program, explicit incorporation of environmental justice concerns.

2.10.4 The Site-Specific Approach

Because one of CERCLA's main purposes was to hold potentially liable parties responsible for the costs of cleanup, its approach was site-specific.[32] State programs replicated this approach. However, especially in urban areas, brownfields are often found in clusters. This is typically due to industrial zoning and its attendant concentration of specific industries. Several states have incorporated area-wide approaches in their toxics programs to address this issue. MTCA has recognized the need for a multiple sites, area-wide approach in dealing with groundwater contamination (WAS DOE 1990B) and provides targeted remedial action grants to local governments for this purpose. However, the State does not have a program to deal with non-

[31] However, for sites that have been ranked under the State's WARM that enter the VCP, public input is required before such a site can be delisted.

[32] The site being defined by the extent of contamination, not property lines, although Ecology has recently developed a procedure for dealing with properties that do not coincide with a contaminated site. (WAS DOE 2008)

groundwater multiple site contamination.[33] MTCA's lack of an area-wide approach makes it difficult for most communities, except the largest cities and ports, to undertake the cleanup of more than one brownfield at a time, given limited staff and resources to process such cleanups. This sequential approach is disadvantageous from a redevelopment standpoint, because the cleanup of one site at a time may delay the redevelopment of an area until most of the brownfields in an area have been cleaned up.

Area-wide programs have the advantages of facilitating area-wide revitalization efforts, and potentially enabling the land assembly needed for large projects. As discussed in section 2.92, the Puget Sound Initiative's program includes an area-wide collaborative approach to the cleanup of the Puget Sound. Another example is the proposed Tacoma International Finance District Pilot. Project partners are developing a proposal that is designed to use an integrated approach to study the quantitative and qualitative environmental impacts on a district wide basis. Impacts to be studied would include development barriers linked to environmental contamination, historic uses, source control, groundwater, storm water, air quality. Recommendations would be provided to address the following outcomes:

- Eliminate environmental barriers to development.
- Resolve groundwater and storm water issues.
- Clarify upland concerns related to the Commencement Bay Superfund site.
- Reduce threats to drinking water and the environment.

The project is aimed at maximizing positive environmental impacts during construction and beyond (such as higher quality development, view protection, etc.) This conceptual model may be applicable to the rest of the State.

[33] However, the State does have an "Area-wide Soil Contamination" or Soil Safety Program (RCW 70.140). This program was established in 2005 and aims "to enhance efforts in western Washington in areas located within the central Puget Sound smelter plume" (RCW 70.140.10) "to reduce children's exposure to soils that contain hazardous substances." The program aims to provide technical and financial assistance to schools and day-care facilities within the area of the plume. By "area-wide" contamination the law means, "low to moderate arsenic and lead soil contamination dispersed over a large geographic area" (RCW 70.140.020) Unlike this Soil Safety Program, the area-wide, planning-oriented approach we refer to above is not targeted to a specific use or site, such as schools, or to a specific toxicant, such as lead or arsenic, and is characterized by a community planning process involving multiple stakeholders in the planning, cleanup, and redevelopment of a district or neighborhood.

2.10.6 Capacity Needs of Rural Areas and Townships

Today, we recognize that brownfields are not an exclusively urban problem. In the State of Washington, many rural areas and townships confront the challenge of brownfields without adequate administrative and financial resources to conduct the necessary studies or hire appropriate consultants to engage in cleanup and redevelopment. And yet, in many small towns, brownfields cause disproportionate blight, often hindering a town's overall ability to attract economic activities. Several of the efforts funded by EPA and Ecology, especially its Targeted Brownfields Outreach Team, can be helpful in addressing some of these needs but this issue remains an area of concern.

12.10.6 Summary

These interrelated issues, the length of the cleanup and redevelopment process, liability protections under the two administrative pathways, the deployment and training of staff, the regulatory vs. integrative and sustainable approach to brownfields redevelopment; in general, the site specific approach to toxics cleanup, and the lack of capacity of rural communities to undertake brownfields projects are important challenges facing the brownfields program in the State. As recent research indicates, the length of the process depends on the complexity of the site, and whether the path pursued to cleanup the site is formal or voluntary. Brownfields, by definition, are likely to be less contaminated sites, but the strongest liability protections are available through the formal venue. The Voluntary Cleanup Program has a much smaller staff than the Formal Sites program, for good reasons—formal sites require a greater amount of staff assistance to ensure that cleanups of the most hazardous sites adequately protect public health and the environment. Although the majority of sites that enter the system and that complete cleanups are processed through VCP, greater staff deployment to handle a greater number of less contaminated sites more quickly through both the formal and the VCP programs could make a vital difference to the revitalization of many cities, towns, and rural areas. The cooperative agreement with CTED was an early attempt to address the changing need for a more integrated approach to brownfields, however the three staff positions at Ecology and CTED providing the multidisciplinary services for grant/loan administration are not enough resources to meet the need. Cities with neighborhood or area-wide brownfields problems and rural townships with little capacity to undertake cleanup and redevelopment face special challenges.

Although there are several promising pilot projects[34] moving the State's brownfields program in a positive direction, these challenges remain.

2.11 Findings

1 Although MTCA's purposes are six-fold, including the rights to a healthful environment and protection of the environment, as well as efficient use of land, it was developed primarily as a toxics cleanup policy, as well as to ensure that the public has a right to meaningful participation in the cleanup process.

2 There is no definition of brownfields in MTCA, although the legislation does recognize the need to promote the cleanup and reuse of vacant commercial and industrial property.

3 The metropolitan growth management argument for the cleanup and redevelopment of brownfields is particularly relevant in Washington State, because the State has a strong state-wide growth management program. Brownfields redevelopment addresses all the substantive goals of GMA, although there is no mention of "brownfields" in GMA. The cross-linkage of GMA to browfields reclamation is a key step to turning the brownfields program towards a more sustainable approach.

4 The powers of the Department of Ecology under MTCA include investigation of releases, conducting remedial actions, issuing orders and consent decrees, requiring property holders to conduct remedial actions, providing informal advice and assistance regarding requirements and technical requirements, including site-specific advice for independent remedial actions. More recently Ecology is required to develop 10-year financial reports in coordination with local governments to identify needs and funding for cleanup.

5 MTCA's cleanup process uses a risk based ranking method similar to CERCLA's to prioritize sites in the state not on the federal list, allows for cleanup levels—

[34] Through the 1761 amendments to MTCA, and the initiatives funded by EPA's STRP program, e.g., for an Ecology based team of professionals trained in several disciplines i.e. a SWAT team that works collaboratively on site development, financing and cleanup.

unrestricted(residential) and restricted (industrial), and uses three methods to determine cleanup standards, one geared to "routine" cleanups (Method A).

6 Liability under MTCA is also similar to CERCLA's, strict, several and joint. Under MTCA there are currently two major administrative pathways for conducting cleanups, formal sites (worst sites), and independent cleanups. These two pathways offer different levels of liability protection. The formal process, where Ecology staff guide the process can provide greater liability protections, through prospective purchaser consent decrees, consent decrees for potentially liable parties, and agreed orders for potentially liable parties and innocent purchasers. As in CERCLA, liability protections are also conditional on all appropriate inquiries.

7 Brownfields typically follow the independent administrative pathway through the VCP, which was developed to deal with less contaminated sites, and provides staff consultation and comfort letters. However, the VCP cannot be completely identified with a brownfields program, because the VCP's focus is on cleanup not on redevelopment.

8 Prospective purchaser consent decrees are the gold standard of liability protection. Potentially liable parties can avail themselves of consent decrees or agreed orders through the formal process.

9 VCP can offer opinion or comfort letters on the adequacy of the cleanup proposal and the likelihood of obtaining a No Further Action determination at the completion of the cleanup.

10 Although MTCA, like CERCLA also requires an all appropriate inquiry to establish due diligence; unlike CERCLA, the state has not provided rule guidance on all appropriate inquiries.

11 The source of funding for Ecology to implement MTCA are taxes levied on the wholesale price of petroleum and hazardous substances. The revenues are deposited into two accounts, State and Local Toxics Control Accounts. The Local Toxics Account is used for grants and loans to local governments for cleanup. With increasing petroleum prices, the revenue

flowing into the accounts has been growing, increasing the funding for remedial action grants and site hazard assessments.

12 MTCA has undergone a number of reforms since 1989, including integration with the State's environmental protection review process (SEPA)(1994); independent remedial actions(1997); and increased focus on future land use as a driver of cleanup levels(2001).

13 Reforms in 2007 (the 1761 amendments) aimed to expedite local governments' cleanup of hazardous waste and to create incentives for the cleanup of the Puget Sound. Ecology is empowered to partner with local communities to expedite cleanups. Changes to the remedial action grants following the legislation, such as the potential for decreasing the local matching requirement for local governments, have increased incentives for cleanup. Although brownfields is not mentioned in the 1761 amendments, redevelopment is highlighted and new funds have been made available for integrated cleanup and redevelopment plans.

14 EPA plays an important role in the Brownfields Program in the State through its initial capitalization of the State's Brownfields Revolving Loan Fund, through direct assessment grants, technical assistance, and through grants to the Department of Ecology from the State and Tribal Response Program (STRP), which has provided funds to staff the Brownfields Program in the State.

15 The State's Brownfields Revolving Loan Fund is housed in the State's Community Trade and Economic Development Department, managed by the Brownfields Coalition, and a staff member who collaborates with the Brownfields Program at Ecology.

16 Thus, Brownfields administration in the State directly involves the departments of Ecology, and of Community, Trade, and Economic Development, although the brownfields staff is small, a total of three staff members.

17 The brownfields program in the state is currently involved in several initiatives (funded by STRP) including: the development of an inventory of brownfields for the State in the form of an interactive information portal; establishing local environmental task forces to aid in coordinating staff from different agencies involved in the cleanup and redevelopment; and

Targeted Brownfields Outreach Teams to assist smaller or rural communities to plan and execute brownfields redevelopment.

18 Along with the 1761 amendments to MTCA, the Puget Sound Initiative was launched to cleanup contaminated sites and sediments along Puget Sound by 2020. The initiative takes an area-wide, multiple sites coordinated approach to cleanup and redevelopment.

19 Institutional Challenges to the Brownfields effort in the State include:

a.) Length of the cleanup process, which is greatest for complex groundwater and sediment sites, and for the remedial investigation/feasibility study/legal negotiations phase of the cleanup process for formal sites. However, recent research finds that formal and VCP average cases do not differ significantly in length, when hazard rating is controlled for, and complex cases are excluded; and that staff availability is directly related to length of process.

b.) Legal negotiations lengthen the process significantly.

c.) The lack of significant difference in the length of time between the formal process and VCP for comparable non-complex cases suggests that brownfields cases could benefit from the greater liability protections offered by the formal process. However, EPA requires that EPA brownfields grantees enroll in the VCP process.

d.) 74% of the staff resources are devoted to formal sites processing, and about 14% to VCP, while the brownfields program has two staff in Ecology and one in CTED. Lack of statutory recognition of brownfields impedes the assignment of staff to brownfields.

e.) Despite the State Brownfields Program's efforts, Washington's Toxics Cleanup Program is still primarily a cleanup program and continues to face the challenge of developing a program that integrates cleanup and redevelopment.

f.) MTCA does not directly address or link the cleanup of toxics to a broader sustainability agenda, including growth management, and sustainable industrial activities.

g.) MTCA has a site-specific toxics cleanup program, and the State lacks a planning-oriented, area-wide, multiple site approach to guide local governments in dealing with

clusters of contaminated sites, although the TCP's Puget Sound Initiative offers an area-wide approach that could be adapted for the rest of the State.

h.) Small towns and rural areas lack administrative and financial capacity to undertake brownfields cleanup and redevelopment, although some of the initiatives currently under development, such as Targeted Outreach Teams, could address this problem.

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Chapter 3. Financial Assistance and Risk Management

An integral part of the "next generation" policies of environmental protection, and alongside the regulatory reforms discussed earlier, are programs of direct financial assistance and economic incentives aimed at lowering the costs of brownfields projects. (Wernstedt 2006) At the same time, private sector environmental insurance instruments have been developed since the 1990s to address the multiple risks involved in redevelopment projects. Insurance programs lower risks but raise the price of redevelopment. Increasingly, the federal and state governments are recognizing the need to provide subsidies for environmental insurance premiums to facilitate redevelopment. The following sections summarize the types of financial assistance available for brownfields projects in Washington State, with a focus on the State's remedial action grants, and provide a discussion of the types of environmental insurance programs available to manage environmental risks. Note that a full description of the sources of funding available for brownfields projects in the State appears in Appendix A.

3.1 Financial assistance for brownfields projects

The primary sources of financial assistance available for brownfields cleanup and redevelopment come from the federal government (EPA and the Department of Commerce) and the state (Ecology's Remedial Action Grants and the Department of Community, Trade, and Economic Development's Revolving Loan Fund). Many of the state capital sources, however, are not targeted directly at brownfields projects, but are open to all projects regardless of redevelopment intent. Figure 5 above is a diagram showing the flow of the primary sources of financial assistance for brownfields cleanup and redevelopment in Washington. This is organized according to the source (federal or state) and the particular program. As shown, these funds (grants and loans) are available for various phases of the cleanup and redevelopment process. By phases we refer to the ASTM model of integrated brownfield cleanup and redevelopment that we discussed in Chapter 1. According to the ASTM model of sustainable brownfields redevelopment, Phase 1 Initiation includes visioning and identification and outreach to stakeholders; Phase 2, the Evaluation phase includes determining project viability, determining environmental risks, and applicable regulations, Phase 3 is the Transaction phase when risk analysis and legal and financial activities take place, and

Phase 4, the Implementation phase includes permitting, remedial action and redevelopment. (ASTM 2000) Similarly, the programs have different eligible parties. Most assistance, particularly grants, is targeted for local governments, but some grants as well as loans are also available to non-profit and private actors, as shown below. The primary financial sources for private parties undertaking brownfields projects in the State are the State's Revolving Loan Program, and federal Small Business Administration loans.

Appendix A presents a profile of the financial programs displayed in the diagram.

Local governments in the State, in particular, have multiple sources of financial assistance available to them, although most sources provide limited funds and require matching funds. This requires brownfields developers to seek multiple sources of funding to finance brownfields projects. These multiple sources are attached to different agencies, with their own guidelines, often lengthy and technical. The State's toxics program does not currently provide a service to assist public and private developers to seek appropriate funding among these multiple sources, like a type of one-stop shop for financial assistance. Such a service could include a searchable inventory of financial incentives, and assistance in reviewing and determining eligibility for grant and loan opportunities.

3.1.1 Washington State Remedial Action Grants[35]

In section 2.9, we discussed the interrelation of EPA, Ecology and CTED in the administration of federal funds. In this section we will focus on the State's remedial action grants (RAGs), and the changes to this program due the 1761 amendments to MTCA. The state remedial action grants for local governments, quasi-public and non-profit agencies, coming from the Local Toxics Control Account, which amounted to over $84 million for 2007-2009, is potentially a major source of funding for brownfields projects in the State. Although neither the 1761 amendments nor the changes to the Remedial Action Grants (RAGs) target brownfields by name, the new RAGs guidelines highlight redevelopment as a key objective of the grants.(WAS DOE 2007) Through a pilot grant program (Integrated Planning Grants) of up to $200,000 with no match required, Ecology encourages local governments to prepare plans that integrate property reuse into their contaminated site cleanup.[36]

Several aspects of SHB 1761 are worth highlighting. First, remediation and redevelopment, from a systems and net cost-benefit perspective, are integral to one another. Therefore, under the new strategies of HB 1761 the applicants are required to develop integrated projects plans at the

[35] Part of this section was provided by John Means, Department of Ecology.
[36] A new section on Integrated Planning Grants has been added to the guidelines.

early stages of remediation that incorporate strategies to solve multiple problems stemming from contamination. To assist the applicants in developing integrated project plans, integrated planning grants include necessary studies and information gathering as allowable expenses.[37] By facilitating the calculation of risk prior to the acquisition and cleanup of property, this will alleviate a significant financial barrier for eligible parties considering the cleanup and reuse of contaminated properties.

Another aspect of HB 1761 is to encourage local governments previously unable or ineligible to participate in the Remedial Action Grant Program to apply for funding under the new strategies. This has been addressed in two fashions. First, as indicated in Chapter 2, HB 1761 authorizes the director to alter grant matching requirements to create incentives under the above conditions. A negotiated approach has been employed to raise the department's share of the match up to 90%. Next, many economically disadvantaged local governments are located within counties that are not currently considered disadvantaged. Under the previous guidelines these local governments were ineligible for the 25% match increase available to similar governments in economically disadvantaged counties. To resolve this inequity, the new guidelines use the same criteria applied at the county level to determine economically disadvantaged status, and through the most current U.S. Census Bureau data, identifies local government jurisdictions that meet the same unemployment and per capita income thresholds as disadvantaged counties. By increasing the funding and eligibility criteria new sites that were previously idle can be cleaned up and put back to use.

The concepts incorporated in the new guidelines, addressing the 1761 amendments, are new to the remedial action grant program. As such, the terms and criteria are defined in the appropriate sections throughout the guidelines. Notably, the new guidelines provide a definition of what an integrated project plan is and what should be included, general working definitions for new substantial economic development, habitat restoration, public recreation, property acquisition and cost cap insurance. The new guidelines recognize that the needs of each community and site are highly individual and that the applicant will need to work with Ecology staff to negotiate and tailor the agreement to best suit the requirements of the project as well as fit into broader comprehensive strategies such as the Puget Sound Partnership. Collaboration with all the affected stakeholders is strongly encouraged in the new guidelines.

[37] Oversight grants are provided to local governments who have been required to undertake remedial action under an order or decree by Ecology or EPA to cover remedial investigation and cleanup costs. Independent remedial grants are provided to local governments that own contaminated property or are potentially liable for a property they do not own for investigation and cleanup. For independent remedial grants, local governments are required to have entered into the VCP program and received an NFA issued by Ecology within 60 days of receipt of the NFA.

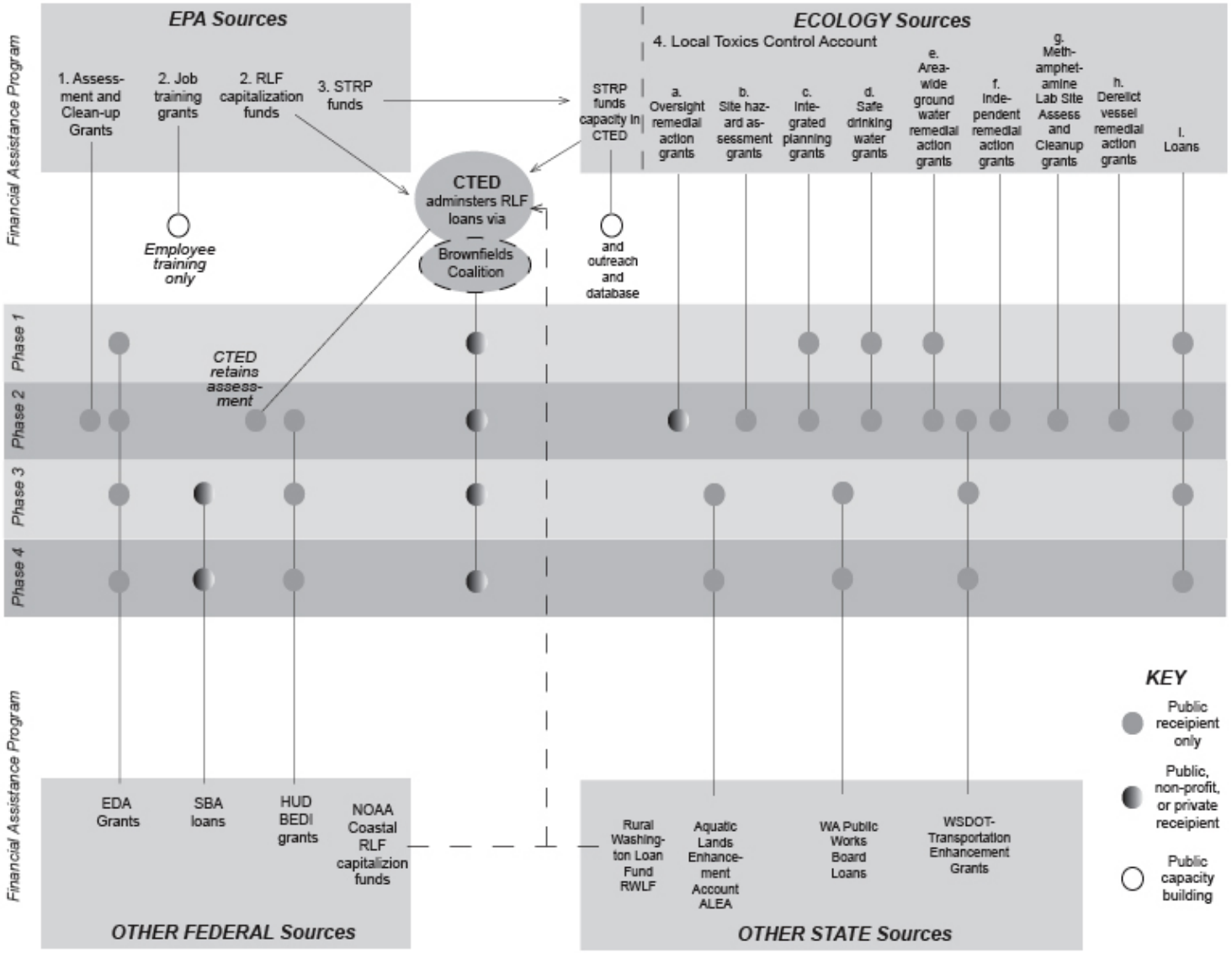

Figure 6. Flow of Primary Sources of Financial Assistance for Brownfields in Washington

Finally, the provisions of HB 1761 may significantly increase the pool of applicants to the remedial action grants program. It is also anticipated that the nature of these projects will differ from the projects funded to date by encouraging more brownfields projects and that the new projects will be evaluated and prioritized on merits that are consistent with the nature and sprit of HB 1761. In particular, by providing a strong incentive for integrative plans, the 1761 amendments to the remedial action program is likely to result in an increase in brownfields redevelopment in the stat

3.2 Risk Management Financial Tools

In the section above, we summarized the financial programs and incentives that the State uses to facilitate brownfields redevelopment. Although there are multiple sources of funding, needs outstrip resources. This is compounded by the multiple potential costs confronting the would-be developer of a brownfields site, which were discussed in section 1.2.3. These include variability of cleanup costs, potential future regulatory "re-openers", natural resource damages, and third party claims (sometimes referred to as toxic torts). The most important of these financial risks facing both private and public agents are the variability of cleanup costs, regulatory re-openers, and third party claims. The management of these financial risks can be addressed by government guarantees, e.g., liability relief, subsidies in the form of grants or low-interest loans, as discussed above, or through insurance. In this section, we will briefly review the major insurance instruments, including various types of environmental insurance, such as remediation cost-cap policies or pollution legal liability, developed to address these financial risks.

Environmental insurance protects against environmental risks by quantifying risk and transferring it to the insurer through the payment of a fixed one-time insurance premium. Environmental insurance instruments were developed to address the exclusion of pollution liability protection in general liability insurance policies, which partially began in 1972 and became absolute by 1986. (Anderson and Harrington 2006) Although available for the past 25 years, environmental insurance policies began to be used in the 1990s. At first the insurance programs offered high deductibles, low maximum coverage (about $5 million), high premiums, and short time coverage. By the 2000s, insurers began to offer a great variety of environmental insurance policies. In 2004, an environmental insurer (Lieberman and Blecher 2004) estimated that there were about 140 different kinds of insurance policies, with limits as high as $400 million on a site, and 5-10 year coverage. Pollution liability insurance has the lion's share of environmental insurance in the country, "accounting for 60% of the entire $2.8 billion environmental insurance market" (Slivka and

Heft 2008). The second most used insurance instrument is cost cap insurance, and many policies blend cost cap and pollution liability insurance. There are currently five major companies that provide a full spectrum of environmental insurance policies and provide insurance for 85-90% of insured parties: AIG Environmental, XL Environmental, Zurich NA, Chubb and ACE US. (Barry 2007)

Most insurance policies are tailored to the specific client but there are a handful of major types of insurance instruments. Table 8 below summarizes the key characteristics of the most popular types of policies: Cleanup Cost Cap or Stop Loss; Pollution Legal Liability; Secured Creditor or Lender; and Finite/Blended Risk. Note that these types of policies can be offered as portfolio policies covering two or more properties. Environmental insurance policies are complex. Although insurers may work from a basic form, most environmental insurance policies are modified by endorsements or changes that add or subtract coverage to suit the needs of the client. In addition, in order to obtain the coverage protection, the insured must make claims or reports to the insurer.

Two other types of environmental insurance are also available: contractors pollution liability, and errors and omissions or professional liability policies. Contractors pollution liability is extended to contractors and consultants working on remediation projects. This type of policy is similar to pollution liability policies, and includes coverage for environmental cleanup, bodily injury and property damage third-party coverage, while the contractor is conducting a remediation, as well as pollution damages stemming from contractor professional services. Errors and omissions or professional liability policies are extended to environmental professionals and cover damages, including pollution liability caused by acts, errors or omissions while the insured is providing professional services.

Recognizing the importance of environmental insurance for the financing of brownfields projects, EPA includes the cost of environmental insurance as an eligible expense under brownfield grants (Matthews 2003). And under SHB 1761, cost cap insurance is now an eligible expense for Remedial Action Grants in Washington. Four states, Massachusetts, Wisconsin, New York and Connecticut have developed environmental insurance state programs.

Massachusetts pioneered in environmental insurance subsidies, launching its program, Brownfields Redevelopment Access to Capital (BRAC) in 1999. Currently, the program provides up to 50% premium subsidy for qualifying brownfield policies or projects, with a maximum of $50K for privately sponsored projects, and up to $150K for publicly or quasi-public, or non-profit projects. Only brownfields projects with some form of financing qualify for the program. Brownfield projects can choose from several insurers pre-qualified by BRAC. Cost cap, pollution liability and lender

liability insurance policies are covered by the program. The program also tracks redevelopment results of the projects funded. As of the end of 2006, BRAC benefited a total of 290 projects that provided insurance in the amount of $1.06 billion, with total premiums of $13.8 million, and $5.5 million in subsidies paid by BRAC. This insurance supported a total of $165 million in environmental cleanups and development expenditures of $3.15 billion. (Barry 2007)

Recent research (Wernstedt, Meyer and Alberini 2006) examined the preferences of private developers for policy instruments and incentives to encourage brownfields redevelopment, including liability relief measures. [38] The research surveyed over 300 private sector members of the Urban Land Institute.[39] The survey provides evidence of the private sector preference for government programs that ensure affordable pollution liability and cost cap insurance programs in contrast to other state programs. "Specifically, 47 percent of respondents indicated that an affordable insurance policy that protects a developer from *damage and liability claims* would "always" encourage private redevelopment of contaminated properties. " (359) An additional 43% indicated that this statement was "almost always" true, thus 90% of respondents appear to believe that pollution liability insurance would be an effective tool for brownfields redevelopment. A similar question on cost cap environmental insurance received an "always" response from 40% of the respondents, and an "almost always" response from 46% from respondents. In sum, both pollution liability insurance and cost cap insurance appear to be particularly attractive to private developers, with a higher preference for pollution liability insurance.[40]

In the Washington State context, developers of brownfields projects can obtain very good pollution liability and cost variability protection through the formal process by entering into a consent decree either as a prospective purchaser or a bona fide prospective purchaser. Agreed orders under the formal process can also provide some measure of liability protection. Under the VCP program, however, only opinion letters, including No Further Action letters are available. A No

[38] Part of the research used conjoint choice experiment approach presenting a development scenario and a variable set of public policies, including cost cap and liability measures. Conjoint choice experiments typically call for respondents to consider two or more choices with different levels for each choice. Although the cost cap and liability measures in part of the survey indicated full state guarantees and not environmental insurance subsidies, the results are suggestive on this topic. Third party liability protection was given the greatest value of all the measures in the conjoint choice part of the survey. Respondents valued it at nearly $1 million in a scenario where the cleanup costs for the site were estimated at $900K. Close in order of preference was cost cap protection, valued at $700K. In addition, Likert-scale questions were included in the survey which asked respondents directly about the effectiveness of cost cap and pollution liability insurance. Respondents indicated, given their experience, whether statements on incentives were true along a 5-point scale from always to never.

[39] The Urban Land Institute is a member organization of land use specialists and real estate developers.

[40] Although, according to the survey results, for experienced developers, the value of cost cap vs. pollution liability guarantees appear to be equal. (360-61) This suggests that developers with little experience with contaminated properties perceive pollution liability as a larger risk than cleanup cost overruns.

Further Action letter provides a good measure of protection from liability after the cleanup is completed, but opinion letters do not address the cost variability or the pollution liability issues that may be confronted before the cleanup is completed, or the concerns of potential lenders. In order to reduce the risk on these fronts, brownfields developers who choose the VCP pathway for cleanup need to turn to environmental insurance. As we have learned, EPA recognizes environmental insurance as an eligible expense. Thus public and private developers who benefit from EPA grants or loans can count on such grants or loans to pay for environmental insurance. Further, as a consequence of the 1761 amendments to MTCA, public, quasi-public and developers can now use remedial action grant funds to cover environmental insurance costs. However, the State lacks an incentive program to assist private developers with the costs of environmental insurance. The State could explore an environmental insurance program such as Wisconsin's where the state program negotiated an agreement with an insurer that provides a discount on premiums for environmental insurance. See section 4.6.4 below. Such subsidies may be of particular importance to incentivize brownfields projects in soft real estate markets, or in economically depressed areas.

Table 8. Characteristics of Major Types of Environmental Insurance

Types of Insurance	Protection Coverage	Terms	Insured Parties
Cleanup Cost Cap (or Remedial Stop Loss)	Protects against uncertainty of cleanup costs and facilitates acquisition of loan and investment capital. Covers additional or higher concentrations of "known" contaminants; new or unknown contaminants; regulatory changes; and/or project delays caused by unexpected contamination.	Insured accepts a deductible, including estimated cost of cleanup + additional amount for cost overrun (or self-insured retention (SIR))—typically 10-30% of cleanup costs. Insurer bears cost in excess of deductible up to policy limit. Coverage terminates once cleanup is complete and completion certified—most common policy period 3-10 years. Limits typically from 50-200% of expected cleanup cost, with $1M minimum. Estimates of premiums range from 6-25% of estimated costs.	Properties with known environ-mental problems
Pollution Legal Liability	Protects against liability and legal defense costs from 3rd party claims for cleanup costs required for previously unknown or known, previously remediated pollution (re-opener coverage) Also covers property damage, and bodily injury caused by contamination on site or migrating from specific site; can also cover protection from Natural Resources Damages; diminution of value; business interruption/loss of use or income; and new environmental conditions. Covers 1st party claims of previously unknown pre-existing pollution and business interruption losses.	Premium is paid to cover an aggregate accident limit and a limit for each incident. Limit of liability protection shared by all named insured, and there is Limits can be available up to $50 million per insurer, but can have multiple insurers and increase total insurance. But typical limits = $5-10M, with a minimum of $1M Multi-year periods available, typically 5, and up to 10 years. Premiums typical $50-100K, min $5-10K. Minimum deductible $5-10K for each incident. Most common deductibles from $25-250K	For property owners, property managers, tenants
Finite/Blended Risk	Transfers financial liability to insurer. Preferred for longer cleanups. Typically includes both cost-cap insurance and pollution liability insurance.	Insured pays insurer the entire present value of projected cleanup plus a risk premium. Period negotiable, but typically more than 10 years. Finite risk can be structured similar to an annuity in order to ensure sufficient funding. Insured can obtain balance after cleanup and insured and insurer may share the annuity if no cost overruns or pollution liability costs. Insurer pays costs in excess of cost of cleanup plus risk premium.	Property owners
Lender Pollution Liability or Secured Lender	Protects lender in case of loan default. Coverage includes payment of lesser of estimated cleanup costs or outstanding loan balance once a loan defaults. Second coverage protects lender from third-party claims resulting from contamination on or stemming from mortgaged property.	Period and premium negotiable. Common premiums from $45-75K Typical limit $5-10 M, minimum of $1M. Deductibles $10-100K. Policies issued for periods of 3-10 years.	Lenders, but some lenders require property owners to purchase

Sources: Yount and Meyer (2006); Anderson and Harrington (2006); Barry (2007)

3.3 Findings

1 Primary sources of financial assistance for brownfields projects in the State come from the federal government, through EPA grants and loans and the Department of Commerce, and from the State, through Ecology's Remedial Action Grants, and CTED's Brownfields Revolving Loan Fund.

2 A majority of funds are available for one or two phases of a project, while a few, such as EDA and RLF loans are applicable to more than one phase.

3 Most sources are available for local governments, with just a few, such as EDA, SBA loans are available to the private sector as well.

4 The State's Remedial Action Grants are a major source of funding for toxics cleanups, although there are no targeted funds for brownfields as such in the RAGs.

5 Changes to the RAGs due to the 1761 amendments move the program towards a more integrated cleanup and redevelopment approach. These include requirements and funding for integrative project planning (up to $200K), increased subsidies for redevelopment elements, such as economic development or habitat restoration. These changes are likely to increase the number of brownfields projects in the State.

6 Multiple sources of funding are available, but the funding under the programs for each project are limited, and most projects require multiple funding sources to make them viable. No program exists in the State to assist public or private developers to learn about these programs, or to review the programs for eligibility and provide assistance with applications.

7 Environmental insurance protects against environmental risks by calculating risk, and transferring it to the insurer through payment of a one-time premium.

8 Many different kinds of environmental insurance exist, but three main types have been the focus of federal and state programs: pollution liability, cost cap and lender liability insurance. While pollution liability insurance protects against liability and third party claims, as well as previously unknown pre-existing pollution, re-openers, etc., cost cap insurance protects

against the uncertainty of cleanup costs. Lender pollution liability protects lenders in the case of loan defaults.

9 Four states have developed environmental insurance programs. Massachusetts's program provides up to 50% premium subsidy for qualifying brownfields projects open to both public and private parties.

10 Recent research confirms the preference of private developers for affordable pollution liability and cost cap insurance programs over other public subsidies.

11 In Washington State, developers of brownfields projects without environmental insurance can obtain very good pollution liability and cost variability protection through the formal process by entering into a consent decree. Agreed orders also provide some good measure of liability protection.

12 Under the VCP approach, an NFA letter provides a good measure of protection from liability after cleanup, but opinion letters do not address cost variability or pollution liability issues before cleanup is completed. For these protections, developers must turn to environmental insurance.

13 EPA grants and loans, and the State remedial action grants, as of 2007, recognize environmental insurance premiums as eligible expenses. Washington, however, lacks a program, such as Wisconsin's, to assist private developers with the costs of environmental insurance.

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CHAPTER 4: REVIEW OF OTHER STATE BROWNFIELD PROGRAMS

4.1 Introduction

Changes to Washington State's MTCA legislation in 1994, 1997, and again in 2001 took place in the context of toxic contamination legislative reform that was simultaneously occurring in states throughout the U.S. These reforms, much like those to MTCA, generally combined measures that increase regulatory flexibility and liability relief, along with adding various forms of financial support for redevelopment of contaminated sites. However, the particular mechanisms for liability relief, creation (or not) of voluntary cleanup programs, and range of financial assistance for activities associated with brownfield cleanup and redevelopment were neither uniform nor consistent across the states.

In this Chapter, we review six state brownfields programs from across the country, using information gathered from archival research of program information and interviews with program directors, coordinators, and managers. The intent is to discuss the structure and features of these programs as a basis for comparing and contrasting with the current framework in Washington State, which we have laid out in the previous chapters. The review of other states is designed with the explicit goal of first understanding how they operate to address the dual nature of brownfields as an environmental and economic problem, and second, to draw on these programs for approaches or features that may be applicable in Washington State. Programs currently in place in the states of California, Colorado, Massachusetts, New Jersey, Oregon, and Wisconsin were selected for review. These selections were made for reasons of 1) geographic proximity and similarity (Oregon and California), 2) widespread attention and acclaim that some programs have received in recent national reports on brownfield programs (Northeast-Midwest Institute 2002, 2005) (Massachusetts, New Jersey, and Wisconsin) and finally, 3) recommendations and familiarity of Ecology staff and the research team with the programs of other states (previously mentioned states plus Colorado).

For each of the six states, we generated a consistent profile describing relevant legislation, key features of the program, and projects exemplifying how the program has been implemented. For purposes of comparison the profiles were kept as consistent as possible, but owing to the multiple dimensions (such as forms of liability relief) and features (particularly financial incentives) of each, the programs defy direct comparison across uniform categories. Such a comparison is particularly difficult to make considering the myriad sources of funding available for brownfield redevelopment

as discussed in the previous chapter. Yet, as was also discussed, there are programs and agencies (like Ecology and CTED in Washington) that do play a predominant role in brownfields financial assistance at the state level. It is assumed that the federal programs playing a role in brownfields activity in Washington as discussed in the previous chapter are similarly available in the six states we reviewed for analysis (though of course there may be differences in possible application of those resources across the states owing to the requirements of the program). Thus in the reviews, we focused on those state agencies predominantly involved with brownfields and the programs they administer for the analysis presented here. The ensuing discussion highlights the organizational arrangements between brownfields cleanup and redevelopment offices, the way financial instruments are exercised, as well as indicators of economic/financial success in the use of the program tools. Additionally, each profile concludes with a discussion of the respective state's program(s) based primarily on the interviews conducted with key program officials.

The sets of tables on the following pages present summary information of the state programs reviewed. First, general features of the programs are displayed. This table presents the state's codified brownfield definition (if there is one), a summary of liability relief mechanisms, whether or not the state has a Voluntary Cleanup Program (VCP), whether or not the state has a Licensed Site Practitioner (LSP) program or some variation thereof, and finally, a description of the state's inventory and tracking system. The second table displays particular financial assistance and incentives within the state's program. As in Washington, there are myriad sources of financial assistance available for brownfields cleanup and redevelopment, particularly for redevelopment. Thus, the table focuses on financial assistance that is either explicitly part of the state's brownfields program within environmental or economic development agencies, or programs available in other departments that specifically target brownfields The fields include state-funded grants for assessment and cleanup, state-funded loans for assessments and cleanup, and whether these are available to the private sector, whether there is a separate Underground Storage Tank (UST) removal program with funding, other state-funded assistance available for remediation related activities, including environmental insurance programs, and finally, whether there are specific state brownfield or environmental tax credits.

Table 9. State Brownfield Programs

	Codified Brownfield definition?	Liability relief mechanisms	VCP?	LSP?	ID and inventory program?
California	"Brownfield site" means a real estate parcel or improvements located on the parcel, or both that parcel and the improvements, which is abandoned, idled, or underused, due to real or perceived environmental contamination, including, but not limited to, soil or groundwater contamination, the presence of underground storage tanks, or the presence of asbestos or lead paint on the parcel or in the improvements located on the parcel, which after assessment and planning, is determined to have a reasonable potential for economically beneficial reuse. CALIFORNIA CODES HEALTH AND SAFETY CODE SECTION 44504.1	- Certificate of completion available through VCP program - California Land Reuse and Revitalization Act of 2004(AB 389) – Provides immunity from liability for response costs or damage claims to qualified innocent landowners, bona fide purchasers or contiguous property owners. - Relief for redevelopment agencies through Polanco Act - Prospective purchaser agreements	Yes	Private Site Management Program -- authorizes private site managers, who must be Registered Environmental Assessors, Class II (REA IIs), to objectively conduct one or more aspects of an environmental assessment including preliminary endangerment assessments (PEAs), site investigations, and removal or remedial actions at low-risk sites with limited Department of Toxic Substances Control (DTSC) oversight	- EnviroStor database is an online search and Geographic Information System tool for identifying sites with known or potential contamination, and sites where DTSC's environmental oversight or review has been requested or required - DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes Land Use Restricted Sites
Colorado	No codified definition -- referred to generally within contaminated property legislation – but guidance documents generally refer to brownfields using the EPA definition	Two responses available through VCP 1) Cleanup plan approval, or 2) No further action determination.	Yes	No	System tracks sites in VCP program (does not differentiate between brownfields and other spill sites)
Massa-chusetts	No codified definition -- referred to generally within contaminated property legislation – but guidance documents generally refer to brownfields using the EPA definition	Via Brownfields Act of 1998: -"Eligible" Owners and Operators: Ends liability for "eligible persons" provided they meet requirements of Chapter 21E Section 5C. Defines "eligible person" as an owner or operator that did not own or operate the site at the time of the release and did not cause or contribute to the contamination at the site. -Downgradient Property Owners: Exempts certain owners and operators from liability for contamination that has migrated onto their property -Exempts municipalities that take a site for non-payment of back taxes -Exempts redevelopment agencies and authorities, CDCs and Economic Development and Industrial Corporations (EDICs) from liability provided they meet requirements of Chapter 21E Section 5C. -Expands and clarifies the existing exemption for secured lenders -Exempts governmental bodies or charitable trusts who hold property restrictions created for the public benefit pursuant to c. 184, section 32 (conservation, agricultural preservation, watershed preservation and affordable housing restrictions) -Activity and Use Limitations (AUL): Protects owners and operators from liability for future violations when their permanent	Yes	Yes – Parties undertaking site assessment and cleanup activities in Massachusetts must hire a Licensed Site Professional (LSP). The Board of Registration of Hazardous Waste Site Cleanup Professionals is an independent, 11-member board that licenses and regulates LSPs.	-Online searchable site list provides a list of properties in Massachusetts where an "Activity and Use Limitation" (AUL) has been recorded or registered.

		solution or remedy operation status includes an AUL and they transfer the property to a new owner -Covenant Not to Sue: Establishes a "Brownfields Covenant Not To Sue" program for parties who are redeveloping contaminated properties that do not qualify for the statutory liability relief described above			
New Jersey	Brownfield site means any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been, or there is suspected to have been, a discharge of a contaminant; 58:10B-1	- No further action letters come with a covenant not to sue - Prospective purchaser agreements	Yes	Yes – Cleanup Stars Program -- NJDEP pre-qualifies environmental consultants as "Cleanup Stars" - are permitted to investigate and remediate certain low-priority sites and areas of concern with limited NJDEP oversight. NJDEP audits Cleanup Stars' work	Known Contaminated Sites in New Jersey (KCS-NJ) report, which contains basic information on approximately 14,000 sites, and a brownfields inventory SiteMart for attracting economic development
Oregon	285A.185 Brownfields Redevelopment; rules. (1) As used in this section, "brownfield" means real property where expansion or redevelopment is complicated by actual or perceived environmental contamination.	- NFA letter available through VCP program - Prospective purchaser agreements available	Yes	No	Environmental Cleanup Site Information -database known or potential contamination and documents sites where DEQ determined NFA
Wisconsin	560.13(1)(a) "Brownfields" means abandoned, idle or underused industrial or commercial facilities or sites, the expansion or redevelopment of which is adversely affected by actual or perceived environmental contamination. 75.106(1)(a) "Brownfield" has the meaning given in s. 560.13 (1) (a), except that, for purposes of this section, "brownfield" also means abandoned, idle, or underused residential facilities or sites, the expansion or redevelopment of which is adversely affected by actual or perceived environmental contamination.	-DNR offers liability clarification letter upfront -Liability limits for local governments, who may qualify for a statutory exemption from environmental liability for contaminated properties that they acquire through "involuntarily" measures. -Liability limits for lenders, who may qualify for state and federal liability protection for normal lending, acquiring property through foreclosure, inspecting property, enforcing a security interest in personal property and fixtures, and acting as a representative - Liability limits for impacted neighbors, who can demonstrate that their property has been contaminated by pollutants that crossed the property line from another property that they do not possess or control - (VPLE) Voluntary Party Liability Exemption--an elective cleanup program for voluntary parties. "Voluntary party" is anyone who submits an application and pays all the necessary fees.	Yes	No	- Tracking --BRRTS – Bureau for Remediation& Redevelopment Tracking System – publicly available - GIS Registry of closed remediation sites available publicly

	State-funded grants for assessment and cleanup	Private parties eligible?	State-funded loans for assessments and cleanup	Private parties eligible?	Separate UST program with funding?	Other state-funded assistance available for remediation related activities	State brownfield or environmental tax credits
California	- OCSA - Orphan Site Control Account -- share funding available for remediation activities taking place under (ERAP) Expedited Remedial Action Program; max of $1.5 million; $4 million available as of July 2007	Yes	-Cleanup Loans and Environmental Assistance to Neighborhoods (CLEAN) Program -- low-interest loans to landowners, developers, local governments, redevelopment agencies, and community organizations. The Department of Toxic Substances Control (DTSC) administers the CLEAN Loan Program - Two types of loans established: the Investigating Site Contamination Program (ISCP) loan - up to $100,000 per site to conduct Preliminary Endangerment Assessments (PEAs); and CLEAN loan which provided up to $2.5 million per site to conduct further investigation and cleanup. -Currently (as of 2006) no funds are available – fund was not recapitalized in recent budget	Yes	Yes	Financial Assurance and Insurance for Redevelopment Program (FAIR) – subsidized, pre-negotiated environmental insurance - currently (as of 2006) unavailable – was not funded in most recent budget	No
Colorado	- Funding for assessments and cleanups conducted by State - $250,000 annual appropriation	No	-Brownfield revolving loan fund financing with reduced interest rates, flexible loan terms, and flexibility in acceptable forms of collateral. All cleanups financed through the Fund must have previous approval under the Colorado Department of Public Health and Environment's Voluntary Cleanup Program - $6.9 million in fund	Yes	Yes	None	Maximum of $100,000 credit per property is available; 50% of the first $100,000 spent on cleanup, 30% of the next $100,000 and 20% of the third $100,000. Property must be located in a municipality with a population of 10,000 or more
Massa-chusetts	- Urban Brownfields Site Assessment (UBSA) Program - administered by the Executive Office of Environmental Affairs provides grant funding to municipalities for site assessments. Match required.	No – only available to municipalities	-Brownfields Redevelopment Fund (BRF) Site assessment funding up to $100,000; Remediation funding up to $500,000; and Remediation and site assessment funding up to $2 million for projects designated as "Priority Projects"	Yes	Yes - $1 million annually – available to municipalities	-Brownfields Redevelopment Access to Capital Program (BRAC) state-subsidized environmental insurance available to most parties who wish to purchase, clean up and develop Brownfields sites	- Brownfields Act tax credit -- certain taxpayers are allowed a credit against their personal income tax or corporate excise liability for the costs incurred for an environmental response action (1) which results in either a permanent solution or remedy operation status in compliance with G.L. c. 21E
New Jersey	Hazardous Discharge Site Remediation Fund (HDSRF) Municipal (Public) Program: Up to $2M per year per project HDSRF Private Program: Up to $1M per year	Yes	HDSRF Loans - available to public entities for up to 100% of the funding needed for remediation if there is an imminent and significant threat to public health and environment. The loan is capped at $3 million per year per site. The interest rate is 2 points below the Federal Discount Rate with a minimum of 3%, and is determined by the NJEDA. The maximum term for any loan is 10 years Loans to private entities for up to 100% of the funding for remediation up to $1 million per year.	Yes	Yes	- Brownfields Development Area (BDA)- NJDEP works with selected communities affected by multiple brownfields to design and implement remediation and reuse plans for these properties simultaneously	Yes, first tax reimbursement program in the country—non-liable parties can obtain reimbursement up to 75% of cleanup costs of site. Tax base for reimbursement includes sales and use taxes, corporate business tax, and sales tax paid on materials for remediation or new structures.

			The interest rate is the Federal Discount Rate with a minimum of 5% and is determined by the NJEDA. The maximum term for any loan is 10 years				
Oregon	Oregon Economic & Community Development Department (OECDD) Brownfield Redev Fund – primarily loans, but some grants on case by case basis	Yes	OECDD Brownfield Redev Fund – capitalized in 2005-7 session with $45 million; split 80-20 between "urban industrial properties" and brownfields generally – all loans made so far have gone to private sector and only eligible for assessment and cleanup	Yes	Yes	None	No
Wisconsin	-DNR Brownfields Site Assessment Grants (SAG) to local gov'ts. Requiring 20% match - Dept of Commerce State Brownfield Grants – up to $1.25 million per grant can also be used for property acquisition, demolition, etc. – annual appropriation of $7 million -Green Space and Public Facilities grants – created in 2001, approx. $1 million available/year -Dept. of Agriculture (DOA) funded brownfield projects through Coastal Management Program	Yes – just Commerce grants	-DNR Land Recycling Loan Program – capitalized in 2000 with $20 million, $7 million remaining as of 2006	Yes	Yes5	ERTIF – Environmental Tax Incremental Finance Districts – designed specifically to address brownfields, and remediation costs may be recovered through resulting increases in property taxes	No

4.2 Profiles of State Brownfields Programs

4.2.1 California Land Environmental Restoration and Reuse Act

California's vast and varied history of industrialization, the economic devastation of closing military bases and loss of local industry, the recent rash of natural disasters and social unrest are just a few of the factors which have contributed to its current brownfields situation. Businesses have relocated, and residential communities have followed suit. Against this backdrop, local and state agencies have partnered with private industry to adopt various approaches to revitalizing and recycling urban brownfields properties. While public agencies play a critical role in environmental management, the vast majority of California's brownfields restoration projects depend on participation by the private sector. California's brownfields remediation programs are designed to encourage this type of cooperation between regulatory agencies and private interests, and to be flexible enough to effectively address the wide range of brownfields sites across the state.

4.2.2 Key Program Features

The Cleanup Loans and Environmental Assistance to Neighborhoods (CLEAN) Program

Enacted in 2000 and implemented by the Department of Toxic Substance Control (DTSC), the program provides low interest loans to help owners, developers, schools, local governments, and others accelerate the pace of cleanup and redevelopment of abandoned and underused urban properties. The CLEAN Program offers loans of up to $100,000 to conduct investigations of qualified urban brownfields, and can offer low interest loans of up to $2.5 million for cleanup and removal of hazardous materials at qualified urban properties where redevelopment is likely to boost property values, economic viability and quality of life of a community.

The Voluntary Cleanup Program (VCP)

The VCP has been DTSC's primary brownfields vehicle since its inception in 1993. It was designed to restore low-risk properties quickly and efficiently when the responsible party has agreed to pay all costs. Site developers with the resources to fund their own site cleanup are able to proceed at their own pace, with DTSC's oversight and in keeping with DTSC processes and standards.

The Expedited Remedial Action Program (ERAP)

ERAP was developed in 1994 to encourage responsible parties to clean up contaminated properties by offering economic and liability incentives. A pilot program limited to 30 sites, ERAP

was initially designed to resolve issues of contention regarding the Comprehensive Environmental Response, Compensation and Liability Act of 1980. ERAP allows the responsible party to clean up the site to its intended land use and incorporates a covenant not to sue, apportionment of liability based on fair and equitable principles and potential state funding for "orphan shares."

Prospective Purchaser Agreements (PPAs)

PPA's provide liability protection to purchasers or developers who are willing to clean up contaminated sites at their own expense, but are apprehensive about liability for existing contamination. Under a PPA, DTSC provides a covenant not to sue for existing contamination and provides for contribution protection. In exchange, the prospective purchaser agrees to a cleanup plan for the site, access for oversight, a commitment for future land use, and provision of significant public benefits. Public benefits include a significant increase in tax base, creating new jobs, or reuse improved quality of life in the area.

Unified Agency Review Process

The *Unified Agency Review Process* was enacted in 1994 to limit inconsistency, redundancy and confusion that can result when a variety of federal, state and local agencies have regulatory jurisdiction over cleanups. The statute established a Site Designation Committee at Cal/EPA to designate a single administering agency to oversee response actions for a site, and provides for a "certificate of completion" to be issued at the end of the cleanup process, a means for legal recognition that a cleanup is complete and that liability to all government entities has been satisfied.

Lender Liability Law

California's *Lender Liability Law* was enacted in 1996 to limit the liability of lenders who have not directly contributed to the release or potential release of hazardous substances on properties in which they have a legal interest. This law helps to alleviate reluctance on the part of lenders to finance the purchase or development of property where contamination is suspected or confirmed.

4.2.3 Regulatory Environment: Key Legislative Tools

The California Land Environmental Restoration and Reuse Act (Senate Bill No. 32 (Escutia, Chapter 764, Statutes of 2001)) established the California Land Environmental Restoration and Reuse (CLERR) Program in 2001. This program devolves authority for cleanup to local governments with oversight retained by the California Environmental Protection Agency. Under the

Act, local agencies, so designated, can issue notices to property owners or operators of a property to provide specified information whether hazardous materials are present on a property. If the local agency, based on the information provided, finds that the property may contain hazardous materials, it can require the owner to conduct a Phase I environmental assessment on the property. The State oversight agency would then review the environmental assessment, which may result in a requirement for remedial action, or the local agency itself can initiate remedial action.

The California Land Reuse and Revitalization Act of 2004 (AB 389), which became effective in January, 2005, provides liability protections to brownfield developers, innocent landowners and contiguous property owners for eligible sites. Eligible sites are primarily brownfields in urban infill areas which are not EPA or State Superfund sites, or underground storage tanks.

The *Private Site Management Program (AB 1876)* allows qualified individuals to oversee site assessments and remediation at brownfields sites that present relatively less complex problems and issues.

Local Cleanup Agreements (SB 1248) allow formal DTSC recognition of qualifying local agency cleanup programs. These agreements allow local agencies to supervise cleanups, set remedial goals, and provide certification of cleanup completion

The *Unified Agency Review of Hazardous Material Release Sites (AB 2061)* is an Established Site Designation Committee that includes representatives of various state agencies with overlapping jurisdictions. The Committee designates a single lead agency to oversee response actions and responds to petition by responsible party.

Polanco Legislation for Redevelopment Agencies (AB 3192 & SB 1425) grants local redevelopment agencies authority to conduct cleanups and provides limited liability exemption if the cleanup is conducted pursuant to remedial action plan approved by DTSC, Regional Water Quality Control Board, or another qualified local agency. This legislation extends limited immunity to property successors and lenders.

Hazardous Material Liability of Lenders and Fiduciaries (SB 1285) provide limited liability exemption to lenders and fiduciaries for releases of hazardous materials on property in which they have a legal interest, but did not cause or contribute to release or potential release of hazardous substance.

Recorded Land Use Restrictions (AB 871) require that DTSC maintain a list of land use restrictions recorded pursuant to specified sections of the California Health & Safety Code. These restrictions allow establishment of cleanup goals that are compatible with the intended use of the property.

4.2.4 Program Logistics

To begin the process of oversight agency selection, a local agency must first submit a Phase I environmental assessment to Cal/EPA. Under this program, the selected oversight agency may be DTSC, the Regional Board of the State Water Resources Control Board in whose jurisdiction the property is located, or, under limited circumstances, a qualified local agency. To select the oversight agency, representatives of DTSC and the State Water Resources Control Board (SWRCB) meet and confer on each environmental assessment and related information submitted under the program. When an oversight agency has been selected, the selected oversight agency notifies the local agency and the owner or operator of the property of its selection and of any additional requirements that must be fulfilled in order to oversee the site investigation or remedial activities at the property.

In order to select an appropriate oversight agency, the representatives of DTSC consider a number of factors, including the type of the release, the nature of the threat posed by the release, the source of the release, the regulatory history of the property or site, the applicability of the various oversight agencies' expertise to the particular threat in question, and the level of currently available resources within each agency.

4.2.5 Major Accomplishments

The California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), has developed a number of initiatives to address brownfields problems, and, where available, has complemented them with other State mechanisms. Under its Voluntary Cleanup Program (VCP), and the traditional "State Superfund" program, DTSC has been successful in sustaining economic growth and development.

Based on figures available for only a handful of sites, DTSC's successful implementation of contaminated site remediation and reuse has cleared more than 1,400 acres for redevelopment; allowed for the creation of more than 21,000 jobs, with thousands more generated by pre-development and construction activities; increased current and future tax revenues by nearly $475 million annually; provided for some 5,200 housing units; and opened up over 13 million square feet of office, commercial, recreational and industrial space.

California also passed a law, Financial Assurances and Insurance for Redevelopment (FAIR, SB 468) in 2001, which intended to lower the cost of environmental insurance for brownfields projects. FAIR would have provided a pre-negotiated package with a selected insurer of environmental insurance products, including pollution liability, cost overrun (cost cap) and secured

creditor insurance. It would have reimbursed up to 50% of the cost of environmental insurance policy premiums, and up to 80% of the self-insured retention amount (SIR), up to a maximum of $500K. The program, however, was abandoned before implemented, due to budget shortfalls, change in administration and priorities, and, according to Yount and Meyer (2006), also because of the over specificity of the bill itself which authorized the program. For example, the bill required that the insurer selection process follow the State's procurement process.

4.2.6 Highlighted Projects

Barbary Coast Steel Plant/IKEA Inc.: Emeryville, California

IKEA Property, Inc. broke ground in February 1999 for construction of a new 275,000 square foot retail furniture store and warehouse. The project, located on 15.5 acres in Emeryville and Oakland, was IKEA's first store in Northern California. DTSC entered into a Prospective Purchaser Agreement (PPA) and Covenant Not to Sue with IKEA in late 1997, which was a key factor in the redevelopment project. The PPA covers the former Barbary Coast Steel Plant site, a steel manufacturing plant that operated from 1882 to until approximately 1991. The previous owner, Barbary Coast Steel Corporation, conducted substantial cleanup activities in 1996 and 1997 under an approved Remedial Action Plan. These activities included: demolition of buildings, site-wide removal of at least two feet contaminated soil, installation of additional groundwater monitoring wells, and a site cap. Barbary Coast Steel will continue to monitor groundwater on and off the site, while IKEA has agreed to reconstruct, where necessary, and maintain a permanent site cap after construction activities are completed. DTSC has reviewed the soil management plan, and will provide oversight of related field activities during construction. The IKEA project created approximately 300 permanent jobs for the local community.

Weber Block Plaza: Stockton, California

On the edge of Stockton's Central Business District, beneath parked cars and cracked asphalt, lay 300 feet of the Stockton Deep Water Channel. The one-block area had become an eyesore for the City of Stockton. The area was suspected of being contaminated with gas, diesel fuel, motor oil, lead, arsenic and polycyclic aromatic hydrocarbons. The Weber Block became part of an ambitious effort by the City of Stockton Housing and Redevelopment Agency. The Weber Block project was performed under DTSC's Voluntary Cleanup Program. The first step was to conduct a Preliminary Endangerment Assessment on the property to identify the type and concentrations of contaminants and assess their danger. In the case of Weber Block, although a few compounds in soil and

groundwater on the site were above regulatory standards, the PEA determined that chemicals did not pose an excessive risk at the site for its proposed use as a public plaza. Based on that finding, remedial action was limited to transporting the creosote treated timber pilings to a proper disposal facility. Additionally, a deed restriction was required to ensure that the property would not be used for residential purposes in the future. In less than two years, the parking lot underwent a $6 million conversion and almost two acres of nearly useless space is now the Dean DeCarli Waterfront Square. Additional brownfields projects are planned along the Stockton Waterfront, including a 14.5-acre area on the North Shore and two to three acres on the South Shore. More than $100 million in private and public investment has resulted in the first increase in property values for existing building in the past ten years.

4.2.7 Learning From Interviews

Cleanup responsibility and authority is decentralized and diffused in CA. This is often confusing for local officials and developers. The two primary state agencies are the Water Quality Control Board and the Department of Toxic Substance Control. Both agencies devolve authority to the regional level. This is in large part due to the extremely varied conditions in different parts of such a large state.

Multiple state statutes provide different clean up standards and offer different levels of protection from liability. Determining under which of these laws to operate is not transparent and is largely the domain of environmental/land use lawyers and related experts. AB389—the 'brownfields bill' passed in 2005-- offers some liability relief to owners of contaminated sties, but it is not clear how much and with what certainty. In selecting which agency to apply to for cleanup oversight, private land owners weigh the factors of time, cost, and certainty. Most property owners would opt for less rigorous review and enforcement. In May 2005, Cal EPA, DSTC and SWCB signed a Memorandum of Understanding that develops a systematic process for the public agencies to follow in designating the lead agency. DTSC has more staff and technical capacity to monitor brownfields cleanups and costs the developer more. SWCB case managers oversee between 60-100 sites and cost the developer less. Funding for clean up monitoring is all from fees; no state funds are allocated for this function.

CA does not inventory brownfields and waits for private property owners to propose development and then responds on a case by case basis. There was general sentiment that the most significant step for the state to take was to identify where water and land was polluted and

at what levels. These community-wide (groundwater) and multiple site (drycleaners) areas would then receive priority attention, as opposed to trying to inventory all brownfield sites. One interviewee raised the question of the desirability of creating such a list as placement on it would automatically reduce the value of any property.

There are no state financial incentives to private landowners for brownfield redevelopment. The Polanco Act enables redevelopment agencies to act as both regulator and developer of contaminated sites, thus simplifying the process of conversion to public purpose. DTSC's School Program developed in Los Angeles in 2000 offers a model of how environmental clean up and community development can go hand in hand. It is a streamlined process which tries to balance community and environmental demands.

DTSC is experimenting with several innovations to move away from being a largely reactive agency. In regard to establishing clean up priorities, they have developed the West Oakland Environmental Justice Pilot Project. Members of this low income community are asked to identify their top clean up priorities, usually human health focused. In East LA, DTSC is experimenting with involving the local environmental justice community in enforcement. The agency has established the Wikipolicy Project which enables community members to suggest policies and direction for DTSC (and a Web Café project to assist the environmental justice community to access the wiki site).

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Dorothy Rice, Executive Director, California State Water Control Board, 6/21/07

Stephen Hill, Toxics Cleanup Division Chief, California Regional Water Quality Control Board, San Francisco Bay Region, 6/21/07

4.3 Colorado's Brownfield Program

Colorado established its Voluntary Cleanup and Redevelopment program in 1994. The stated goal of the program is to "Provide for the protection of human health and the environment and to foster the transfer, redevelopment and reuse of facilities that had been previously contaminated with hazardous substances or petroleum products." This program provides the framework for brownfields redevelopment in the state, approves cleanup plans, and/or provides "no further action" letters to parties responsible for site cleanup. This program is administered by the Department of Public Health and Environment, Division of Hazardous Materials and Waste. The program exists to provide timely (45 day) review of cleanup plans submitted by property owners; the cleanup and verification of site remediation is left to the responsibility of the owner.

The voluntary cleanup program was developed primarily in response to a need for a framework that would address sites with indeterminate liability, disputed levels of contamination, or that were not clearly governed by any existing legal framework (such as the federal Resource Conservation and Recovery Act, or RCRA). The program is a means by which the State of Colorado can make the redevelopment of brownfields more attractive for private parties, thereby encouraging environmental remediation as well as economic development on formerly contaminated sites.

4.3.1 Key Program Features

Voluntary Cleanup Program

Applications for cleanup under the voluntary program are designed to be a one-time interaction with the Department of Public Health and the Environment. As such, the applicant is expected to present all necessary information at one time. The general information that an owner is expected to include is as follows:

- A detailed site history to assess sources of contamination on the site

- A characterization of the site, indicating possible contaminants and where sampling for these contaminants occurred
- Sampling and analytical methodologies
- A comparison of the site characterization with established state standards
- A plan of action for remediation or no further action. Justification for such a plan must be based upon either meeting state standards for cleanup, or an analysis of risk based upon the proposed land use.

No New Regulations

The VCP was passed in order to simplify the remediation of brownfields for both public and private parties as much as possible, as well as to operate quickly and with a minimum of administrative processes and costs. Accordingly, no new regulations were passed in relation to the Voluntary Cleanup and Redevelopment Act.

Legal Reporting Requirements

Under Colorado law, only current activities that release hazardous substances or contribute to the contamination of property are required to be reported. Activities in the past that caused contamination are not subject to notification requirements under state law, with the exception of past releases from underground storage tanks. Most voluntary cleanup situations involve contamination that occurred in the past, and thus are not subject to state reporting requirements. However, one of the objectives of the voluntary cleanup program is to make "coming forward" with plans to report and remediate contaminated sites more attractive to owners. Reporting is therefore not mandatory, but is encouraged through the lifting of barriers to reporting (such as fear of prosecution, or being required to complete more cleanup than expected).

Funding

A key element of the Colorado voluntary cleanup program is that the state does not provide direct funding to assist with cleanup activities, although it does perform site assessments for eligible sites on a priority basis. However, a state revolving loan program does exist that provides low interest loans for cleanups. The State also has an income tax credit program, the Colorado Contaminated Land Redevelopment Tax Credit, with a tax credit of up to $100,000 on the first $300,000 of clean up costs for properties located in municipalities with populations greater than 10,000.

Liability Relief

Liability relief for brownfield remediation can be provided by the state's voluntary cleanup program and federal "all appropriate inquiry" guidelines. Once the state approves the voluntary cleanup process, and that process is completed, a successful lawsuit against the property owner is unlikely. Private environmental insurance products are also available to address liability concerns.

Cleanup Standards and Risk

Cleanups through the voluntary cleanup program must meet existing surface and ground water standards within the property boundary of the subject site. No standard exists for soil cleanup, and all cleanup standards or risk-based guidance developed by the State of Colorado can be modified based on an assessment of risk at the site. The state encourages voluntary cleanup program applicants to use an approach to risk that is as simplified as possible; for example, in lieu of a full baseline risk assessment such as that used by the EPA, a narrative description of exposure pathways is sufficient for all but the most complex sites. The removal of source contamination is encouraged whenever possible, however, as long as soil is not a source of groundwater contamination, an "acceptable level of risk," as defined by the Department, generally has been reached.

State Oversight and Enforcement Authority

The state provides no oversight beyond the initial approval of the site owner's cleanup plan and review of the site owner's self-certification of completing the cleanup. The completion report is submitted to the state for review as an application for no further action, in order to provide assurances from the U.S. Environmental Protection Agency that federal Superfund action will not be pursued.

4.3.2 Regulatory Environment/Policy Framework

The state voluntary cleanup program draws its authority from the Voluntary Cleanup and Redevelopment Act (C.R.S. 25-16-301), and was passed in 1994. This Act was created with the intention of facilitating voluntary cleanups by providing a method to determine cleanup responsibilities and planning re-use of contaminated property. The voluntary cleanup program does not apply to:

- *Properties listed/proposed for listing on the National Priorities List (NPL) for Federal Superfund sites.* However, the program accepts sites on which the US EPA has been involved related to Superfund, as long as the sites have not gone so far as being proposed for listing as a Superfund site.
- *Facilities that fall under the authority of the federal Resource Conservation and Recovery Act (RCRA).* Those facilities with a RCRA permit or in interim status for a permit, or which have released hazardous waste as classified by RCRA after 1980 are excluded from the voluntary cleanup program. However, some flexibility is allowed, particularly if the impact to soil and water is minimal, and no long-term cleanup or monitoring is deemed to be required.
- *Properties that have contaminated groundwater.* Such properties are subject to the Water Quality Control Division of the Department of Public Health and Environment.
- *Underground Storage Tank Sites* (handled by the Department of Labor Employment). Exceptions to this include tanks that were removed prior to December 22, 1988, and for which any residual contamination does not impact surface water or a source of drinking water.

4.3.3 Major Accomplishments and Highlighted Projects

Rangely, Colorado

Two abandoned gas stations in a small Western Colorado town hindered the development of the main street business district. The town's downtown renewal agency, the Rangely Development Agency (RDA), took ownership of the site and moved forward with the goal of bringing the sites back to a viable economic use. The RDA accomplished this with three main goals: 1) gain ownership and site control; 2) evaluate and mitigate environmental concerns; and 3) find end-users to redevelop the sites.

Alamosa, Colorado

A large coal-fired power plant site in the city of Alamosa, Colorado, closed since 1981, had become a major impediment to the city's goals of promoting urban infill redevelopment and strengthening the downtown area. A coordinated effort between state and local government, and a private party committed to redevelopment of the site, contributed to the project's eventual success.

David A. Lorenz Regional Park, Colorado:

A former landfill located in an area of rapid urban growth was transformed into playfields with an emphasis on using recycled materials. Because of the reduced maintenance costs, the local parks district responsible for oversight of the redevelopment were able to forecast a recoup of their costs within eight years of the start of the project.

4.3.4 Learning from Interviews

The Voluntary Cleanup Program is the cornerstone of Colorado's approach to brownfield cleanup and redevelopment. The process varies quite a bit from site to site according to interviewees. Financial resources in the state are limited to the EPA grants, a small state fund ($250k annually), as well as tax credits and a state revolving loan fund. These are usually matched with EPA funds or local government grants, and some projects are funded 100% through the state program (a match is not required). A process for identifying and tracking brownfields is not currently used.

An interviewee pointed to the importance of outreach to use of the VCP, especially in smaller and rural communities. He suggested that Front Range brownfields (those close to Denver and Boulder) "seem to have gotten the brownfields message" and are well adept in accessing the federal assessment funds and tax credits available. However, he suggested that identifying and locating projects is one of their biggest challenges. Colorado does not use all of the EPA funds available to them every year, attesting to the need to expand the awareness and development of their program. Experience suggests that timing is very important in the involvement of a project in the VCP program, and thus having people connect projects (that are dispersed throughout the state) to programs at the right time is crucial and challenging. Furthermore, the interviewee suggested that the agency faces obstacles in rural areas related to perceived negative intentions of regulatory agencies.

The Colorado Brownfields Foundation (CBF) plays a significant role in both outreach and implementation of the VCP in Colorado. A non-profit foundation with an advisory board of lawyers, government officials, and developers, the CBF provides both educational and outreach services as well as direct assistance in brownfield cleanup and redevelopment such as environmental strategies, gap financing, and property transfer assistance. The CBF is under contract with the Department of Public Health, Hazardous Materials and Waste Management Division for outreach and assistance. Interviewees highlighted the role of the CBF in many of the successful projects, particularly in holding the title on property until an assessment has been completed before being transferred to a local government or non-profit.

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4.4 Massachusetts Brownfield Program

The Massachusetts Brownfield Program focuses on the remediation of contaminated properties for the two main purposes of environmental protection and economic development. In 1998, the state passed legislation entitled the Brownfields Act that created financial incentives and liability relief for parties involved in brownfields cleanup projects. The Act also provided state agencies with $50M to administer programs that focused on contaminated site remediation and redevelopment. In 2006, these programs (including tax credits and the redevelopment fund) were extended and re-capitalized, respectively.

4.4.1 Key Program Features

Liability Relief and Financial Incentives

Two key features of the Massachusetts Brownfields Program, as framed in the Brownfields Act, are liability relief and financial incentives. These features are not meant to trump the importance of environmental protection, but function as a means to engage stakeholders in a more cooperative, rather than adversarial role in site remediation. Additional features also exist as tools to encourage brownfield cleanup and responsible redevelopment, including provisions for economically distressed areas, tools for municipalities, and ongoing monitoring. Liability relief and financial incentives are described in more detail in this section, below.

Privatized Cleanup Program

The Massachusetts Brownfields Program was notably the first privatized waste site cleanup program in that direct oversight was shifted from the Department of Environmental protection to private sector "Licensed Site Professionals." Doing so increased the rate of remediation of sites throughout the state.

Flexible Cleanup Standards

Flexible cleanup standards allow different levels of cleanup for different types of redevelopment projects. Sites that were to be re-used as industrial sites, for example, are not held to the same standards as sites being redeveloped for residential use.

Federal Funding

Approximately $40M in federal funding from the US EPA, as well as significant additional funding from various HUD programs has been awarded to various government agencies for the purpose of identifying, assessing and cleaning up brownfields sites. Grants, loans, and technical assistance from NOAA, the Army Corps of Engineers, and the Department of Energy have also supported many brownfields remediation projects in Massachusetts.

Liability Relief by User Type

Strict, joint, and several liability exists for current and past owners/operators of contaminated property in Massachusetts. However, the Brownfields Act amended existing laws to provide liability protection for several types of parties involved in brownfields projects. These include "eligible persons" (Owners/operators who did not cause or contribute to contamination at the site), downgradient property owners (certain owners and operators of property into which contamination has migrated), certain eligible tenants who did not cause or contribute to contamination, certain redevelopment authorities and community development corporations who did not cause or contribute to contamination, and secured lenders who take ownership of contaminated property through foreclosure.

Covenant Not to Sue (CNTS)

The Massachusetts Brownfields Covenant Not to Sue (CNTS) Program provides liability protection for more complicated projects not covered directly under the Brownfields Act. Liability

relief through CNTS is used as an incentive toward cleanup and redevelopment of a given site for certain projects. CNTS can be offered, for example, to a causally responsible party interested in partnering with a developer in the remediation and redevelopment of a site, or for an eligible party who can reach only a temporary, rather than a permanent, solution required for statutory protection.

4.4.2 Financial Assistance/Incentives

Funding for brownfields remediation projects is available both through programs created specifically for brownfield cleanups, as well as funding through other established programs that also provide funding that can be used toward brownfield remediation.

Brownfields Redevelopment Fund (BRF)

The BRF is targeted toward the assessment and cleanup of brownfield sites in "Economically Distressed Areas" (EDA's). The BRF provides low-interest loans and grants for these areas, with a maximum cap of $50,000 per project site assessment, and $500,000 per project site cleanup, with the exception of "priority projects," which can receive up to $2 million for site assessment and cleanup. In order to be eligible, proposed projects must 1) have a demonstrated need for BRF funds, 2) be located in an EDA, and 3) result in significant economic impacts in terms of new jobs or contribution to the economic or physical revitalization of the areas in which they are located.

BRF funding includes grants (with eligibility limited to municipalities, redevelopment authorities and agencies, economic development corporations, and community development corporations) and loans (with the recipient providing matching funds).

Brownfields Redevelopment Access to Capital (BRAC)

The BRAC program is intended to encourage lending to private sector borrowers involved in the remediation and redevelopment of brownfield sites in Massachusetts. The program is designed to back private sector loans with environmental insurance in order to ensure that sites are remediated to the extent planned, and that lenders are assured of the repayment of their loans. Funds in the program are used to pay insurance premiums, pay excess deductibles, provide loan guarantees and pay cleanup costs should a remediation project not be completed. Borrowers' risks are mitigated through the BRAC Pollution Legal Liability and Cleanup Cost Cap policies. In this way, the BRAC program reduces or eliminates environmental risk for private parties, and thereby brings private sector loan funding to brownfield remediation projects in the state.

Massachusetts Brownfields Tax Credit

The Massachusetts Brownfields Tax Credit is a time-limited program available for certain eligible parties for recouping costs incurred as part of a contaminated site remediation. Eligible parties include individuals who are owners or operators of a contaminated property, and more recently non-profits, but who did not contribute to the contamination or own/operate the site at the time of the release. Tax credits range from 25% to 50% of the "net response costs" (as defined by Massachusetts law), depending on whether the cleanup pursued was a permanent remedy or a remedy involving a limitation of use on the property involved.

Key limitations to the tax credit included:

- Time period for costs incurred: Costs must have been incurred between August 1, 1998 and January 1, 2012.
- Cost Threshold: Cleanup costs must have been greater than 15% of the assessed value of the property prior to remediation.
- Reporting: The site must have been reported to the Department of Environmental Protection.
- Combining with other aid programs: A credit could not be taken on funding the taxpayer received from the BRAC Program or the BRF.

Other funding programs

- Massachusetts Division of Housing and Community Development (DHCD) Community Development Block Grant funding (provided through HUD): Several programs provide funding for brownfields cleanup activities
- The Underground Storage Tank (UST) program, which provides limited funding for cities and towns for remediation of leaking underground tanks
- Clean Water State Revolving Fund: Subsidized (2%) interest loans for brownfields projects that have a demonstrated benefit to water quality
- Business Development Corporation (BDC) New England: Offers a remediation loan program that promotes the cleanup of contaminated sites. Loans of $500,000 to $2 million can be used to finance cleanup costs, regulatory compliance costs, site preparation and entitlement, demolition, construction, mortgage financing and various soft costs
- Executive Office of Economic Development (EOED) Massachusetts Opportunity Relocation and Expansion (MORE) Program: Executive Office of Economic Development

(EOED) Massachusetts Opportunity Relocation and Expansion (MORE) Program: Offers grants to municipalities that partner with private developers for infrastructure-related projects that create jobs. Funding is available for site remediation and preparation work tied to infrastructure improvements.

- Smart Growth Programs. Various Massachusetts state agencies offer incentive programs that may be used directly or indirectly for brownfields redevelopment projects that support smart growth.

4.4.3 Regulatory Environment/Policy Framework

"*The Brownfields Bill" – Chapter 206 of the Acts of 1998*

An Act Relative to Environmental Cleanup and Promoting the Redevelopment of Contaminated Property. This bill provided agencies at the state level with $50 million to administer programs targeted towards the cleanup and reuse of contaminated property, and extended numerous incentives and various types of liability relief to parties undertaking brownfield remediation projects.

M.G.L. c. 21E: Massachusetts Oil and Hazardous Material Release Prevention and Response Act. This Act defines and governs the actions of the Massachusetts Department of Environmental Protection (DEP) with regard to the release of oil and hazardous materials into the environment

4.4.4 Major Accomplishments and Highlighted Projects

A PDF brochure published by the Massachusetts Department of Environmental Protection that includes brownfield success stories for projects in Massachusetts can be accessed here: http://www.mass.gov/dep/cleanup/bfstory.pdf

4.4.5 Learning from Interviews

Since 2000 Massachusetts has received over 50 applications for the CNTS (Covenant Not To Sue) program. It's particularly useful for eligible parties who seek temporary cleanup solutions or for parties seeking up-front liability protection. Liability protection is already offered in the [Brownfields Act] statute; the CNTS program adds to that protection by offering it at the front-end of a project. A downside of the program cited by interviewees is its expense; a typical CNTS

agreement costs about $30k to set up and attorneys representing the eligible parties customize many of the agreements.

The brownfield program allows for a single point of contact at the Department of Environmental Protection for all brownfield remediation projects. Initially the program was created at the governor level, however, this approach was seen as too top-down and did not allow for appropriate collaboration among the 12-15 different agencies on both the state and federal levels involved in brownfield cleanups. Every month, a meeting is organized between the different agencies to ensure appropriate collaboration is taking place on various projects. In addition to the single point of contact at MassDEP, there are also designated regionally-based contacts throughout the state (these personnel have full-time jobs in addition to their responsibilities as contacts for brownfield cleanups).

According to interviewees, the introduction of the LSP (Licensed Site Practitioner) program sped up brownfield redevelopment activities. Instead of eligible parties going to the MassDEP, they can contact the over 500 LSPs in the state. The LSPs are responsible for achieving the same cleanup standards as the DEP; quality is ensured through an auditing program and a review board run by the DEP.

Tax credits are available to eligible parties after cleanups are performed (eligible parties would rather have the tax credit up-front, however, rather than having to wait until the end of a project to receive it). There is a brownfields redevelopment fund that is administered through MassDevelopment, which is focused on economic development projects. They provide real estate expertise and financial tools to businesses and local public agencies. Funding through MassDevelopment is administered as a loan program and is available for site assessments and remediation activities. Additional funding is available through HUD and the CDBG program. According to an interviewee, Massachusetts is currently drafting a new bill that would add statutory liability protection for eligible parties at the beginning of a project. This bill, supported by developers, would add liability protection in the form of personal injury and natural resource liability protection.

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4.5 New Jersey’s Brownfield Program

The core goal of New Jersey’s brownfields program is to match economic development with environmental cleanup and return abandoned or contaminated properties to viable economic use. Legislation to address the cleanup of contaminated properties was first developed in the early 1980’s with the Environmental Cleanup Responsibility Act (ECRA), which was replaced in 1993 by the Industrial Site Recovery Act (ISRA). ECRA was a strict cleanup program organized around the “polluter pays” principle, signed into law largely as an emergency regulation. Owners of brownfield sites with unacceptable levels of contamination were required to remediate their sites to a strict standard before they sold them, regardless of the intended re-use. This older program has been characterized as inflexible and by its inability to effect compromise between public and private entities in the state.

ISRA, which was passed into law during a period of national recession, was developed as a more flexible program than ECRA in terms of cleanup standards for different property types, loan provisions, and voluntary incentives for buyers and sellers. Under the earlier “mandatory” model (ECRA), property owners were required to cleanup contaminated properties before they were sold, and were required to pay for this cleanup. Under the newer model (ISRA), voluntary parties could conduct cleanups and were not subject to the same extent of oversight by state agencies under the previous legislation. (Day and Johnson 2004) The Brownfield and Contaminated Site Remediation

Act (BCSRA), passed in 1998 and amended in 2002, further amended (but did not replace) ISRA and provides the current framework for the New Jersey brownfields program. (NJ Legislature 1998)

4.5.1 Key Program Features

The New Jersey Brownfields Program is defined by its voluntary cleanup program (VCP), initiated in 1992. The VCP allows responsible parties, developers, and local officials to work with the New Jersey Department of Environmental Protection (NJDEP) to remediate non-priority contaminated sites that pose no immediate threat to human health and the environment. The Voluntary Cleanup Program replaces the earlier mandatory program under ECRA, which included hard time-tables and penalties. Under the more flexible VCP, a party conducting a cleanup enters into a "Memorandum of Agreement," which establishes the scope and schedule of remediation activities. Parties may select a partial investigation or cleanup, and can exit the agreement at any time. Most VCP cleanups involve relatively low levels of contamination and are targeted toward re-use into viable commercial centers, although some have been re-developed into residential sites. The VCP has several key features, which can be classified under the following four categories:

Liability protection

This includes no further action letters (NFA) with a covenant not to sue (CNTS) – provided to non-liable developers who pursue a remediation project under the oversight of the New Jersey Department of Environmental Protection.

Choice in determining level of remediation

Under supervision of the NJDEP, developers can choose the level of cleanup to perform. Sites can be remediated to three different levels, categorized as restricted, limited restricted, and unrestricted use. Contamination sources must be removed regardless of the level of cleanup sought.

Cash financial incentives

25% matching grants private entities from the HDSRF for limited restricted or unrestricted reuse remedies, or for innovative technology remedies

Tax incentives

Tax rebates from the state allow up to 100% reimbursement of cleanup costs through redevelopment agreements with developers. A new tax credit program also provides cleanup incentives.

Some properties do not qualify for the VCP. These include heavily contaminated properties that possess an acute, direct threat to human health or the environment, or properties subject to the Industrial Site Recovery Act (ISRA), the Underground Storage Tank program, or Superfund sites.

4.5.2 Regulatory Environment/Policy Framework

The Brownfield and Contaminated Site Remediation Act (BCSRA)

The BCSRA provides the basis for the brownfields program in New Jersey, and "amends key statutes including ISRA, and adds new provisions that advance brownfields reuse as part of a comprehensive program for urban redevelopment."

While BCSRA amended parts of ISRA, ISRA still remains a key statute as it applies to all transferors of industrial properties that "involve the generation, manufacture, refining, transportation, treatment, storage, handling, or disposal of hazardous substances or hazardous wastes." The Act requires owners or operators of such establishments who plan to close operations or transfer ownership of their property to 1) notify the NJDEP, and 2) obtain either a no further action letter or approval of a remedial action work plan from the NJDEP.

Hazardous Discharge Site Remediation Fund (HDSRF)

This fund was established in conjunction with ISRA in 1993 to provide funding to public, qualifying private, and non-profit entities for investigation and remediation activities of contaminated sites under NJDEP oversight. Funding levels and grant amounts differ significantly for public and private entities. Depending upon entity type, incentives are available for use of innovative remediation technologies, or types of remediation projects, such as affordable housing, recreation or conservation, or development as a limited or unrestricted use site. The HDSRF is divided into two programs, one being oriented toward public entities and the other toward private parties.

HDSRF Municipal (Public) Program: Up to $2M per year per project

- 100% Grants for Investigation
- Low-interest (two points below fed discount rate, 3% floor) Loans for Remediation
- To be eligible for either, the municipality must 1) adopt or have a realistic plan for developing or redeveloping the subject site, 2) hold a tax sale certificate for initial investigation of the site, and 3) must own the property to be eligible to perform further

investigation or remediation. Loans for remediation are 2 points below federal discount rate with a 3% floor.

HDSRF Private Program: Up to $1M per year

- 50% Innocent Party Grants: For properties acquired prior to December 31, 1983; and where there has been a discharge of a hazardous substance that was not used by the person who acquired the site, or any person with permission from the applicant to use the site.
- 25% Matching Grants (up to $100,000) For businesses or individuals with a net worth of less than $2 million who propose using approved innovative technology for site remediation, or who implement a remedy that uses unrestricted or limited restricted use standards.
- Loans at the federal discount rate, with a 5% floor

Additional regulatory framework elements:

- Spill Compensation and Control Act (N.J.S.A 58:10-23.11 et seq.): This Act, enacted in 1976 and amended almost annually thereafter, established a fund for cleanups and provides authority for the emergency response, removals, remedial actions, enforcement, cost recovery, victim compensation, natural resources damages, and voluntary cleanup
- Technical Requirements for Site Remediation (N.J.A.C. 7:26E): This rule applies to cleanups undertaken in New Jersey that are subject to other major brownfield cleanup legislation, such as ISRA or BCSRA.
- The Environmental Rights Act (N.J.S.A 2A:35A): Establishes a basis for filing citizen suits
- The Water Pollution Control Act (N.J.S.A 10A-1 et seq.): Establishes the basis for the remediation of contaminated sites which impact aquatic areas in New Jersey

4.5.3 Logistics/Process

The process depends largely on the type of site, level of contamination, and the level to which the site is being remediated. The basic process for site remediation is detailed below.[41]

Participants

[41] The following is a paraphrase of the process set out in New Jersey Department of Environmental Protection website: "Site Remediation Program: The Brownfields Process". Accessed on 26 April 2007. <http://www.state.nj.us/dep/srp/brownfields/process.htm>.

- Sellers: Private parties or municipalities that own contaminated sites in need of reuse market such properties to potential developers or businesses or to the community for non-profit use such as open space.
- Buyers: Developers or businesses in need of a site search for an appropriate brownfields location to meet individual needs.

Preliminary Planning

- Determine if contamination is an issue by conducting a preliminary assessment and, if necessary, site investigation.
- Seek state oversight, if desired, through the Voluntary Cleanup Program and financing, if eligible, from the Hazardous Discharge Site Remediation Fund.
- Analyze potential remedial costs, if any, along with estimates of transaction costs and reuse value to determine if site meets desired needs and objectives. This will include considering remedial funding options (e.g., tax abatements and public and private financing) and non-site remediation factors (e.g., available infrastructure, transportation, taxes, financing, work force, insurance, community needs and market forces).

Final Planning

- If contamination is an issue, conduct a Remedial Investigation to define the contamination problem and quantify cleanup costs.
- Seek state oversight, if desired, through the Voluntary Cleanup Program and financing, if eligible, from the Hazardous Discharge Site Remediation Fund.
- Review mechanisms to provide certainty in cleanup costs including liability provisions and insurance covering unforeseen cleanups costs.

Site Remediation

- Select appropriate remedial action to allow residential or commercial/industrial reuse through a Remedial Action Work Plan.
- Complete all remedial activities to fulfill DEP regulations to obtain a No Further Action letter.

Redevelopment and Reuse

- Construction of residential, commercial or industrial facilities that allow reuse of a site for new ventures.
- Creation of open space and recreational opportunities for community residents.

4.5.4 Major Accomplishments/Highlighted Projects

Since its creation in 1993, the Hazardous Discharge Site Remediation Fund has provided $95,000,000 to municipalities, businesses, and individuals for the purpose of reclaiming contaminated sites. The case studies featured below are some examples of successful projects completed under the voluntary cleanup program.

Trenton Tunnel

Combination of a transportation project with a 6.3-acre community park sitting atop the Trenton Tunnel. http://www.state.nj.us/dep/srp/brownfields/success/trentontnl/

Former Manasquan Borough Hall Property

Cleanup of underground storage tank contamination and redevelopment into a small residential development. http://www.state.nj.us/dep/srp/brownfields/success/manasquan/

Project Freedom

Cleanup of residual contamination on the former site of a New Jersey Department of Transportation office and redevelopment into a 54 unit affordable housing project for adults with disabilities. http://www.state.nj.us/dep/srp/brownfields/success/proj_freedom/

DiNaso & Sons Incorporated Building Supply Expansion

Redevelopment of an 80 acre, former recycling company property as an expansion of an existing business (the DiNaso & Sons Building Supply Co.), which sparked a revitalization of a major business corridor. http://www.state.nj.us/dep/srp/brownfields/success/dinaso.htm

4.5.5 Learning from Interviews

New Jersey is the densest state in the country and many of its cities developed as industrial and manufacturing centers. This industrial legacy has produced many contaminated and abandoned or unused sites, and in order to address this problem, the state has become a national leader in toxics cleanup and redevelopment. In the early 1980s, New Jersey's state program, anticipating the

relaxation of federal requirements, became the most restrictive program in the country, a model of the "polluter pays" and adversarial approach to industrial interests. (Day and Johnson 2004) By the late 1980s, this program was widely criticized for its lengthy process, and its higher cleanup costs discouraged industrial activities, and encouraged abandonment of contaminated sites in the state. Other states that had adopted ECRA-type legislation, such as Illinois, California, Indiana, and Connecticut, began to experience similar problems of high case loads and lengthy processing times. Minnesota's Voluntary Investigation Program developed in 1988 (the pioneer Voluntary Cleanup Program in the country) was explicitly designed to avoid the problems of the NJ approach. Minnesota's program became a model of the customer-driven approach to cleanup of toxic sites, and widely adopted by other states. By the early 1990s, ECRA had lost public and political support, and reform legislation, the Industrial Site Remediation Act, which opened the way to more voluntary, cooperative models of cleanup was passed in 1993. A center piece of this approach is New Jersey's Voluntary Cleanup Program. Through this program, private or public parties enter into a non-binding memorandum of agreement with DEP to cleanup non-priority contaminated sites. Going beyond the VCP program, this second stage of in New Jersey's evolution generated several innovations, including its Cleanup Stars Program, the Brownfields Area Development Initiative, and the Brownfields Reimbursement program.

In 2004, New Jersey initiated the Cleanup Stars Program. This program pre-qualifies environmental professionals, "Cleanup Stars" to investigate and remediate low-risk sites (with no ground water or surface water contamination impacts), with limited NJDEP supervision. The pre-qualified professionals are required to follow the State's technical rule for environmental cleanup. The professional then submits the required documents to NJDEP requesting an appropriate No Further Action letter. If NJDEP determines that the application is not administratively complete, it will notify the applicant within 5 business days. NJDEP retains the authority to audit the work (investigation and/or remediation). If DEP determines that the application is administratively complete, and does not audit the site, then DEP is committed to issue an appropriate NFA within 10 working days of receipt of the documentation. In 2006, the program was applicable to 4,000 out of their 18,000 cases, freeing up site managers to deal with more contaminated and complex sites, and improving the quality of environmental professionals. The State's biggest challenge is still "the numbers", every year DEP is faced with more and more contaminated sites. Since the Cleanup Stars program is seen as a success by NJ officials, currently DEP is considering expanding the program to include sites with some groundwater contamination, or adopting a Massachusetts-type Licensed Site Professional (LSP) program to be able to process more sites in a more timely way. A full-blown

LSP program has been introduced by bills in the Senate (NJ S-1897) and the Legislature (A-2962), is being supported by the DEP Commissioner, and is a top priority for the environmental committees in both houses. The LSP program would create a ranking system for all sites consisting of four tiers of sites, which vary in terms of DEP oversight, Tier 1 (ranked primarily on the basis of non-compliance) requiring the most oversight, and Tier 4 (consisting of leaking heating oil tanks), the least.[42]

New Jersey has several programs that provide financial incentives for both the public and the private sector for cleanup and redevelopment of contaminated sites. The Brownfield Development Area Initiative (BDA), funded out of the Hazardous Discharge Site Remediation Fund and initiated in 2003, is a competitive program open to municipalities, counties, or redevelopment agencies, which is geared to communities with multiple contaminated sites. The program requires a neighborhood-wide or community-wide planning approach, including the formation of a Steering Committee representing the various interests in the community, developers, community organizations, as well as local government. The objective of the program is to ensure that redevelopment and remediation go hand in hand, as promoted by the ASTM brownfields redevelopment guidelines.

The process outlined in NJDEP BDA guidelines requires the preparation of a strategic plan, which identifies remediation and reuse steps. Currently, 15 BDAs have been designated in the state, although most designated BDAs are at the beginning of the process, where sites have yet to be determined. The process, in addition to the organizing and planning steps, consists of identifying the sites, conducting environmental investigations and remediation, and using whatever state programs are available to redevelop or attract private developers to the sites. NJDEP assigns a single case manager to a BDA. This is especially important in coordinating action among sites that are often adjacent to each other and may otherwise be assigned to multiple site managers. Local governments can first qualify for brownfield investigation grants (not restricted to BDAs), which provide funding for site assessment and remedial investigations, up to $3M per municipality per year which provide for 100% of eligible costs. A BDA can further become eligible for up to $2 M in grants per calendar year. These grants can provide up to 100% of eligible costs for preliminary assessments, site investigation and remedial investigations (ASTM's Phase I and Phase II investigations), and up to 75% of eligible costs for Remedial actions. BDA grants can be applied by local governments to sites over which the municipality has no ownership interest.

[42]NJ Senate Bill 1897, June 5, 2008. A Bill establishing a licensed site professional program for site remediation and makes various changes to site remediation laws. Accessed at NJ Legislature webpage: http://www.njleg.state.nj.us/2008/Bills/S2000/1897_I1.HTM

Other grants are available to municipalities for remedial action including: open space and recreation grants which provide up to 75% of costs of remedial action if the property is redeveloped for recreation and conservation purposes. Here again a property interest by the municipality is not required, and evidence of the redevelopment intent can be guaranteed with a development or conservation easement. For properties to be redeveloped for affordable housing, grants are available to cover the costs of remedial actions up to 50%. Grants of up to 25% or $250K of remedial action costs are available for sites that achieve a limited restricted or unrestricted use No Further Action determination. Loans are also available, for up to 100% of funding to remediate a contaminated site, or up to $3M per year per site, with favorable interest rates. Sites under the VCP program can receive loans up to 100% of remedial actions costs, if a public entity owns the site, and has completed up to a remedial investigation of the property.

The BDA program and the financial mechanisms available to municipalities also help to redevelop contaminated sites in private hands. Under a BDA, a municipality can enter into partnerships with private owners to apply and obtain funds to cleanup properties for redevelopment as affordable housing or recreational uses. In addition, there are several loan programs for remedial action for sites in private ownership, including loans in qualifying municipalities, and voluntary clean up loans, which can provide up to 100% of cleanup costs but are capped at $1M per year. Under the BCSRA in 1998, NJ also developed the first brownfield tax reimbursement program in the country in order to provide financial incentives to the private sector. Under this program, a non-liable party can enter into an agreement with the State of New Jersey, (departments of Treasury and Commerce) to obtain reimbursement for up to 75% of the cleanup costs of a site through proceeds of taxes generated by redevelopment of the site. The major taxes that are eligible are: sales and use taxes, corporate business tax, and sales tax paid on materials for remediation or new structures. The reimbursement occurs only after DEP issues a No Further Action letter, and after the offsetting taxes have been paid to the Treasury Department and typically under this program, private parties would be reimbursed over a period of years.

In New Jersey, DEP addresses the cleanup side of brownfields and works closely with the Department of Community Affairs, Office of Smart Growth, which provides planning assistance to localities and staffs the NJ Brownfields Redevelopment Task (BRIT) Force. BRIT was established in 1998 by BCSRA, and is composed of six public members appointed by the governor and state agency representatives from DEP, DCA, and other relevant agencies. It was charged with: preparing and updating and making available to the public an inventory of brownfield sites in the state; coordinating State policy on brownfields, including incentives; use inventory to prioritize sites

based on their economic development potential; prepare a plan of action for productive reuse; actively market sites; make recommendations to the Governor and Legislature to better promote the redevelopment of brownfields. Its online inventory of brownfields sites, called SiteMart provides prospective developers with information on sites by county and municipality, such as area, price, availability and status. (New Jersey SiteMart 2008)

NJ is a growth management state, and as such, one of its principal strategies for development and redevelopment is to channel development into the state's cities and towns, both for the purpose of revitalizing them, and for reducing development pressures on undeveloped areas. Given the industrial history of the state's cities, encouraging redevelopment in cities requires brownfields cleanup and redevelopment. Going beyond the establishment of the Brownfields Redevelopment Task (BRIT) Force, Governor Corzine's administration, especially his new Office of Economic Growth, have become great proponents of brownfields redevelopment, especially in the port areas of the state. Governor Corzine has recently developed an Economic Growth Strategy for the State of NJ (2007), which incorporates several goals and action steps. Under the strategy to support the revitalization of the state's cities, encouraging brownfield redevelopment is a goal. The action step under this goal is for the new Governor's Office of Economic Growth to lead in the creation of a state strategy on brownfield redevelopment. Such a strategy, once developed, could become a model for a state-wide strategic approach to brownfields redevelopment in the country. Combined with the community planning approach incorporated in its Brownfields Development Areas Initiative, this statewide strategic planning approach in New Jersey may well characterize an emerging third generation of brownfields redevelopment: the first being the mandatory, "polluter pays" approach, which was dominant through the early 1980s; the second generation, a more consumer-oriented approach, in concert with the "reinventing government" movement, which generated innovations such as the VCP programs across the states, and the Licensed Site Professionals program in Massachusetts; and the third generation, a more strategic and planning oriented approach, which incorporates a community planning orientation to integrate cleanup and redevelopment of multiple sites, as well as more strategic programs and investment at the state level.

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New Jersey's Technical Rule can be found at NJDEP website:
http://www.state.nj.us/dep/srp/regs/techrule/

The Brownfields Development Areas Initiative can be found at the NJDEP website:
http://www.state.nj.us/dep/srp/brownfields/bda/bda_synopsis.htm

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4.6 Oregon's Voluntary Cleanup Program (VCP)

Oregon's Department of Environmental Quality (DEQ) developed its Voluntary Cleanup Program (VCP) in 1991 in order to give the owners and operators of contaminated properties a set of tools with which to investigate and clean their sites under the supervision of the DEQ. The goal of the VCP is to increase the number of site cleanups statewide making the cleanup process more efficient within the guidelines of existing Oregon environmental regulations. The VCP makes using, selling, refinancing, and redeveloping contaminated properties a more attractive option for potential owners and operators. It aims to remove environmental, economic, and social obstacles that might hinder the use or redevelopment of brownfields properties.

4.6.1 Key Program Features

Oregon's VCP provides a wide range of services to owners of contaminated sites, which include: liability relief mechanisms, financing and tax incentive programs, environmental assessment assistance, and brownfield redevelopment assistance.

Liability Relief Mechanisms

The VCP was designed with enough built-in flexibility to meet the specific needs of different sites. This allows each cleanup effort to remain focused and efficient. For example, a large site might be divided into smaller, more manageable units for the purposes of the project. The VCP program also works with potential purchasers of contaminated sites through Prospective Purchaser Agreements (PPAs). These offer property owners additional liability protection and provide site cleanup assistance.

Financing and Tax Incentive Programs

The Oregon Economic and Community Development Department (OECDD) offers a variety of incentives to encourage brownfield redevelopment in the state. The **Capital Access Program** provides loan portfolio insurance for environmental evaluations and brownfield redevelopment projects. The **Credit Enhancement Fund** offers loan guarantees to individual businesses for environmental evaluations and brownfield redevelopment projects. The **Brownfield Redevelopment Loan Fund** finances eligible environmental evaluations. A **Special Public Works Fund is** available to local and tribal governments for environmental evaluations on municipal property. There is additional financial assistance available to property owners through **DEQ**

Assessment Grants or the **City of Portland Brownfield Revolving Loan Fund**. These funds are available to municipalities and non-municipalities, including private parties. The cleanup must be linked to new site uses leading to economic development or community revitalization.

DEQ Brownfield Redevelopment Assistance

This program identifies and removes brownfields redevelopment barriers by providing liability relief through PPAs, supporting flexible approaches to cleanup, performing individualized project cleanup oversight, and providing liability protection for lenders. In addition, it forms partnerships that facilitate the reuse of brownfield properties, from providing technical assistance to local governments to coordinating community groups, businesses and agencies, to developing remediation financing strategies.

Brownfield Investigations Available through DEQ's Site Assessment Program

Oregon's DEQ offers Brownfield Assessment of eligible properties through a partnership with U.S. EPA Region 10. These studies provide critical data about sites for which a previous lack of information may have delayed or inhibited redevelopment efforts. The goal of the environmental assessments is to determine the level of contamination of a site, to look for potentially contaminated soil or groundwater, to identify potential cleanup options and estimated costs, to provide advice regarding regulatory agency concerns, and to provide information about the site without using city or county funding.

4.6.2 Regulatory Environment: Key Policies and Amendments

1995

Governor John Kitzhaber signed into law the Recycled Lands Act (HB 3352), also known as the Amended Environmental Cleanup Law (original cleanup law was passed in 1987), to facilitate cleanup and redevelopment of brownfields. Later that year, the Oregon DEQ embarked on the rulemaking process, allowing and encouraging community involvement through public workshops, technical workgroups, discussion groups and a central advisory panel.

1997

Final administrative rules of the Recycled Lands Act were approved. The Oregon Legislature passed a bill (HB 3724), which provides access to public resources at the OECDD toward redevelopment of brownfields. This financial assistance provides landowners and local governments

with the capability to assess the extent of contamination on private or public property in preparation for cleanup and redevelopment of the site. The bill also established a Brownfields Redevelopment Loan Fund for future funding from the state or other sources.

2000

Governor Kitzhaber signed an executive order that outlined Oregon's first steps toward a goal of environmental sustainability by 2025. The order required the state Department of Administrative Services (DAS) to adopt new standards within six months. These standards included taking plant and wildlife habitat into consideration when developing and using nontoxic materials for construction. The state DAS was also required to develop environmentally sensitive purchasing policies by 2001.

4.6.3 Program Logistics

The first step in the VCP is for the responsible party and DEQ to sign a letter of agreement that covers liability issues, indemnification, and, in accordance with the statute, requires the responsible party to pay for DEQ's involvement in the cleanup. Either party can terminate this agreement with 15 days advance written notice. Complex sites, which require a greater commitment from both parties, often have more formal agreements that include a negotiated scope of work for the project.

The DEQ has formalized an Independent Cleanup Pathway (ICP) to assist parties interested in cleaning up contaminated sites without ongoing DEQ oversight. If a cleanup is completed to a level that is protective of human health and the environment consistent with Oregon's cleanup regulations, DEQ will issue an NFA letter to the responsible party (RP) when the cleanup activities are completed, reviewed and approved. The ICP is specifically designed for low and medium priority sites and is not applicable to high priority sites.

4.6.4 Major Accomplishments

The Oregon DEQ maintains two electronic database records containing information about sites where contamination has been reported and about the progress of cleanup at those sites. The ECSI (Environmental Cleanup Site Information) database holds information about more than 2,400 sites where releases of hazardous substances have occurred or are suspected. The UST (underground storage tank) database tracks about 6,600 sites with releases of petroleum from underground tanks. In assistance to prospective buyers, the DEQ has produced a list of 2,850 brownfield sites within Oregon that have potential for redevelopment.

4.6.5 Highlighted Projects

DEQ has been involved in a wide variety of brownfield projects, ranging from small rural industrial sites to a community-based revitalization of a multi- property area. Some projects turn unused properties into new businesses, while others provide urban green spaces.

Astoria Mill Site Project

When operations ceased at this former plywood mill in 1991, the owners planned to address the contamination through DEQ's Voluntary Cleanup program. Further investigation revealed more severe environmental problems and the costs eventually exceeded the owner's ability to pay for cleanup. Having determined that the site was a high environmental priority, DEQ used its orphan site funds to mitigate the worst threats. The City of Astoria began working with DEQ early in the restoration of this 20-acre site located in a developed area near the Columbia River. The City purchased the property in January 1999 and has sold it to a developer for mixed residential and commercial development. As a part of the purchase agreement, the City reimbursed the State for a substantial portion of the cleanup costs, which will, in turn, provide DEQ funds to clean up additional sites.

Amity Right-of-Way Project

The city of Amity needed an environmental assessment on a city owned right-of-way beneath Trade Street (highway 99W) before proceeding with their planned downtown revitalization. A gas station was operated in this area from the 1930s to the mid 1960s, and 4-6 under ground storage tanks were still located under the sidewalk. The city applied and was awarded $21,000 to contract with an environmental consulting company to perform the assessment and determine the number and nature of the abandoned storage tanks. The total estimated cost for this project was $23,358. The project was paid for with funds from a Brownfields Redevelopment Fund grant of $11,000, a Special Public Works Fund technical assistance grant of $10,000 and $2,358 from city funds.

The Portland Brownfields Initiative

The Portland Brownfields Initiative is a pilot project. The key goal of the Initiative is to build a set of government, business and community-supported processes that will help restore and redevelop contaminated sites and revitalize neighborhoods within the Enterprise Zone, the Enterprise Community, and in neighborhoods along Portland’s waterfront. The City of Portland successfully

applied to the EPA for a Brownfields Economic Redevelopment Initiative pilot project grant in 1995. The next year, the City initiated development of Brownfield Action Plans by seeking input from a diverse group of community stakeholders through a series of Brownfield Roundtables. In 1997, the Portland Initiative began piloting a new environmental curriculum for Portland public schools. They also began working with Portland Community College to implement a similar curriculum at their campus located in the North/Northeast Enterprise Zone in 1998.

4.6.6 Learning from Interviews

Oregon's approach to brownfield redevelopment is integrated into their cleanup program. Financial assistance for brownfield clean-up is provided through the OECDD while the DEQ provides regulatory oversight of cleanups. The Voluntary Cleanup Program (VCP) and the Independent Cleanup Program particularly, mainly work with privately owned properties. However, recently, these programs are being used by more public and non-profit organizations. Within the DEQ, there has been less of a brownfields focus over the past 4-5 years, according to interviewees, and state-based financial cutbacks have led to a decrease in staffing. The program now attempts to operate at close to a revenue neutral balance, where cleanup oversight fees balance the program expenses.

Oregon's cleanup program emphasizes private-sector action in clean-up processing. The DEQ estimates they issue 75-100 NFA letters per year, and have issued around 1,100 – 1,200 letters since the VCP began in 1999. Although these deadlines are not always met according to interviewees, the DEQ has policy goals of approving or commenting on report filings for the VCP program within 60 days, if that report is submitted before 90 days of the final report deadline.

The emphasis of financial resources for cleanup in the Oregon program has been placed on loans; interviewees described the OECDD's approach as "loan heavy and grant light." Public and non-profit entities as well as private ones are eligible for the program loans. The last biennial legislative budget allocated $45 million to the program, specifying that 80% of the fund go to urban industrial projects and 20% to brownfields more generally. Similar to the emphasis in funding, interviewees also pointed to urban industrial areas, particularly those along the water in urban areas of Oregon as receiving their particular attention. The industrial focus is part of a larger strategy to maintain the industrial sector of Oregon's, and Portland's in particular, economic base.

Given additional resources, interviewees suggested that they would expand the outreach for the program, as the resources available for brownfields development is not well understood or used in rural areas. Additionally, interviewees indicated that grant money is essential for community

development oriented projects. They look for nexus in a prospective project with their three-part mission to promote economic development, community development and protect human health and the environment. Loans typically assist with projects that fit the first dimension of the agency's mission, but is sometimes difficult according to interviewees, for projects that are more community development oriented to utilize loan funding.

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4.7 Wisconsin Brownfields Initiative

Wisconsin's Brownfields Initiative, created by the passage of the Land Recycling Act (Wisconsin Act 453) in 1994, is made up of a number of programs that provide both financial and technical assistance to parties cleaning up and redeveloping brownfields properties. These programs provide site assessment and cleanup funding to public and private parties, and also provide tax relief for those parties that carry out the cleanup work. Wisconsin has also enacted legislation to bring closure to liability after cleanup. The task of promoting the cleanup and reuse of brownfields properties is managed statewide by a number of agencies, including: Wisconsin Department of

Administration (DOA), Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP), Wisconsin Department of Commerce (Commerce), Wisconsin Department of Health and Family Services (DHFS), Wisconsin Department of Natural Resources (DNR), Wisconsin Department of Revenue (DOR), and the Wisconsin Department of Transportation (DOT). All of the state agencies involved in brownfields activities form a cooperative partnership that promotes the cleanup and reuse of brownfields.

4.7.1 Key Program Features

The Wisconsin Brownfields Initiative is anchored by a strong cooperative effort between state agencies, local governments and the private sector. This leadership has helped shape the direction of brownfield policy and legislation and paved the way for a number of redevelopment successes. Following are some of the resources used to promote an environment of cooperation:

Led by the DNR and assisted by state agencies, *Green Team Meetings* are held for the benefit of local governments, their environmental consultants and their private brownfields partners. The goal of these meetings is to assist parties in understanding the liability incentives and financial assistance available for contamination cleanup and contaminated property redevelopment. Approximately 130 Green Team meetings are held each year.

In order to keep the Wisconsin Brownfields Initiative as seamless and effective as possible, its *Interagency Policy Group* includes staff from both the DNR and Commerce. The Group meets monthly to discuss all aspects of their respective brownfields programs. When appropriate, staff from other agencies are also invited to share current information about funding programs, site-specific projects and plans and plan conferences, publications and other outreach strategies.

Created in 1998 by the State Legislature and the governor, the task of the *Brownfields Study Group* task was to evaluate Wisconsin's current brownfields initiatives, identify any needs in the public and private brownfields sectors, and make recommendations for additional incentives. The Study Group was initially composed of 30 individuals, representing a wide variety of brownfield public and private sectors. Since 1998, this broad coalition provided more than 100 recommendations to state agencies, the Legislature and the governor. Many of these provisions became law thanks to this successful cooperative effort.

4.7.2 Regulatory Environment: Key Policies and Amendments

The first set of state brownfields initiatives were contained in the 1994 Land Recycling Law. This law took the initial steps to clarify the liability of lenders, municipalities and purchasers of

property who were able to meet certain statutory requirements for investigation and cleanup of contaminated properties. Wisconsin's Brownfields Initiative has enjoyed a fair amount of legislative success since 1994. Following are listed some of the legislative highlights of that success:

Land Recycling Act (WI Act 453)

First legislation passed to deal with brownfields, defined as abandoned, idle or underused properties where real or perceived contamination can hinder efforts at cleanup and redevelopment. Includes liability incentives for local governments and private parties to tackle contaminated properties.

Local Government Liability Exemption (s. 292.11, Wis. Stats.)

Created in 1994, this provision exempts a local government from the cleanup requirements if the local government acquires a contaminated property through tax delinquency, bankruptcy proceedings, condemnation, eminent domain, escheat, for slum clearance or blight elimination, by using Stewardship funds or from another eligible local government. This exemption from liability protects a municipality, unless the spill is caused by an action taken by the municipality or failure of the municipality to take "limited actions" to prevent further spills.

Voluntary Party Liability Exemption (VPLE)

Created in 1994, the Voluntary Party Liability Exemption program allows parties to conduct an environmental investigation and cleanup of a property and then receive limits on their future liability with their certificate of completion. Once the DNR has approved the completion of cleanup activities at a property, prospective purchasers can feel comfortable knowing that the entire property has been investigated and cleaned up to the satisfaction of the DNR. This is Wisconsin's equivalent to the VCP program.

2005 Wisconsin Act 418

In 2006, the State Legislature passed four new brownfields provisions that were subsequently signed into law *(2005 Wisconsin Act 418)*. These provisions include more efficient land use controls, voluntary party liability exemption for certain types of solid waste facilities, local government liability exemption for certain types of solid waste facilities, and ER TIF updates.

4.7.3 Program Logistics

The major elements of the state's brownfields program include various forms of financial

assistance, state-developed inventories of brownfields, and expanded liability protection. Financial Assistance for Wisconsin brownfields cleanup comes in the form of a variety of available grants:

Commerce Brownfields Grants

The Department of Commerce promotes the redevelopment of contaminated properties through the use of state funds, federal Community Development Block Grants (CDBG) and environmental remediation tax credits.

DNR Brownfields Site Assessment Grants

In 2000, the DNR awarded the first Brownfields Site Assessment Grant (SAG) to a local government to help prepare a brownfield property for cleanup and redevelopment. With SAGs, local officials can eliminate the uncertainty associated with brownfield investment by investigating environmental contamination and removing dilapidated buildings or underground storage tanks.

DNR Green Space And Public Facilities Grants

Created in 2001, the DNR's Green Space and Public Facilities Grants provide a unique opportunity for local governments to clean up contaminated properties for reuse as public spaces. Since the best reuse for some brownfields may not be commercial, industrial or residential redevelopments, Green Space grants often provide the best way to incorporate these properties into the needs and requirements of many neighborhoods.

Wisconsin's Brownfields Insurance Program (WBIP) was authorized by SB 472 in 2004. The bill gave broad power to WDNR to develop an insurance program. The program went into effect in November 2006. It uses a single insurer, AIG Environmental, to provide a 10% discount on premiums for pollution liability insurance to developers. Any developer with a WDNR-approved Phase I and Phase II site investigation is eligible for the discount. The state itself does not provide any subsidies for insurance.

DOA Brownfields Funded Projects

The DOA's Coastal Management Program (CMP) provides grants to assist with the protection, enhancement and restoration of the state's coastal areas, including funding for the economic components to comprehensive planning grants.

DOT Transportation Grants

Abandoned and underutilized properties and buildings were once important central locations for economic activity for many communities in Wisconsin. For the most part, the surrounding transportation infrastructure is still in place, providing the necessary transportation requirements to make these locations readily accessible to suppliers and customers.

DNR Land Recycling Loan Program (LRLP)

As of May 2006, the DNR has entered into LRLP financial assistance agreements for zero percent loans totaling nearly $12.7 million, with approximately $7.3 million remaining.

Department of Revenue's Environmental Remediation Tax Incremental Financing (ERTIF)

Environmental Remediation Tax Incremental Financing (ERTIF) is a financing tool that local governments can use to fund brownfield cleanup projects. ERTIFs allow for a community to pay for project expenses through future increases in property taxes in the district.

Brownfields Location Information System

In addition to financial incentives, Wisconsin provides non-financial incentives to further encourage the cleanup and redevelopment of brownfields in the form of an inventory system that links potential developers with both properties and expanded liability protection. The Department of Commerce is developing a Web-based system, the *Brownfields Location Information System,* to list brownfields in order to promote their potential reuse by allowing users to locate properties that meet their specific redevelopment criteria.

4.7.4 Major Accomplishments

The momentum created by these legislative and policy initiatives began to bear fruit in the late 1990s. As hundreds of sites were cleaned up each year, more and more of these properties were redeveloped by public and private entities. Local government officials, developers and bankers began utilizing the suite of brownfield tools available through Wisconsin's Brownfields Initiative, creating success stories that helped spread the word.

In 2002, the International Economic Development Council and XL Environmental released the *Land Use Report*, a snapshot of national and regional redevelopment trends, showing that Wisconsin and five other states (CA, MA, OH, PA, NY) "consistently appear at the forefront of brownfield

redevelopment activity." Wisconsin continues to lead the country in utilizing the federal brownfields tax incentive, which allows taxpayers to claim environmental remediation costs as deductions in the year incurred. In 2004, Wisconsin netted more federal brownfields funding than any other grant recipient at that time, a $4 million award to create the "Ready For Reuse" Grant and Loan Program for brownfields cleanup

4.7.5 Highlighted Projects

Baraboo's Public Works Building

An old rail yard located in downtown Baraboo had been a brownfields eyesore in the community for many years. Adjacent to the world-famous Circus World Museum, the site had a long history of industrial use and contamination, including heavy metals and polychlorinated biphenyls (PCBs). After the city performed initial investigations, local officials used state grants to jump-start the cleanup and redevelopment. The city acquired the property, demolished several buildings and removed an underground storage tank. After cleanup, the city built a $5 million public works facility on the property, which has spurred additional development in the downtown area. Funding sources for this brownfield redevelopment included a $30,000 DNR Brownfield Site Assessment Grant and a $250,000 Commerce Brownfields Grant. In addition, the city also received a Local Government Liability Exemption for the property, providing city officials with the needed flexibility to forge ahead with the investigation and cleanup of the property.

Sheboygan's Harbor Centre – South Pier Project

This 40-acre former brownfields in Sheboygan is located on a peninsula at the confluence of the Sheboygan River and Lake Michigan. Since the 1880s, the property was used for furniture and toy manufacturing and for storage of coal, fertilizer, petroleum products, coke and salt. Cleanup of the contaminated soil and groundwater included soil excavation, removal of storage tanks and construction of such barriers as clay caps to protect human health. After cleanup, the property was redeveloped into a water park hotel, resort complex and conference center, employing more than 350 people. The city also added a riverfront promenade, educational facility and lakefront walk. This brownfield site had a wide variety of financial assistance, including more than $12 million from the city of Sheboygan, a Tax Incremental Finance District (TIF) and more than $4 million in grants from state and federal programs.

4.7.6 Learning from Interviews

Wisconsin attempts to treat brownfield cleanup and redevelopment as an integrated process through their Brownfield's Initiative. The Department of Natural Resources (DNR) provides technical assistance and regulatory oversight of brownfields and high priority petroleum-contaminated sites, while several agencies are involved with the promotion of cleanup and redevelopment generally. In addition to the grants and loans offered through the DNR, the Departments of Commerce; Administration; Agriculture, Trade and Consumer Protection; as well as Health and Family Services also administer various grants, tax credits, and advisory roles. Coordination among the various departments is reportedly strong, and the DNR and Department of Commerce have a Memorandum of Understanding for coordination of grants and loans. Monthly meetings between the two agencies are required by the MOU.

The VPLE is the equivalent of other states' VCP efforts; all cleanup takes place under the same Hazardous Substance and Discharge Law s. 292 Wisc. Stats., also known as the "Spill Law," which contains various provisions and amendments speaking specifically to brownfields, including occasions for limitation on liability. The vast majority of brownfield cleanups, approximately 95% according to one interviewee, are non-agency initiated. Similarly, the agency does not have a process for identifying the properties; the cases are essentially brought to them. According to officials, initiating a brownfield identification program was not viewed as an appropriate step given the widely interpreted definition of brownfields and concern for stigma associated with brownfields among property-owners. The state does however, use a progressive tracking and inventory system (BRRTS). This has won praise from other states, and is a very effective communication tool because it makes site information and cleanup status available over the web. Improvements they might make given further resources include publishing the contents of closure letters, as well as a comprehensive inventory of former landfill sites, which are currently only partially listed on BRRTS.

Interviewees emphasized the important role of the various grant programs to the rate of cleanup projects completed. DNR administers Site Assessment Grants (SAG); approximately 40 per year, and almost a third of these grants went to communities with less than 5,000 in population. Commerce currently administers $7 million a year in brownfield grants which can go to public and private sector actors, and Commerce is required to fund a minimum of seven projects in communities with a population of 30,000 or less. Commerce State Brownfield Grants require Phase I and II assessments to be completed before the application is made. However, the grants are very flexible; uses include environmental treatments, cleanup, other site preparations, and the only

restriction being that funds cannot be used for new construction. A match for the grant is expected and ends up leveraging a significant amount of other funds; the grant typically amounts to about 20% of project costs so that matching funds total much more than the initial grant. The DNR also administers a popular green space and public facilities grant for cleanup of properties that will then go to public use; in 2004 eleven grants totaling $1 million were administered.

Outreach efforts were also cited by interviewees as key to their programs' effectiveness as well as an area where they would direct additional staff and funding resources given the opportunity. The DNR has 5 regional offices, and the headquarters in Madison is organized into three divisions. One division carries brownfields and outreach as its specific charge. Each year the DNR leads a group of state agencies in Green Team meetings (130 are held each year) for local governments, environmental consultants, and other private-sector actors in brownfield redevelopment to help explain the brownfield process and assistance available. Staff also provides meetings and presentations in local communities, but despite efforts, interviewees suggested that many small or rural communities are still not as aware of the resources available.

One unique approach to area-wide or community-wide contamination issues mentioned by the interviewees was the SUDZ (Sustainable Urban Development Zone) program. Only funded once by the legislature with allocations earmarked for specific communities, it was not reallocated in the last biennial budget. What the interviewees liked was the comprehensiveness of the program – it allowed a community to identify a brownfield or contaminated area, and draw a wide circle around it for planning. The grant could be used for tank removal, and clean-up, as well as inventory of sites and strategic planning and visioning.

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4.8 Discussion of Selected Trends Emerging From State Programs

1. Many stakeholders in cities and towns, particularly in large states, are simply unaware of the financial resources and technical resources available to them to address brownfields.

Most states reviewed reported outreach to both public and private sector actors as a challenge in conducting brownfield cleanup and redevelopment programs. Program managers reported that despite their efforts, many local governments, developers, and property owners in smaller towns and cities, and in rural areas of expansive states like Oregon and Wisconsin for example, are not cognizant of the assistance available to them. This is understood largely as a result of limited program administration resources and the primary responsibility of managers to conduct projects currently in the program. Given that the managers interviewed were either the only individual or one among a very small staff for their respective programs, it is not surprising that they reported outreach as an important direction for further resources. Furthermore, managers find themselves facing a challenge in rural communities historically suspicious of the nature of state agency presence in the local arena, particularly environmental agencies. The current ensemble of brownfield programs since the CERCLA, RCRA, and state-level toxic control act amendments that followed, marks a policy outgrowth to include a more collaborative and incentive-based approach to cleanup, yet this is not yet clear to nor often effectively communicated to those rural communities most in need of the assistance now available to them. Brownfields can involve multiple agencies at multiple stages of cleanup and redevelopment, and because of this complexity, clear and comprehensive outreach relies on strong inter-agency coordination which otherwise often falls through the cracks between them.

Noting these challenges, there are however, examples of effective responses in some states that merit discussion. As mentioned earlier, the Colorado Brownfields Foundation (CBF) is a non-profit organization composed of developers, attorneys, urban planners, and public employees. The CBF often plays an active role in brownfield cleanup and redevelopment through consulting, property transfer assistance, and gap financing. In addition, the CBF plays the lead role in brownfield outreach in Colorado and is under contract through the Colorado Department of Public

Health, Hazardous Materials and Waste Management Division to provide education about the Voluntary Cleanup Program. According to interviewees, the CBF is very effective in this role, having more resources than the Waste Management Division at its disposal to conduct outreach and also because they are a non-governmental organization, welcomed in communities usually unreceptive to state agencies. Specifically, the organization hosts conferences and workshops throughout the state, including rural communities, and provides educational assistance at the Waste Management Division's request. Similar non-profit organizations in New Jersey (Brownfields Task Force) and Wisconsin (Brownfields Study Group) also play key roles in education

Interestingly, legislation in Wisconsin requires that a minimum of seven Department of Commerce Brownfield Grants (called Commerce Brownfields Grants) be awarded to communities with a population of less than 30,000. Wisconsin interviewees reported that meeting this requirement is regularly a challenge and thus they make an explicit effort "to get the word out to these communities whenever we can" (Scott, interview 2007). The legislative intent of this requirement was to ensure that the funds dedicated to the program were adequately dispersed throughout the state. Consequently, brownfield managers have had to respond with outreach and education to communities in order to meet the program mandate. While political motivations on behalf of legislators may have been behind this, the mandate nonetheless has prevented Commerce Brownfield Grants from only being awarded to those communities with knowledge of the program or those with the greatest urban development pressures. This is significant in that the requirement helps to implement an underlying intent of most states' financial assistance programs; to stimulate cleanup and redevelopment of brownfield sites lacking the market pressures that would otherwise motivate reuse.

2. Initiatives with an explicit multi-site focus, going beyond a property-by-property basis for cleanup, are emerging to achieve economies of scale from the use of financial assistance and incentives beyond the cleanup of a specific property.

As Wernstedt and Hanson (2006) note in their discussion of brownfield regeneration through business based land trusts and progressive finance, area-wide approaches are not an entirely new idea. European countries have a tradition of adopting area-based frameworks in their brownfield initiatives, which Meyer (1998) observes. At the national level, community-wide assessment grants are available through the Environmental Protection Agency (EPA), which has recognized the approach as one way of reducing costs and calling for the coordination of grants to support

redevelopment of clusters of contaminated properties. However, states have introduced area-wide initiatives that represent a further evolution in an area-wide approach. What is significant about these state, area-wide approaches is that they shift focus from the individual site to a coordinated effort of multiple properties in a fashion integrated with the larger community context. In doing so, they envelop a range of brownfield issues and redevelopment strategies, seeking to capture economies of scale while also explicitly fostering nexus between economic development and environmental protection objectives.

In order to discuss the ways that state programs are doing this, we abstracted three general dimensions of the area-wide approach for discussion based on the review of state programs conducted in this study. Economies of scale achieved in assessment, remediation, and infrastructure; community or neighborhood-based planning to steer coordinated redevelopment of a brownfields area; and explicit attention to community-wide benefits beyond individual job and tax benefits at the individual parcel level characterize these dimensions of the area-wide approach. Recognizing that on the ground, actual area-wide programs are often implemented in such a way as to combine one or more the general dimensions presented here, we discuss examples from the states of the way that these dimensions are taking shape on the ground. The discussion here then, is intended to draw out those various policy objectives and mechanisms from existing area-wide initiatives for purposes of learning about potential strategies that Ecology may wish to adopt for its Remedial Action Grants and Loans.

First, area-wide approaches have been developed to take advantage of economies of scale from technical or engineering perspective, such as in remediation or in infrastructure for redevelopment. These have also been designed in some cases to pool or share risk across multiple sites. Area-wide groundwater remediation is a clear example of this, where a single or multiple sources may contaminate groundwater that underlies multiple properties. A municipality may identify general characteristics of the contamination through a sampling scheme across these properties. This may then be used to point towards a presumptive remedy and approval process that individual properties within the area may qualify for. Such a perspective is manifest in Wisconsin's Sustainable Urban Development Zone (SUDZ) program, and also in Ecology's Remedial Action Grants, as well as similar programs in other states. Second, states have introduced initiatives emphasizing community members as "resources" best suited for moving brownfields toward reuse, and doing so within a framework of community revitalization. This arises in part from the recognition of advantages to coordinating cleanup and redevelopment across broad areas of communities or neighborhoods rather than targeting individual parcels, in light of the fact that often

there are several brownfield sites that are associated with the overall economic distress or decline in those areas. The key to these programs is the use of community-based or neighborhood-based planning as a route to develop and implement the coordinated remediation and reuse of multiple brownfield sites. The rationale characterizing this dimension of area-wide initiatives is clearly expressed in the policy directive behind New Jersey's Brownfield's Development Area (BDA) program, which states, "the Department [of Environmental Protection] shall establish an area-wide brownfield development program that will enable communities to plan comprehensively for the remediation and reuse of multiple brownfield sites" (NJDEP, Policy Directive 2002-2003, November 25, 2002).

In contrast to site-specific remediation, the area-wide approach of the New Jersey BDA program provides a framework that addresses the larger physical, political, and social contexts of an affected community. All stakeholders (owners of contaminated properties, residents of the community, responsible parties, developers, community groups, and technical experts for the local government) are invited to participate in the area-wide process, with the ultimate goal of revitalizing communities and neighborhoods. As discussed earlier, specific features of the program, such as the appointment of a single case manager with responsibility for oversight of all remediation activities within the BDA, provide a decision-making framework and targeted resources to coordinate remediation and reuse activities in such a way as to fulfill the community's vision (NJDEP, Brownfield Development Area Initiative Application Guidance, January 2007). While putting in place a structure for coordinated administration of multiple sites, the program clearly emphasizes the role of a strategic plan that will reflect the values of stakeholders within the BDA, and result in cleanup and redevelopment that fulfills the goals of and complements the state's smart growth goals.

A third dimension of area-wide initiatives focuses attention on the community-wide, public benefits that spread beyond the confines of an individual, underutilized parcel. These initiatives expand focus beyond the job and tax revenue benefits of more traditional brownfields economic development programs. Cleanup in these programs is coupled with the creation of parks, ecological restoration, or the creation of open space yielding intangible benefits associated with them. Wisconsin's Brownfields Green Space and Public Facilities Grant Program exemplifies this broader appeal with a stated intent to "assist communities with the financial costs of the cleanup of brownfield properties that will be redeveloped into community assets.. [and]… result in a public benefit" (Wisconsin DNR Green Space and Facilities Grant Program Fact Sheet RR-755, updated August, 2007). Through this program, 11 grants totaling $1million were awarded to 10 local communities. These properties represent almost 200 acres of underused land that have been

cleaned-up and turned into green spaces, recreation areas, or sites for new public buildings (Wisconsin Department of Natural Resources, Wisconsin's Brownfields Initiative, Report to the Legislature, 2006).

The area-wide approaches of the states as discussed here treat multiple brownfields properties as systems, and exhibit benefits to tackling them en masse rather than in isolation. In sum, these benefits include:

- Public benefits – cumulative effects of redeveloping multiple properties can increase property values, tax revenues, and other less tangible benefits over an entire neighborhood or community affected by a small number of brownfield sites
- Reuse scenarios developed by community members may provide incentives for further private investment especially as increases in property values over the entire neighborhood occur to a high enough level that a developer may wish to undertake a community-valued project
- Area-wide approaches may allow larger dollar investments in cleanup and redevelopment to take advantage of economies of scale in remediation and infrastructure for redevelopment and of risk-sharing opportunities across multiple sites
- If projects are bundled together, environmental insurance can become an affordable tool for smaller projects that are often too small to afford it on their own.

3. In place in several states for over a decade, independent, licensed site practitioners present a flexible model for addressing increasing caseloads faced by environmental agencies overseeing cleanup.

Licensed Site Professionals (LSPs) programs, such as Massachusetts' program, authorize state-licensed site professionals to conduct investigations and cleanups for their clients while retaining state auditing oversight. The LSP programs have two components, the licensing of professionals, which establish professional criteria in terms of professionals' education and experience and license individual professionals, and the authorization of these professionals to conduct steps in the investigation and cleanup process of brownfield sites.

LSP programs, aimed at quickening the pace of cleanup and redevelopment, are associated with privatization efforts. Today, however, the licensing aspect of LSP programs, serves another purpose. EPA's new AAI rule, in setting out its requirements for environmental professionals to

ensure the quality of AAIs, includes the requirement that an environmental professional have a state or tribal issued certification or license. Thus, a state licensing program for environmental professionals would provide a service to state professionals, as well as to local governments and the private sector who want to ensure that they meet the federal AAI requirements on which federal liability relief depends. Even if a state does not want to devolve any of its oversight to licensed professionals, the federal AAI requirements provide a good reason to establish a state licensing system for environmental site professionals.

On the devolution aspect of the State's oversight function of the LSP programs, the devolution could be total, as in the Massachusetts program, or partial. For example, Arizona's and California's programs exclude sites with groundwater contamination. New Jersey's Clean Stars program is more of a registry, than a full licensing program. It was developed to deal with less contaminated sites, excluding sites with groundwater contamination. As we discussed, however, New Jersey is moving quickly towards a full-scale LSP program, and it has devised a tier approach to oversight, based on its own criteria. (New Jersey Legislature 2008) The intent of the programs is to deal with the backlog of brownfield sites. Massachusetts, for example, was facing an 8,000 site backlog in the early 1990s when it initiated its program. Through the LSP program, Massachusetts had cleaned up 30,000 sites by 2008, compared to the 500 sites it had cleaned up under its more traditional program. The program is also enabling the State to keep up with the cleanup of sites discovered annually, which are currently about 1,800. (NJ Legislature 2008)

4. Integration of the cleanup and redevelopment aspects of brownfields projects varies but is evident in many of the state programs studied, from the very title of legislation, statutory definition of brownfields, and program approach and mission.

The state programs examined demonstrate a decided move from first generation programs which focused solely on cleanup and provided strong regulatory oversight of the cleanup process. All six include a voluntary cleanup program, an option that provides agency advice at the discretion of the property owner, and can shorten the cleanup process. Most of these programs have recognized the brownfields problem, and the need to integrate cleanup and redevelopment of brownfields sites through legislation. Although Massachusetts has not provided a statutory definition of brownfields, the Massachusetts "so called" Brownfields Act (1998) "An Act Relative to Environmental Cleanup and Promoting the Redevelopment of Contaminated Property" which provides liability relief and financial programs for brownfields, makes a clear link between cleanup

and redevelopment, the two dimensions of the brownfields problem. Wisconsin's program changed course in 1994 with the passage of its Land Recycling Act, changing from a traditional agency oversight cleanup program to an integrated, coordinated inter-agency program. New Jersey also replaced its first generation strict cleanup program to a more customer-oriented one in 1993, and then again through its Brownfields and Contaminated Site Remediation Act in 1998, which established the state DEP cooperation with the Department of Community Affairs and provided a statutory definition of brownfields. California has a statutory definition, and its California Land Environmental Restoration and Reuse Act (2001) which established the local agency cleanup program and the California Land Reuse and Revitalization Act of 2004 providing several types of liability relief recognize the importance of the redevelopment aspect of brownfields. Oregon also has a statutory definition of brownfields and the 1995 Recycled Lands Act signaled the redevelopment intent of the state's approach.
Colorado does not have a statutory definition, but its guidance documents use EPA's brownfields definition.

Liability relief measures are necessary to shift state programs towards a stronger brownfields approach. In keeping with the CERCLA amendments, the programs examined also provide liability relief, typically prospective purchaser agreements. Variations among the programs include California's liability relief for redevelopment agencies, and Massachusetts's exemption of liability for municipalities that take a site for non-payment of back taxes.

Second generation programs also typically include state-funded grants and low-interest loans to local governments for assessment and cleanup. Wisconsin and New Jersey also provide grant funds for private parties, and all states include loan programs, for which private parties can apply. Several programs include innovative funding mechanisms, including the environmental insurance programs of Massachusetts and Wisconsin, New Jersey's area-wide BDA and Wisconsin's ERTIF as indicated above, and three states, Colorado, Massachusetts and New Jersey have tax credit or reimbursement programs.

The programs track sites as they enter the cleanup process, with public databases that typically provide information on their progress through the process. Going beyond this, New Jersey has developed an inventory of brownfields for economic development purposes, SiteMart. Most programs cite the problem of the potential stigma associated with identifying sites as brownfields in a public database as the reason for not providing such inventories.

Integrating cleanup and redevelopment requires interagency collaboration, since the functions of environmental protection and economic development are normally housed in different state

agencies. The six programs examined differ considerably on how they handle this institutional challenge. Most programs are unevenly split between the state environmental protection agency, with greater staff resources handling the cleanups, and the economic development agency for the administration of financial incentives. The exception among the states studied is Colorado, where the outreach and other redevelopment assistance are handled by the Colorado Brownfields Foundation, a non-profit under contract to the State. California's program is the most challenged in this respect, with two major state agencies, regional and local agencies handling the cleanup, despite its Unified Agency Review Process. Of the programs examined, Wisconsin's is likely the most integrated having developed over time several institutional innovations: the Brownfields Study Group, an ongoing blue-ribbon group appointed by the Governor that keeps track of the brownfields program and has the ear of the governor and the legislature; the Interagency Policy Group, which brings together DNR and Commerce department staff on a monthly basis; and the Green Team Meetings which provide interagency outreach and education to local communities, their consultants and private partners.

Of the six programs studied, New Jersey's program is evolving beyond a second generation program, characterized by greater customer-orientation, and integration of cleanup and redevelopment aspects of brownfields, into a third generation program, by which we mean a program which incorporates two distinctive elements, a more sustainable area-wide community engagement and planning process in the cleanup and redevelopment of brownfields, and a state-level strategic approach to confronting the backlog of brownfields. Its BDA program provides a good working model of a planning-oriented community-wide approach to multiple sites, and Gov. Corzine's inclusion of brownfields in the state's recent economic growth strategy is a first step towards a state-level strategic plan for brownfields. Initiatives of two other state programs examined, Wisconsin and California also address the multiple-site, community planning challenge of brownfields. California, with its strong tradition of local redevelopment agencies, tax increment finance districts, and devolution of cleanup activities to local agencies enables community engagement and planning. Distinctively, California is also addressing environmental justice aspects of brownfields in two pilot projects, one by involving a low-income community to set priorities for cleanup and redevelopment in their neighborhood, and the other involving the community in enforcement. Wisconsin's short-lived Sustainable Urban Development Zone, and its Environmental Remediation Tax Increment Finance Districts, enabled in the late 1990s, and further amended and

clarified through 2006,[43] also encourage stakeholder involvement in a community planning process, since tax increment finance districts require a community planning effort.

Overall, the six programs examined can be characterized as second generation programs, which include recognition of the brownfields problem, liability relief and financial incentives, as well as integration of the cleanup and redevelopment functions, although integration, especially at the institutional level, remains a challenge for many of the programs.

[43] As of July 22, 2008, 16 ERTIFs had been created by local governments. "List of Current ERTIFs". Accessed at WI DNR website: http://dnr.wi.gov/org/aw/rr/financial/ertif.pdf

4.9 Findings

A. State Profiles

1) California has a complex interagency program with two state agencies, the Department of Toxic Substances Control, and the State Water Quality Control Board and its regional agencies, as well as state authorized local agencies including redevelopment agencies, handling the cleanup aspect, and its financial incentives. The state offers a statutory definition of brownfields and recognizes the importance of brownfields in several statutes. It provides liability relief for qualified innocent landowners, bona fide purchases, and contiguous property owners, as well as prospective purchaser agreements. It has a VCP program and a registry of environmental assessors (a variation of Massachusetts LSP program), and authorizes these licensed professionals to conduct one or more aspects of site investigation and remedial action. It provides limited state funds for assessment and cleanup of petroleum USTs to owners and eligible prospective buyers (public and private), and loans for assessment and cleanup for both public and private parties, through its CLEAN program. Innovative programs include the Schools assessment and cleanup program, environmental justice pilot programs, and its devolution of cleanup authority to local agencies, including redevelopment agencies.

2) Colorado's brownfields program was established as a VCP program through its 1994 Voluntary Cleanup and Redevelopment Act. Legislative relief consists of No Further Action letters at the end of the VCP process. Since 1994, no new legislation on brownfields has been passed, and guidance documents use the older EPA definition of brownfields. The program performs targeted site assessments on a priority basis and has a revolving loan fund available to public and private parties. Colorado offers a brownfields tax credit. An innovative feature of the program is its use of the Colorado Brownfields Foundation, a non-profit to provide outreach, and other redevelopment assistance including an environmental resource hot line.

3) Massachusetts has no codified definition of brownfields, but the "so called" Brownfields Act (1998) sets out liability relief for several types of eligible parties, including innocent owners, tenants, municipalities, redevelopment agencies and secured lenders, as well as Covenants Not To Sue for temporary solutions to cleanup. Its voluntary program is privatized through the Licensed Site Professionals program, which licenses site professionals and devolves cleanup authority to these

licensed professionals, retaining auditing oversight. Massachusetts provides several financial incentives, including its Brownfields Redevelopment Fund, which includes site assessment grants for local governments, a revolving loan fund for site assessments and remediation available to eligible parties, including private parties, as well as the state's Brownfields Tax Credits, and its subsidized environmental insurance program.

4) New Jersey's VCP program dates from 1992, and in 1998, the state passed the Brownfield and Contaminated Site Remediation Act, which uses the older EPA definition of brownfields. It provides liability relief through No Further Action letters and prospective purchaser agreements. Its Cleanup Stars Program is a registry of environmental professionals who are pre-qualified to investigate and remediate low-priority sites with limited oversight. Legislation introduced in the NJ legislature is likely to move the Cleanup Stars program into a full-scale LSP program. NJ offers several financial incentives: grants for both municipalities and the private sector for assessment and remediation; loans for up to 100% of remediation with different loan caps for both public and private entities; Brownfields Development Area funding for municipalities and their partners to address multiple-site area wide revitalization efforts. NJ also developed the first tax reimbursement program in the country for non-liable parties. The state also maintains an inventory of brownfields, SiteMart, to facilitate the economic redevelopment of such sites. Most recently, the State's Economic Growth Strategy incorporates brownfields cleanup and redevelopment as a key strategy in its plans.

5) The home of Oregon's brownfields program is the Department of Environmental Quality. Like Washington State, Oregon has both a VCP program and an Independent Remedial Action pathway. Oregon's liability relief consists of No Further Action letters for VCP participants and prospective purchaser agreements. Oregon uses EPA's newer definition of brownfields. Financial incentives, primarily loans, are administered by the State's Community Development Division.

6) With the passage of its Land Recycling Act in 1994, Wisconsin began to integrate the cleanup and redevelopment of brownfields. It has developed several institutional innovations aimed at coordinating a multi-agency functions, including a blue-ribbon committee, the Brownfields Study Group which provides recommendations to the Legislature and the Governor; an Interagency Policy Group which meets on a monthly basis; and interagency Green Team Meetings that provide coordinated outreach to local communities, their consultants, and private partners. It provides liability relief for local governments, lenders, neighbors, as well as a liability exemption for

voluntary cleanups. In addition to more traditional financial incentives, the Wisconsin program has also developed an innovative Environmental Remediation Tax Increment District (ER TIF) program, and has negotiated an environmental insurance program which provides discounts on premiums.

B. Issues/Trends

1) Outreach, especially to rural communities, remains a problem for many of the programs studied. The state programs studied have developed several innovations to address this issue. Colorado uses a non-profit foundation, in contract to the State to provide outreach. In Wisconsin, the requirement that a minimum number of brownfields grant be awarded to communities with a population less than 30,000, has provided an incentive for program staff to conduct outreach and education in less urban areas.

2) Most programs remain site-specific. New Jersey provides an area-wide program for local communities with substantial financial incentives, the Brownfields Development Area Initiative, which follows closely the ASTM Guide for sustainable brownfields cleanup and redevelopment, emphasizing community engagement and planning. Through less direct means, Wisconsin enables an area-wide approach through ER TIFs, and California does the same by enabling local governments, including redevelopment agencies to manage the cleanup process. The benefits of area-wide approaches are at least three-fold: economies of scale at the technical or engineering level, as well from risk pooling; community-wide involvement and planning; public benefits, such as the increase in property values, tax revenues over an entire neighborhood.

3) State programs that license site professionals to undertake cleanup activities with minimum state oversight have been developed to tackle large backlogs in toxics cleanup agencies. The programs have two elements, the licensing of professionals, and the extent of privatization of cleanup activities. Separate from the privatizing aspect, the licensing of professionals addresses EPA's new AAI requirement that licensed environmental professionals prepare AAIs. The devolution of state oversight to such professionals can be determined by the state from nearly total to restricted to specific types of sites.

4) State programs examined have shifted from 1st generation strict state oversight programs to 2nd generation, more customer-oriented programs, such as Voluntary Cleanup Programs, and have

achieved varying degrees of integration of their cleanup and redevelopment functions. Most programs have passed laws that emphasize reuse and redevelopment aspects of brownfields; provide a definition of brownfields in their statutes and guidance documents; offer various measures of liability relief and financial incentives. The programs also provide liability relief measures and financial incentives. Since cleanup and redevelopment efforts typically take place in different state agencies, interagency coordination remains a challenge for most programs. A third generation type of program may be emerging, e.g., New Jersey, with distinctive programs enabling area-wide, community planning efforts, and state-level strategies to return brownfields to community use.

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CHAPTER 5: BROWNFIELDS CASE STUDIES IN WASHINGTON STATE

This chapter presents detailed case studies of brownfields cleanup and reuse from throughout the state of Washington. The 8 cases represent a cross-section of brownfield cases across the State. They range from small simple sites involving mainly contaminated soils (Broadway Crossing, Seattle, and Chevron, Morton) to larger simple sites involving soil, and marine environments (Wyckoff Property in the Eagle Harbor/Wyckoff Superfund site, Bainbridge Island, the JH Baxter, Renton) Half the case were administered through the formal process (ASARCO, Everett; Custom Plywood, Anacortes; JH Baxter, Renton; Chevron, Morton), two were administered through VCP (Broadway Crossing, Seattle, and Kendall Yards, Spokane), one is a tribal case (Jimmycomelately Creek, Sequim) and one is a Superfund case (Wyckoff Property, Bainbridge Island). The cases reflect urban, rural, and tribal redevelopments of formerly underused or abandoned contaminated lands and were selected based on discussions with Ecology. Key elements to each site are reviewed and include, but are not limited to site evaluation and assessment, financial instruments and partnership formation, plans for reuse, and community and environmental benefits.

Each case study includes a discussion of the project's timeline and identifies procedural relationships between phases of redevelopment, including clean-up, funding, and partnerships. Summary findings and recommendations are based on the review of the projects.

5.1 Broadway Crossing

Lou's Chevron gas station formerly occupied the site of the new Broadway Crossing development, a mixed use project with LEED certification. This former brownfields is well regarded as a pioneer among mixed-use redevelopment projects, consisting of a remarkable partnership between a corporate developer, Walgreens, and a local non-profit housing agency, Capitol Hill Housing (CHH). The ground floor is occupied by a Walgreens drug store while the remaining 4 stories accommodate 44 affordable-rental units. Independent remedial action was undertaken by the property owner, S.E. Grainger Development Group, employing Ecology's Voluntary Cleanup Program (VCP) to assess and cleanup the site for planned redevelopment. Broadway Crossing was officially opened in March 2007.

5.1.1 Site Description

Broadway Crossing is located in the Capitol Hill neighborhood at the cross streets of Pine and Broadway, approximately ½ mile northeast of downtown Seattle. See Figures 7 and 8 below for its location in Seattle.

Figure 7: Context Map of Broadway Crossing

Figure 8: Broadway Crossing Parcel (Data Source: City of Seattle)

Table 10: Capitol Hill Neighborhood and City of Seattle Demographics

	Capitol Hill		Seattle
Population	19,075	3% Seattle's Population	563,374
No. Households	12,993	5% Seattle's Households	258,499
Median Household Income	$30,288	33% lower Median Household Income compared to Seattle	$45,736
Median House Value	$317,476	18% higher Median House Value compared to Seattle	$259,600
Median Monthly Rent	$668	81% Capitol Hill Residents are renters; 4% vacancy rate	$721
Poverty Status	2,856[44]	15% of Capitol Hill Residents live below poverty line	64,068

City of Seattle (2003), Neighborhood Planning Areas: Census 2000, Department of Design, Construction and Land Use

According to the Capitol Hill Urban Center Village plan, the neighborhood is a densely populated, pedestrian-oriented area made up of established commercial corridors and multi-family residential areas (City of Seattle 1998). The plan makes recommendations and proposes strategies for the continued development of the neighborhood by emphasizing the need for more affordable rental housing units to meet the community's demands. Table 10 summarizes the neighborhood's demographic data alongside figures for the City of Seattle. Though the available data dates to the 2000 census, it suggests a low vacancy rate with a majority of residents classified as renters and that households earn less than the City's median household income. The rental rate for the Capitol Hill neighborhood is similar to the Seattle rate, the former calculated at $668 in contrast to the City's average of $721. The difference in monthly rental rates, which is 7%, is significant when contrasted to the 33% difference in median household income; therefore residents of Capitol Hill earn on average a lower monthly income, but pay a similar monthly rental rate compared to the rest of Seattle. The data calls attention to the particular development needs of this community, a significant element when assess the comprehensive reuse of brownfields.

5.1.2 Background of Site

A former gas station and convenience store, the Broadway Crossing project has undergone a 6-year transformation into a mixed-use space with retail on the ground floor and low-income

[44] According to the City of Seattle's reporting of 2000 Census data, poverty status, meaning below or above poverty, was established for 99.7% (19,015) of Capitol Hill residents compared to the reported 19,075 total neighborhood population.

apartments on the four stories above. The cleanup of the site was initiated and completed through Ecology's VCP and the redevelopment of the former Chevron station involved a private for-profit and non-profit development partnership.

According to Ecology records, the then owners of the gas station replaced the leaking underground storage tanks in 1990. In early March 1998 William Arensberg sold the two parcels[45] that make up the site to Rentas Enterprise for $1.2 million, which transferred ownership L&M Enterprises (Lou Rentas) at no cost (King County 2007). The site continued operation as a Chevron gasoline service station. According to King County tax records, L&M Enterprises (Lou's Chevron) sold the site to Walgreens on October 2001 for over $2.0 Million, who leased the site to Lou's Chevron for two years, on condition that upon expiration, Chevron would remove the USTs and in the process partially clean up the site. Incorporated into the sales agreement was the indemnification of L&M Enterprises by Walgreens for any responsibilities concerning the contamination and cleanup of the site (Grainger 2007).

In 2002, Walgreens hired the S.E. Grainger Development Group to manage the redevelopment of the site and began the pre-application process with the City of Seattle for a one story Walgreens store with a surface parking lot. During a public design review in February 2003, neighborhood residents reacted very poorly to the design for the proposed redevelopment of the site (Schwartz 2003). During this meeting, residents shared their concerns for the proposed project with the developer, Scott Grainger, citing the need for dense mixed-reuse in addition to affordable housing (Schwartz 2003). In considering the opportunity to incorporate the neighborhood's request for increased density, such as retail development, with affordable housing, both recommendations which were made in the area's community plan, the project underwent redesign. S. E. Grainger Development Group hired GGLO, a Seattle-based design firm and partnered with Capitol Hill Housing (CHH), a local nonprofit agency that develops and manages low-income housing. New plans for the mixed-use development were shared with the public on October 15, 2003 during the project's second design review; neighborhood feedback was significantly more positive than during the February 2003 review.

Walgreens sold the site to Broadway and Pine Apartments LLC, a subsidiary of CHH, for just over $2.0 Million in August 2005, which in turn sold the Walgreens portion and the common areas of the building to SEG Pine, a company owed by Scott Grainger, for $3.7 Million in late 2006 (King County 2007). In the fall of 2005 the initial stage of construction began as did the second phase of the cleanup through Ecology's VCP. See below. Construction of the Walgreens and

[45] Tax Parcel number 600300048607 and 600300049507.

Broadway Crossing apartments was completed in early 2007 and opened to the community in March 2007.

5.1.3 Contamination and Cleanup

In 2003, after the gas station ceased operations, Chevron entered into Ecology's Voluntary Cleanup Program (VCP) with plans to excavate the contaminated soil from the previous leaks and to remove the underground storage tanks of the gasoline station. Gasoline range organics were identified as the main contaminant of the soil on the site. No groundwater contamination was discovered. Removal of the contaminated soil was the remedial action. But at that time, Chevron was unable to fully cleanup the site because of a retaining wall. In response, Ecology issued a partial sufficiency with further action determination, stating that the residual contamination could be cleaned up during redevelopment (Sato 2007).

In the fall of 2005, Scott Grainger Development managed the second phase of cleanup in tandem with the excavation and development of a two level underground garage on the site. Both Phase I and Phase II of the cleanup were conducted independently through the VCP. The type of contaminant, gasoline range organics (GROs) and the remedial action, i.e., soil removal, had been identified when Chevron underwent the VCP in 2003. When the cleanup began, however, Grainger found that the Phase II investigation had underestimated how much contaminated soil had to be removed. Apparently, there were layers of contaminated soil not previously identified. Adding to the costs was the difficulty of extracting the soil from its tight infill location, as a result, the cleanup costs for the project more than tripled. But the contamination was confined to the soil, and had not migrated to other properties. Grainger Development fully removed the contaminated soil in preparation for the excavation of the site to allow for a two-story underground parking garage to service the apartment building. Despite the unexpected increase in cleanup costs, this second phase of the cleanup was effective in its use of "two-fers". That is, the retaining wall needed to be removed and the site excavated for the underground parking garage anyway. Ecology's flexibility in allowing the second phase of the cleanup to occur at the time of construction saved the developer a significant sum.

Each party responsible for cleanup provided Ecology with a UST Removal and Remedial Excavation Reports. During the second phase, under Grainer, the site entered the VCP process in the fall of 2005. In January 2006 the final UST Removal and Remedial Excavation Report was received and approved by Ecology, resulting in a final NFA letter issued in April 2006. (Sato 2007).

Overall, the second phase of the VCP process for this case took less than a year. But if we begin the count from the first phase in 2003, the VCP process took three years.

After cleanup and development, the site had appreciated by roughly $1.75 million.

5.1.4 Stakeholders

S.E. Grainger Development Group

S.E. Grainger Development Group operates regionally, constructing build-to-suit stores; the firm maintains ownership of the property which is leases back long-term to the corporate entity, such as Walgreens. As such, the company is very familiar with the development criteria of corporations. To the benefit of the project development, Scott Grainger had prior experience working with Ecology's VCP (Grainger 2007). While Broadway & Pine Apartments LLC owned the entire property for a year during construction, it subsequently sold the Walgreens store and the common areas of the building to SEG LLC, a subsidiary of S.E. Grainger Development Group, who, in turn leases the store site to Walgreens.

Walgreens

Walgreens, the largest national drugstore chain, relies on fee developers with local expertise to develop its stores. Walgreens typically holds long-term leases on its developed stores in contrast to owning the real estate directly. The average Walgreens is less than 6 years old and the company plans to open 500 new stores in 2007. When assessing possible locations for new ventures, Walgreens' interests focus on busy intersections, adjacency to afternoon commuter routes, and proximity to hospitals, medical clinics, and retirement communities (Boone 2005).

Capitol Hill Housing

CHH has been in operation since 1976 and is a non-profit organization that develops and manages affordable housing in Seattle, particularly in the Capitol Hill neighborhood. The non-profit is organized and operates as a Community Development Corporation (CDC). CHH was able to obtain grants and Low Income Housing Tax Credits (LIHTC) from Washington State's Housing Finance Commission for the apartment portion of the development and largely managed this section

of the project. LIHTC is an indirect federal subsidy, administered by the states, used to finance development of affordable rental housing for low-income households.[46]

5.1.5 Key Arrangements

The market viability for the development of the land was significant enough that a mixed-use building was economically feasible despite the contamination on the site (Grainger 2007).

Financial Arrangements

CHH leveraged a combination of private and public dollars to separately fund the development of the affordable housing portion of the project; please refer to Table 11. Funds totaled $16.95 million. Private funds were used for the acquisition of the property, site cleanup and the development of the Walgreens store.

Risk Management

Development and environmental liability risk was shared between the three stakeholders but the S.E. Grainger Development Group carried a greater portion of the environmental liability risk as the party responsible for cleaning up the remaining contamination on the site at time of development. Neither S.E. Grainger Development Group nor Walgreens obtained pollution legal liability insurance because of its high cost. As petroleum is excluded from CERCLA and RCRA authority, the risk to a non-contaminating owner is greatly reduced. The risk of liability at this site is also largely mitigated by the surrounding uses and the groundwater rate and direction of flow (Grainger 2007).

5.1.6 Effectiveness— what worked, and did not?

The particular characteristics of this case study, the type and spread of contamination as well as proposed reuse and development of the site made it an ideal candidate for Ecology's Voluntary Cleanup Program. Cleanup was relatively simple, involving the removal of underground storage tanks and the excavation and removal of contaminated soil. Nonetheless, an analysis of the site's redevelopment illustrates the complexity of assessing cleanup costs even when following ASTM protocol and performing both a Phase I & Phase II Site Assessment.

[46] Under this program, once a developer agrees to provide affordable rental units for the stipulated length of time, typically 40 years, the developer can sell the credits to investors to raise equity, thus reducing the amount of loans needed to finance the project. Investors receive dollar for dollar credit against their federal tax liability each year for ten years.

Table 11. Affordable Housing Sources of Funding

Sources	Amount
Low Income Housing Tax Credit (LIHTC) Equity through Enterprise	$5,643,000
KeyBank Construction Loan	$9,000,000
Washington Community Reinvestment Loan	$522,000
Seattle Office of Housing Loan	$1,800,000

What Worked

The reasonably straightforward cleanup of a local corner service station, in comparison to significantly more complex sites as described in the Wyckoff Case Study, can be managed well under Ecology's VCP. The financial obligations and management for this brownfield typology under a voluntary process make reuse of the site viable to developers and open to neighborhood-specific needs. In addition, the second phase of cleanup was effective in its use of "two-fers", that is, obtaining double duty for cleanup and development costs. As the retaining wall needed to be removed and the site excavated for the underground parking garage, construction costs were incorporated into the second phase of cleanup.

The partnership arrangements between for-profit, private development and retail companies and a local non-profit, private housing developer/manager were ideally suited to the reasonably straightforward cleanup processes and redevelopment of an urban corner. Familiarity with Ecology's cleanup assessments and procedures, the ability to leverage considerable private and public funds, and the ability to work cooperatively to achieve a common, though not identical, development goal are foundational to the successful reuse of this urban brownfields site. A pivotal event in the redevelopment timeline of this site was the public design review session in February 2003 which was an opportunity for redevelopment and neighborhood interests to be assessed interactively. Had community members not attended the meeting, the outcomes of this project would be significantly different. Instead, the developer understood the importance of incorporating the neighborhoods needs into the planning process showing that public participation is vital to planning the reuse of brownfields.

What did not Work

The greatest challenge for cleanup on the site was determining the amount of soil contamination, as levels of contamination were not uniform throughout the site. The cost of disposing of the

contaminated soil is significantly higher than the disposal of 'clean' soil. The actual cleanup was limited to soil contamination and did not include any challenging hydro-geological features, which could have delayed excavation. However, the cost of cleanup was more than triple the anticipated budget, since the amount of contaminated soil on site was significantly greater than reported in the Phase II Assessment (Grainger, 2007). Excavation was a challenging task due to the dense urban surroundings of the site. The increases in cost might have led to a delay in the project timeline which would then reduce the first year net operating income (NOI), while increasing construction costs. If construction was performed on a standard interim loan, then the developer could have faced added fees and interest to extend the term of the loan. All of these features can severely constrain a project's viability.

5.1.7 Links to Economic Development

There were no public economic studies performed beyond the review of the application for an affordable housing loan. Each development partner would have conducted their own financial feasibility analysis. This information was not available at the time of research. A typical Walgreens store employs 25 to 30 people, while a typical service station in the mid-90s employed 7.6 people (USEIA 2001). The redevelopment of the site created new job opportunities for local residents and added 44 affordable housing units to the Capitol Hill neighborhood. The combination of affordable housing and commercial space in a medium-density mixed-use building addresses development strategies and recommendations articulated in the neighborhood plan of 1998. The developer's choice to construct Broadway Crossing to the US Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver standards will bring long-term cost savings (achieving 40% water savings, and 20% energy savings), an indirect economic benefit to the renters, the property managers, and the City of Seattle. The project was registered (not certified) in June 2006 and is currently listed with a LEED rating of NC 2.2 (USGBC 2007).

Broadway Crossing, a tax credit-financed property, serves residents making 30%, 40%, and 60% of King County's median income and can accommodate recipients of Section 8 vouchers (CHH 2006), since the development was partly financed by low-income housing tax credits. The project's low income covenant agreements is valid for 40 year, with an additional 22 year period of compliance for its 44 units[47] (King County 2007). Table 12 summarizes the rental units available to tenants:

[47] The federal program allows states to increase the period of compliance.

Approximately $139,000 has been generated in Real Estate Excise Tax since the sale of the site to Walgreens in 2001. In 2004, the land was valued at $720,000 which resulted in a tax bill of $7,488. In 2007, the land and improvement value together resulted in an assessed value of approximately $3.5 million, which resulted in approximately $33,000 in tax revenue for the city. This represents roughly a 340% increase in revenue to the City. (King County 2007)

Market conditions played an integral role in the dynamics of the sale agreement. In hot markets, the seller is at an advantage. This advantage often extends to erasing cleanup liability, even if the seller is the party that contributed the contamination. This was the case at Broadway Crossing, where the locational attributes of the site were so great that the seller would only sell the site as-is and required indemnification from the buyer. This disadvantage to the buyer can be especially acute for retailers and chain retailers, which often require specific location features or opening in specific submarkets to capture market share. The risk to this type of dynamic is that cleanup will often hinge on market conditions. When the market slows, some sellers will likely take responsibility for cleanup but many others will sit on their site until market conditions improve again.

5.1.8 Issues Raised/Lessons Learned

- Broadway Crossing is a success story of a brownfield with minor contamination being redeveloped into a more intense use that serves the community's interest. It exemplifies the type of project that can benefit from the VCP pathway, and is feasible for most private development. The confinement of contamination to the soil alone meant cleanup could be achieved through a relatively straightforward UST removal and soil excavation. The VCP process for this second phase took less than a year from the time the project entered the VCP process to the issuance of the NFA letter.
- The case also highlights the difficulties associated with adequately assessing site contamination. The site was initially regarded as a seemingly straightforward cleanup which followed ASTM protocol, but the Phase I & II Assessments under-calculated the amount of contamination, consequently resulting in higher than expected cleanup costs. However, the opportunity to take advantage of a "twofer", the combination of cleanup and development costs/ efforts, and excellent market conditions were key to this project's viability.

Table 12. Broadway Crossing Units and Rents

Type of Unit (# of units)	Rent
Studio Apartment (2)	$475
One Bedroom (14)	$620-$660
Two Bedroom (28)	$397[48]-$740
Capitol Hill Housing (2006) Neighborhoods Within Reach: The Broadway Crossing. www.CHHIP.org	
Number of Units (out of 44)	Available to Special Needs
9 Units	Available to households transitioning from homelessness
9 Units	Available to persons with disabilities
King County Tax Records	
Number of Units	Available to AMGI[49] %
22 Units	Households making 40% King County Median Income
11Units	Households making 30% King County Median Income
11 Units	Households making 60% King County Median Income
Capitol Hill Housing. www.CHHIP.org *and King County Tax Records*	

- The removal of the tanks in Lou's Chevron site was performed under MTCA's UST regulations. Since the owner of gasoline station was not held responsible for total cleanup of the site prior to the sale to Walgreens, the case illustrates Ecology's lack of capacity or authority to enforce the cleanup of small-scale sites, although Ecology does provide grant funding for owners of petroleum LUSTs who enter into a consent decree. The cleanup of many of these types of sites, however, likely hinges on voluntary processes and the viability of market conditions at the time of negotiation between buyer and seller.
- In this case, both parties involved in the cleanup had previous experience with the VCP, which likely increased the project's effectiveness and ability to attract financing.
- The site's location in a dense urban area also diminished the likelihood that contamination or cleanup efforts would result in natural resource damages, which is another risk entangled in brownfield redevelopment.

[48] Some rents will be lower; a portion of the apartments come with a project-based Section 8 subsidy, allowing rents to fluctuate based on tenant income.

[49] AMGI – Area Median Gross Income which is low-income housing tax credit unit tenancy.

- This successful project resulted in considerable public benefit—44 low-income rental units in a city where increasing affordable housing is an important community goal. Several factors led to this beneficial outcome:
- The project was achieved through the unusual partnership of a national retailer, Walgreens, seeking a central location for a new store, its local developer who understood the community planning process in getting a project approved in Seattle, and a very capable Community Development Corporation (CDC) in the business of providing affordable housing.
- Seattle's a strong tradition of neighborhood planning and participation, and the recently approved round of neighborhood plans (late 1990s) played an important role in ensuring the project's public benefit. Neighborhood-based design review boards are another aspect of the participatory environment in the City, composed of community members, and staffed by the City. These boards, guided by City and neighborhood plans, review development projects proposed for their neighborhoods and provide advice and sometimes negotiate with developers over a project. Design review boards can be very influential in obtaining City approval for development projects.
- A crucial decision point in the shaping of this project was the Capitol Hill design review board meeting where Walgreens' local developer presented Walgreens' proposal for a ground level store for the Broadway Crossing site. The design review board's negative view of the project made clear to Grainger that the project had to be denser, mixed retail/residential and that the project could win points with the neighborhood and the City if the residential units were affordable units.
- With the design review board's negative reception of Walgreens' preferred one-story store plan, Grainer was likely able to convince Walgreens that unless the project was changed to a higher density, mixed use project, it could be delayed for years, if ever approved.
- As a local developer, Grainer knew the community development community in Seattle, and likely had dealt with CHH, a respected CDC, with a sound track record in developing and managing affordable housing projects, and strong roots in the Capitol Hill neighborhood.
- The choice of CHH as a non-profit partner for the affordable housing part of the project proved to be a wise choice. CHH was able to obtain low-income tax credits worth over $5.5 million to complete its financing plans and in combination with Grainger's own financial backing, the project was able to proceed to a successful completion.

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5.2 JH Baxter Property and the Port Quendall Properties, Renton

The JH Baxter Property, a 20-acre site located on the southeastern shores of Lake Washington in Renton, is a privately funded brownfield redevelopment project. The site was contaminated by a wood treatment plant that ceased operations in 1982. Both soil and waterways were contaminated with the pollutants from the plant. The Port Quendall Company, an affiliate of Vulcan Inc, purchased the site in 2000 from JH Baxter and entered into a Prospective Purchasers Consent Decree with Ecology for clean-up and redevelopment of the north and south portions of the site. Though an initial plan for a 60-acre mega-project stretching from the site south to the Quendall Terminals and Barbee Mills was unsuccessful, development is occurring parcel by parcel and includes the Seahawk's new practice space on the Baxter property, adjacent to Quendall Terminals. Nearby the JH Baxter site, luxury townhouses and condo are being developed on the former Barbee Mill site.

5.2.1 Site Description and Regional Overview

To understand the issues related to the cleanup and redevelopment of the JH Baxter property, it is important to discuss the development history of the entire site. The JH Baxter property is nestled along Lake Washington at 5015 Lake Washington Boulevard North in Renton, King County. There are two significant transportation access points into or adjacent to the site: the BNSF railway runs north-south along the eastern edge and an Interstate-405 interchange is located southeast of the site. `

Figure 9. Map of Port Quendall Properties

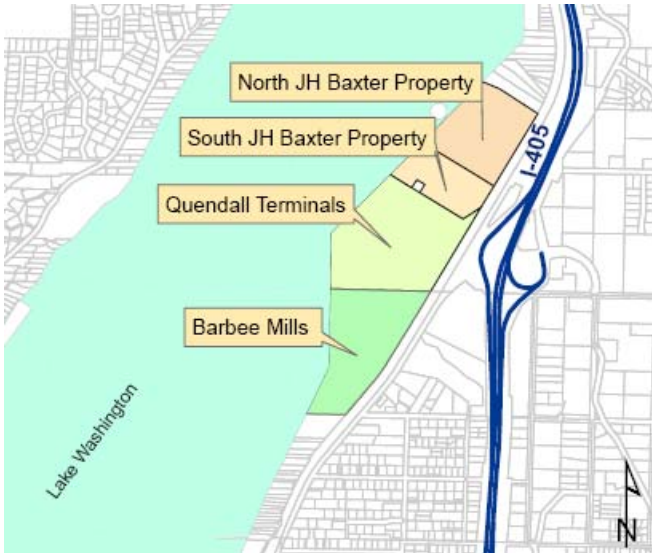


Figure 10: Aerial Photo of Port Quendall Sites

The City of Renton's economy was largely founded on heavy industries such as coal mining and foundry work in the early 1900s. These industries declined through the 1930s, although Pacific Car and Foundry Work (PACCAR) is still a major employer in the city. In the early 1940s the City boomed again with Boeing's arrival; as of the mid-80's, 60% of all employment in Renton was supported by Boeing. However, in 1992, the City experienced a sharp economic downturn when Boeing transferred ten thousand jobs north to Everett, Washington and again in 2000 when the company laid-off thousands of workers and later moved its headquarters to Chicago, IL. By 2005, the regional economy and the aerospace industry were rebounding, which resulted in new employment opportunities for the City of Renton. Despite the fluctuations in opportunities with larger regional employers, Renton was one of the last affordable suburbs of Seattle, which has brought the City significant population growth, approximately a 40% increase from 1990 to 2006 (Booth 2006, Pederson 2007).

In recent years, Renton has promoted itself aggressively to attract high-tech, medical and bio–tech industries to the area in an effort to diversify its economic base. The city's economic development campaign is focused on two major movements: attracting office and retail to downtown and repositioning former and/or idle industrial properties in the city.

The Port Quendall area is an industrial remnant of Renton's wood manufacturing history and consists of three properties: JH Baxter, Quendall Terminals, and Barbee Forest Products Sawmill.

Refer to Figure 9. After wood operations ceased in the 1980's, the sites remained idle as grassy fields, the last large tracts of vacant property along the Lake Washington shoreline.

5.2.2 Site Background

The first recorded private owner of the JH Baxter site was Jeramiah Sullivan, who purchased all of the properties at the May Creek Delta, the alluvial plain of which the Baxter property is a part of, from the US Government in 1873. In 1875, Sullivan sold the JH Baxter site and adjoining properties, Pan Abode, Barbee Mills, and Quendall Terminals to James Colman. Colman sold the timber on the land and deeded a right-of-way (ROW) to the Northern Pacific Rail Line in 1902. In 1908, Colman started selling off parcels individually. Peter Reilley purchased property along the waterfront, site of the present day Quendall Terminal, from which he operated the Reilley Tar and Creosote Company from 1916 to 1969. This operation is the sole contributor to contamination in the Quendall Terminals site (WSSC 2000a,b).

In 1916, the Army Corps of Engineers completed the Lake Washington Ship Canal, which lowered the depth of the lake by eight feet, exposing portions of land in the May Creek Delta; the JH Baxter Wood Treatment Plant was situated on this formerly submerged terrain. The plant employed a wood treatment application method known as the Boulton process, which required the use of creosote to treat pilings and PCP to treat poles (WSSC 2000a, Colburn 2007). The northern portion of the site was used mainly for log storage and drying before treatment, whereas the processing area was staged in the southern portion. Wood treatment was the only industrial or commercial activity at the site and lasted from 1955 to 1982 (WSSC 2000a,b).

While the Port Quendall properties housed three different industries during most of the early and mid 1900s, the Reilley Tar Company ended its operations in 1972 and sold the middle 25 acres to the Quendall Terminals Company, a joint venture between JH Baxter, who owned the adjacent 20 acres to the north, and Barbee Mills Forest Products, which operated the Barbee sawmill immediately to the South.

Mega-Project Plans

In 1976, the first conceptual vision for a mega development was proposed by Don Knoll Development, followed later by James Schuler's concept for the Port Quendall mixed use development, which would encompass all of the large site's 60 acres. In 1982, Schuler received approval from the Renton City Council for the Port Quendall project. However, triggered by the development proposal, a sediment investigation of potential hazardous substances and a subsurface

hazardous waste assessment performed on the site in 1983 resulted in placing the project on hold while the EPA deliberated for approximately 4 years as to whether or not it would place Quendall Terminals on the NPL. In 1986, anticipating the mega-project and recognizing that the owners of the property were conducting remedial activities and obtaining funding for further studies, the EPA lowered the site's hazard ranking and opted not to add Quendall Terminals to the NPL. (US EPA 1986) About that time, Ecology ranked both the JH Baxter Site and the Quendall Terminals site a WARM ranking of 1, the highest priority ranking for cleanup in the state. During the 80s and 90s the sites remained vacant while Ecology attempted to enforce the landowners' responsibility to undertake remedial investigations and cleanup action on the sites.

During the 1990's the concept for a mega-development project was revived by Vulcan Inc, who wanted to locate their business headquarters on the sites. At that time, the City of Renton rezoned the parcels of vacant lands from industrial to commercial office residential (COR-2). The move to rezone the parcels was not approved by all stakeholders, namely the owners of the Barbee Mills site, the Cugini family, who wanted the land to remain industrial, since standards for cleanup of industrially zoned land are less stringent.

The Port Quendall Company (PQC)[50], a subsidiary of Vulcan Inc., developed several iterations of the mega-development project, called Quendall Landing; one concept called for 1.2 to 3 million square feet of Class A office space for high-tech industries, a 200,000 square foot luxury hotel, 300,000 to 600,000 square feet of residential development, 650,000 square feet of retail space and a 1-mile strip of public park space along the shoreline (Seattle Times 2000a, Daniels 1997). The high density of the mega-project was driven by a need for an economic return, which would make the cleanup a smaller obstacle. Cleanup costs for the cleanup of the Port Quendall sites were high, estimated to exceed $30 million; cleanup costs for the Quendall Terminals site were estimated at $17 to $20 million (Ervin 1998, Vessely 1997a) while cleanup costs for the JH Baxter site were estimated at $6 to $8 million.

The mega-project concept would have had major transportation impacts in the area. According to the traffic and economic impact assessment prepared for the project, significant transportation improvements were essential to handle the density deemed necessary to successfully redevelop the Port Quendall sites. BNSF's right-of-way sliced across the eastern edge of the three properties, and in order to support a commercial mix of uses, a pedestrian and car overpass would have to be built. In addition to this large infrastructure cost, the I-405 interchange did not have the necessary capacity to accommodate commercial development at these properties. The City of

[50] Details regarding the Port Quendall Company are examined under the section – Key Arrangements.

Renton concluded that the transportation system might be able to accommodate the traffic generated from the redevelopment of one of the parcels but consequently precludes the commercial development of the other two parcels without significant upgrades to the transportation infrastructure. The cost to improve traffic capacity was estimated at $150 million (Renton 2007).

In an attempt to garner support for the entire redevelopment of the Port Quendall properties, both the City and Vulcan Inc lobbied the State to provide funding to help widen I-405. Vulcan Inc, through PQC, purchased the Pan Abode property next to the interchange to allow for the expansion of the interchange. The City increased the density allowance for the mega-project to generate better profit revenues that would counteract the cost of the infrastructure improvements. The City of Renton, Vulcan Inc and the State agreed to share the cost of the improvements. At the time, the need for infrastructure improvements was a significant obstacle to the mega-development project. Currently, BNSF has stopped running trains and the interchange is being improved as part of the I-405 Renton Nickel Improvement Project.

In 1997, Vulcan Inc began shifting plans away from the originally proposed mega-development but showed continued interest in developing the sites. Development options were extended to all parcels at Port Quendall, with the exception of the most polluted site, the Quendall Terminals. Intent on maintaining the redevelopment interest of Vulcan Inc., the City of Renton examined the option of acquiring Quendall Terminals for $0 in exchange for indemnifying the landowners of any remedial responsibility. The City would take on the liability to cleanup the site, estimated at a total cost of $20 million in 1998. The area would be developed into a one-mile long waterfront park and salmon habitat would be restored while the remaining land, once cleaned, would be sold to Vulcan Inc. at market rate. As a public agency, the City had access to grants and other attractive funding tools to address the environmental obstacle delaying the cleanup and redevelopment. With significant interest in having the site cleaned, Ecology agreed to offer City of Renton a $20 million loan for the cleanup, with some of the funds likely to be later converted into a grant.

In 1998, Vulcan Inc purchased the Pan Abode site, a non-contaminated parcel adjacent to Port Quendall and the I-405/NE 44th Street Interchange. The site was purchased with the intent to develop portions of the property and use the site for the expansion and widening of the interchange (Renton 2007). In spring of 2000, Vulcan Inc purchased the JH Baxter Property. Obtaining a Prospective Purchaser Consent Decree for the north and south portions of the site was a condition of sale. Vulcan Inc agreed to cleanup the site, estimated to cost $6 to $8 million, regardless of the realization of the Quendall Landing's development mega-project.

In June 2000, the City of Renton decided not to acquire the Quendall Terminals site, purportedly because the option was pursued only in support of the Quendall Landing project, the redevelopment plan which encompassed the entire 60 acres. The option to acquire Quendall Terminals was dropped a month after Vulcan Inc purchased the JH Baxter property. (Timmerman 2000).

During the property acquisition negotiations with Vulcan Inc, a development concept for the Barbee Mills site was generated by the President of Barbee Mills Forest Products Company, Robert Cugini. In July of 2000, the City passed an emergency development moratorium on the properties, holding that the zoning change from industrial to COR-2 was passed based on the intent for development of the properties into one mega-project, whereby traffic and infrastructure issues would be addressed comprehensively. The City of Renton was subsequently sued by the President of Barbee Mills Forest Products Company, claiming that the emergency moratorium was a tactic to pressure the sale of the Barbee Mills site to Vulcan Inc. (Timmerman 2000) There was also concern that the moratorium was negatively impacting the value of the aforementioned property, thus influencing the offers made by Vulcan Inc. In March 2001, the City of Renton dropped the moratorium (City of Renton 2001c).

In 2001 the real estate market suffered a decline as the Puget Sound region was significantly impacted by the recession initiated by the "bursting" of the high-tech industrial bubble. The uncertain future for commercial development, coupled with strained negotiations for the acquisition of the land, crippled the feasibility of a mega-development project along the shores of Lake Washington, and the Quendall Landing mega-project was dropped.

5.2.3 Contamination Description and Site Cleanup

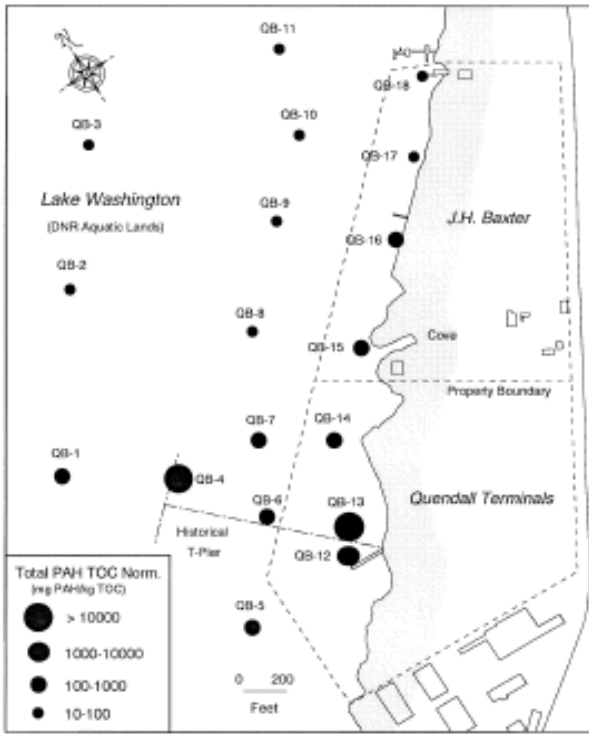
Site Contamination

The JH Baxter Site was primarily contaminated with Poly-aromatic Hydrocarbons (PAHs) and Pentachlorophenol (PCP) originating from wood treatment operations that used creosote and PCPs. The most significant concentration of contaminants was localized to a 7 acres stretch of land in the southern portion of the property, adjacent to the JH Baxter lagoon and the cove, a Lake Washington inlet, which received most of the discharge from the Baxter Lagoon. The Baxter Lagoon is an upland depression where stormwater and water generated by former wood treatment operations settled and was skimmed before discharging into Lake Washington (WSSC 2000a). The northern portion of the site, the remaining 12 or so acres, was assessed to have limited soil contamination.

In 1992, during the remedial investigations carried out by the Baxter family, the site was divided into the two north and south parcels via a lot line adjustment to: 1) identify the distribution of contamination across the site and in particular, highlight the significant concentration localized in the southern portion of the site and 2) to assist Ecology in reaching a Renton-Baxter Remediation Security Interest Agreement that essentially held the North portion of the site as collateral to ensure further remedial work from Baxter on the southern portion of the site. Ecology determined that no further action was required at the North Baxter site other than adequate ground cover.

The contamination and concentration of PAHs, as detected in a 1991 Ecology study on the distribution and significance of PAHs in Lake Washington are depicted in Figure 11 below. According to a 1993 Agreed Order (DE92TC-N335): peak PAH concentrations in the J.H. Baxter Cove are the highest yet recorded in Lake Washington near either Quendall Terminals or the J.H. Baxter site. The highest PAH concentration measured in the Baxter Cove (3.3% total PAH) would be sufficient to designate these sediments as extremely hazardous under Washington State's Dangerous Waste Regulations. (WSDE 1993, Norton 1992, 1)
This same area also contained the highest levels of PCP contamination.

Figure 11. Distribution of PAHs (Norton/WSDE 1992)



The spread of contamination in the Port Quendall area flows westward towards Lake Washington. The boundary between the Quendall Terminals and the JH Baxter properties run parallel to the spread of contaminants thus limiting cross-contamination between parcels. Furthermore, there is a relatively clean buffer-area between the two properties as, historically, most of the industrial activities at each wood treatment facility took place in the center of the sites (Colburn 2007).

The Cleanup Process

The cleanup of the JH Baxter site was managed under Washington State's MTCA. If the original mega-development had occurred, which would have jointly cleaned up and developed the JH Baxter Site, Quendall Terminals, and Barbee Mills sites, the project would have been under Ecology's supervision, since in 1986, EPA had decided not to list the most polluted parcel, Quendall Terminal as a Superfund site. In 2005, with no progress in cleaning up Quendall Terminals, Ecology requested EPA to take the lead for overseeing the cleanup at the site. In 2006, EPA designated Quendall Terminal a Superfund site. However, had the City chosen to pursue acquisition of the Quendall Terminals site in exchange for cleanup responsibility and indemnification of the landowner, it is unlikely that the site would have been pushed to the federal enforcement level (Colburn 2007).

Before acquiring the JH Baxter site, the PQC entered into an option agreement to perform the necessary feasibility studies and remedial actions. The sale agreement between the PQC and owners of JH Baxter was conditional upon PQC's ability to obtain Prospective Purchaser consent decrees for the North and South Baxter Sites.

During the option period, the PQC performed inquiry exceeding the All Appropriate Inquiry on the JH Baxter site as defined by ASTM. Phase I Site Assessment and Phase II Site Assessments had already been performed by Baxter on the site which PQC reviewed. By performing such inquiry, the company took the first step in shielding itself from potential future liability under CERCLA or MTCA. At that time, contamination at the site had already been thoroughly characterized by remedial investigations performed by the Baxter Company under Ecology's oversight. PQC was involved with cleanup analysis and negotiations with Ecology prior to acquisition, consequently reducing the company's risk by establishing working knowledge of the potential liabilities and costs involved with cleanup.

The PQC opted to cleanup the JH Baxter property under the statutory MTCA process. Even though initially more costly, there are several advantages to voluntarily pursuing this approach through a prospective purchaser consent decree instead of pursuing an independent cleanup through the Voluntary Cleanup Program. These include:

- Reduction in the risk of a re-opener or need for further remediation at a later date
- An agreement on cost of cleanup and cleanup plan with Ecology prior to property acquisition
- Expediting the process through an exemption from administrative permitting requirements (although substantive requirements of applicable permits must be complied with).

While the Baxter Company performed the remedial investigation at the site, the PQC was responsible for the rest of the cleanup process and hired consultants, ReTec, to perform a Feasibility Study Cleanup Action Plan and Engineering Design Reports. According to the agreements, PQC agreed to perform cleanup actions described in the Cleanup Action Plan for a cost ranging from $6 to $8 million. Ecology's no further action status for the Northern portion of the JH Baxter site was conditional on adequate ground cover being placed prior to redevelopment (WSDE 2002b). According to the plan and the Prospective Purchaser Consent Decrees, the PQC undertook the following primary cleanup actions at the South Baxter site:

2002

- Excavation of contaminated sediment in Baxter Cove
- Creation of an approximate ½ acre forested wetland with 50 foot wide buffer

2004

- Excavation and incineration of Baxter Lagoon sludge
- Excavation and disposal of shallow-impacted soil from an area where a tank-farm used to be
- In-situ soil treatment and stabilization for the remaining contaminated soil, which involved the injection of slurry/concrete columns into the soil in order to immobilize contaminants and address hydrogeology concerns (excavation alone is not feasible because once the layer between the aquifers is removed, water would be forced upwards)
- Replacement of wetland vegetation that did not survive from 2002
- Concrete tank demolition and removal
- Excavation of shallow contaminated soil around the tanks
- Contouring and planting over excavated areas. (WS DE 2004b)

The entire JH Baxter site was capped in 2005 and groundwater continues to be monitored in the Southern portion of the property. With some residual contamination remaining on site isolated below the cap, restrictive covenants had to be placed on the land. The restrictive covenants or institutional controls on the South Baxter property included the following limitations:

- Creation of a Soil Management Plan to be approved by Ecology
- Limitation on excavation, grading or digging at the site, as long as it does not jeopardize the integrity of the cap as outlined in the Sediment Management Plan
- Prohibition of groundwater being drawn from the site
- Limitation on access to prevent swimming or direct contact with contamination at the site
- Limitation on residential building. Residential uses may only exist if they are over another structure, such that it is at least one floor above soils that do not meet MTCA Method B cleanup levels
- Permission for Ecology to access the site at reasonable times to ensure remedial action and covenants are being followed
- 30-day advanced written notification to Ecology if owner is to convey any fee interest in the land
- Restriction of all leases to the terms of the restrictive covenants

Feasibility Analyses for Redevelopment

Feasibility analyses were performed for both cleanup and development. Because feasibility studies were performed prior to acquisition of the land, Vulcan Inc was aware of the costs and redevelopment options. As indicated, at the time of cleanup, Vulcan Inc did not have a plan for the site. The cleanup plan moved forward with the company assuming it would eventually build a smaller mixed-use version of the original Port Quendall mega-development.

Initial studies performed for the entire Port Quendall project highlighted the need for high-density development to offset the cost of upgrading transportation infrastructure and cleaning up the contamination (Renton 2007). However, this level of density brings a much higher risk for market absorption. At the time the project was conceived the projected Class A (highest quality) office space for the Port Quendall project was more than all of the current Class A office space in downtown Bellevue (Daniels 1997). The other planned uses, such as hotel, retail, and residential spaces would depend on the overall viability of the office portion of the project. A decrease in demand for Class A office space accompanied by a significant economic downturn in the high-tech industry meant that the mega project was no longer feasible.

Post-Cleanup

The cleanup efforts at the JH Baxter site were successful; three years from the start of the cleanup, in 2005, Vulcan Inc received a No Further Action letter for the JH Baxter property, and the site was removed from the Hazardous Sites List (WSDE 2005a). As Vulcan Inc privately funded the cleanup through PQC, no cost recovery was required by Ecology post cleanup. The site still undergoes operation and maintenance to ensure the integrity of the soil cap, which includes groundwater monitoring and soil testing, as described above. As part of the standard or statutory MTCA cleanup process, the site will have to undergo a five-year review of post-cleanup conditions and monitoring data.

5.2.4 Stakeholders and Redevelopment

Stakeholder Involvement on JH Baxter Site

The redevelopment of the JH Baxter site involved several key stakeholders—the City Renton, Ecology, Washington Department of Fish and Wildlife (WDFW), United States Army Corps of Engineers (USACE), the former landowner, Vulcan Inc, and the Seahawks organization. Upon becoming a Prospective Purchaser of the site, in Spring of 2000, Vulcan Inc initiated multi-stakeholder meetings, collaborating with various agencies and consultants to discuss plans for the project. Collaboration on the project ensured a degree of success. For instance, WDFW was willing to compromise on allowing more development along the waterfront in exchange for greater mouth and creek restoration by Vulcan Inc. USACE was willing to streamline the pre-application process to expedite redevelopment (Renton 2007).

The Redevelopment Project for the JH Baxter Site

The Seahawks, a National Football League team owned by Paul Allen, CEO of Vulcan Inc, had been looking for a new practice space for several years. Tim Ruskell, President of Football Operations and CEO Tod Leiweke were boating in Lake Washington and thought the site could be ideal for Seahawks practice needs. Upon discovering that the land was owned by one of Paul Allen's companies, they approached Mr. Allen regarding their vision to relocate the team's practice space to Renton (Romero May 2006, Renton 2007). Plans to turn the site into the Seahawks new headquarters and practice space were announced in 2006 and construction groundbreaking was in

2007. The new facility is planned to open in time for 2008 training camp. Figure 12 depicts the conceptual plan for the new facility.

Figure 12: Conceptual Plan for Seahawks Practice Space (City of Renton)

Developer – Vulcan Inc

According to the Vulcan Inc website, the company "creates and advances a variety of world class endeavors and high impact initiatives that change and improve the way we live, learn, do business, and experience the world." The organization has developed several large projects throughout the Puget Sound.

Vulcan created the Port Quendall Company (PQC) for the purpose of developing the Port Quendall sites. The creation of a separate corporate entity to own the site protected Vulcan Inc from liability; had the PQC been formed as a partnership, agencies would have recourse to seek damages from the partner's assets. As a private corporation, the individual managers of the company are shielded if the company is held responsible for future damages or further remediation.

The JH Baxter property and the adjacent sites offered an expansive developable area with significant access opportunities along the shore of Lake Washington. Nonetheless, there were structural and environmental constraints to consider. Most notably were the estimated $150 million needed for transportation improvements to the interstate interchange, another $25 to $30 million for the contamination cleanup, and the timeframe necessary to plan and implement the improvements. However, Vulcan had also placed another option on a 20-acre site in 1997 as a back-up site if the Port Quendall properties fell through. According to the Seattle Times, there was speculation that this was a ploy to pressure Renton into expediting the transportation/traffic issue that was holding up

the entitlement process (Vesely 1997b). Previously, other developers had shown interest in the site but were not committed to its redevelopment (Colburn 2007). Both the City of Renton and Ecology recognized this and were committed to keeping Vulcan Inc in the deal.

Vulcan Inc employed a cooperative approach in its involvement with the project. The developer's ability to perform necessary investigations and studies expedited the cleanup process and was integral to establishing collaborative relations with the City of Renton and Ecology (Colburn 2007, Renton 2007). Negotiations between Vulcan Inc and the former landowners for sale of the lands took years and did not result in successful agreements for the purchase of all sites.

Landowners – JH Baxter and Barbee Mill Company

Although the JH Baxter site remains the focus of this case study, the Barbee Mill Company site was an integral component to the redevelopment of the area. The Cugini family owned the Barbee Mill Company site, the Pan Abode Property, and jointly owned the Quendall Terminals site, with the Baxter Family, owners of the adjacent site, JH Baxter. The businesses owned by each family contributed to the contaminations of their respective sites but their impact was less significant than the contamination caused by the Reilley Tar and Creosote Company's operations at the Quendall Terminal site before the families took ownership of the property. Development of these lands was the impetus behind the purchase of the contaminated Quendall Terminals. The potential listing of the Quendall Terminals site on the EPA's NPL in the early 80s stalled the approval of the mega-development project for the sites.

Attorneys representing the families argued that liability for cleanup of the contaminated Quendall Terminals since its purchase in 1971 was not the responsibility of the new landowners. They based their argument on the new owners' lack of awareness of the severity of the contamination as well as their blamelessness for the former operations that led to the contamination. (Timmerman 2000). In 1993, Ecology issued an Agreed Order mandating that the joint land owners be held responsible for carrying out a remedial investigation, baseline risk assessment, and feasibility study on the site. Ecology struggled to have the owners carry out remedial investigations at the JH Baxter site (Colburn 2007).

Relations between the owners of the JH Baxter and Barbee Mill sites and the City of Renton were strained. The rezoning of properties from Industrial to COR-2 was strongly criticized by the Cugini Family, who wanted to keep the property zoned as industrial, given its operation of the mill. It should also be noted that risk-based corrective actions (RBCA) site assessments and evaluation levels for cleanup of industrial lands are less stringent than for other uses. In 2000, Barbee Forest

Products entered into litigation with the City of Renton; this included two individual lawsuits and three administration appeals. Proceedings against the City of Renton were initiated after the passing of an emergency development moratorium on the COR-2 properties, which could prevent the landowners from proceeding with their plans for redevelopment, subsequent to their submission of a site plan application (Renton 2000d). As Timmerman reported in the Seattle Times, the landowners were concerned that the moratorium was initiated in support of the preferred development plan by Vulcan, Inc. (Timmerman 2000).

After several years of negotiations, in 2000, the owners of the JH Baxter site reached a sales and cleanup agreement with Vulcan. As previously mentioned, the joint owners of the Quendall Terminals property wanted to sell the property to the City of Renton for $0 in exchange for indemnification from cleanup liability. The most contentious negotiations for the sale of these properties revolved around the Barbee Mills site, for sale at $25 million, which was the least contaminated of all three sites. According to the property owners, Vulcan Inc's suggested purchase price was less than what they believed to be fair market value (Timmerman 2000). However, in 2001, the negotiations over the Barbee Mills Property ended. Instead, the Cuginis entered the site into Ecology's VCP to cleanup the land and subsequently sold the site to the housing developer, Connor Homes (Colburn 2007).

City of Renton

The Quendall Port remains one of the largest pieces of developable land along the shores of Lake Washington (Renton A). The City has been working on the cleanup and redevelopment of these lands with property owners since the mid 1990's. During this time, the City of Renton has pursued different strategies to achieve the reuse of the Quendall Port, preferably as a unified redevelopment project.

The City of Renton, along with Vulcan Inc lobbied the State for funding to build the overpass over the railroad tracks and make improvements to the I-405 interchange. In early 2000, according to City Council minutes from February 14, the City of Renton hired Entranco Engineers to perform a traffic analysis on the I-405/NE 44th St. interchange (Renton 2000e) and sought City Council approval for a contract of $112,000. At the February 20 Council Meeting, the Transportation Division recommended approval for 3 subsequent traffic and economic impact analysis contracts with Entranco Engineers totaling $258,000; City Council approved all three requests. A three-way partnership agreement was reached between the City, Vulcan Inc, and the State to share the costs of the consulting studies and subsequently, to share the costs of the improvements (Renton 2000e and

B). During the February 26, 2001 City Council meeting Councilwoman Keolker-Wheeler reported that at the Associations of Washington Cities Conference in Olympia the previous week, State Legislators seemed supportive of many of the City's project, including Port Quendall, but that moneys were not available (Renton 2001a).

The City of Renton tried to facilitate the acquisition of the contaminated lands by Vulcan Inc by proposing to purchase the Quendall Terminals. If Vulcan Inc were to acquire the Barbee Mills site, in the City's view, it could ensure a unified development of this significant piece of lakefront property. As a public agency, the City had access to State and Federal grants to aid in the cleanup of the site prior to its re-sale to Vulcan Inc at market value. They retained a lawyer to work on the insurance policy and to obtain agreements with Ecology to protect against re-openers (Renton 2007). The city had previous experience dealing with brownfields and a large contaminated property and approached the acquisition with a fairly clear understanding of the risks and protective measures available to them.

Washington Department of Ecology

Both the JH Baxter Site and the Quendall Terminals site held a Washington Ranking Model score of 1, the highest priority ranking for cleanup in the state (sites that are ranked 0 are Superfund sites). Because of Ecology's limited enforcement and funding capacity, the sites languished for years without effective cleanup efforts, though Ecology had a clear vision of what cleanup needed to take place at the JH Baxter property. Vulcan Inc completed the Remedial Investigation/Feasibility Study (RI/FS) and the Cleanup Action Plan, which closely matched Ecology's vision for the site cleanup (Colburn 2007). Vulcan also paid for a dedicated Ecology staff member to expedite the cleanup process (Renton 2007).

Ecology supported the City of Renton's proposed purchase of Quendall Terminals by offering to provide the City with a loan to cover the cost of cleanup, some of which could be converted into a grant. However, as previously stated, the City was only willing to acquire the site to ensure the integrated development of the area. With the City no longer interested in the site, Ecology began urging EPA to list the site federally as it did not have the necessary enforcement capacity to make the landowners' clean up the site (Colburn 2007).

5.2.5 Effectiveness—what worked, and did not?

The JH Baxter property represents a success story from a technical remediation standpoint. The site had difficult hydrogeology that made a simple excavation of all contamination infeasible.

Yet, project managers were able to employ a technique that had recently worked at an Everett landfill, the injection of slurry concrete columns to stabilize the soil and immobilize contaminants (Colburn 2007).

PQC's extensive financial and political resources in addition to their parent company's experience in urban and brownfield development were ideal complements to the complex redevelopment of multi-property sites. PQC assisted in providing community outreach and worked effectively to coordinate assessments and negotiations with local regulating agencies. Vulcan Inc was thorough in its investigation of the risks associated with the sites prior to acquisition by making option agreements on the land, obtaining prospective purchaser consent decrees with Ecology, participating in a formal cleanup through MTCA, and creating a separate corporation to manage the work at the site. (Colburn 2007) It is clear that the City of Renton and Ecology were enthusiastic about Vulcan Inc's involvement in the Port Quendall project (Renton 2007, Colburn 2007).

Ecology's performance on the Baxter site depended on the willingness or recalcitrance of the owners or prospective purchaser. When working with the original landowner, the remedial investigation was drawn out and the RI/FS was not completed. When working with PQC, a prospective purchaser, then owner, who was willing and able to clean up the site, Ecology effectively managed a complex cleanup within MTCA's time guidelines. With respect to the middle parcel, the most polluted parcel in the larger Port Quendall site, Ecology's efforts to get the owners to clean up the site were not successful. Consequently, Ecology invited EPA to designate the property a Superfund site and take over its cleanup.

Ecology's effectiveness in the larger Port Quendall site was also dependent on whether the owners had a prospect for either selling or developing their property. Ecology struggled since the mid-1980s to have the owners of the three parcels take responsibility for cleaning up their properties, but the owners contested their responsibility for the contamination, and lacked the considerable financial resources to clean them up. Ecology also lacked funds to accomplish the cleanup. But, as in the Barbee Mills property, when an owner had a redevelopment plan or prospect that would enable him to recover the cleanup costs, the cleanup was accomplished. Also, Ecology's operational effectiveness was at its best during its work with one development entity, PQC, as opposed to the difficulty it faced when dealing with multiple landowner interests.

The City of Renton had an economic development department that was eager to redevelop the Port Quendall lands, and was very proactive in assisting Vulcan as the prospective purchaser of the larger site and would-be developer of the mega-project to assemble land and cleanup the most polluted site. The City rezoned the properties; undertook infrastructure studies and lobbying; offered

a plan to take over the most polluted property, clean it up and then sell back the site to Vulcan for the mega-project; and, even declared a moratorium on the development of one of the properties when its owner brought up its own competing redevelopment plan. All of the City's efforts ultimately failed to assemble the land for the mega-project or to cleanup the most polluted parcel. Had the City's efforts been supported by an existing redevelopment plan which had engaged the larger community in its development, the outcome might have been different. Since the 1980s, the City had made clear its preference for a mega-project at the site, but from that time to the Vulcan mega-project proposal, the City failed to develop a community plan for the area to prepare the way for its future redevelopment.

Strained relations among the stakeholders delayed the cleanup and redevelopment of the properties. The joint owners of the Quendall Terminal site claimed that they were not responsible for the industrial activity on the land prior to their acquisition of the property, and did not want to assume responsibility for its contamination. The Baxter Company was not a cooperative partner in the cleanup of its site, so much so that the site was eventually divided into two parcels so that the northern portion could serve as a security interest to Ecology for cleanup. Negotiations between the City of Renton and the owners of the Barbee Mills site were strained by the passing of an emergency development moratorium and the resulting litigation between the two parties.

5.2.6 Links to Economic Development

The economic benefit of transforming the Quendall Port properties into a hub for high tech companies, complete with a hotel, retail outlets, and residences was estimated to generate 8,000 jobs, and a significant increase to the tax base of the City of Renton (Vesely 1997b). The City had not originally envisioned a parcel by parcel development and projected that the economic benefit, while still positive, would be significantly less than those resulting from an integrated development project.

At this time, the overall economic impact of the Seahawks Practice Space and Headquarters is not fully known. However, the City of Renton's Economic Development Team has estimated that the project will contribute significantly to the City's economic growth. The City's direct benefits from property taxes, utility taxes, and employee license fees will be minimal; the facility will employ about 100 employees. Nonetheless, the Seahawks Headquarters, scheduled to open in 2008, and the adjacent Connor Homes development are high profile projects for the City of Renton. Growth in the retail and hospitality industries will likely be spurred by these developments.

5.2.8 Issues Raised/Lessons Learned

Due to geographic proximity and a shared pollution history, the Baxter site provides both an example of a successful cleanup and redevelopment, and a set of lessons in missed opportunities, ineffective actions and processes, and remaining challenges.

- *Baxter Property.* The success of the Baxter redevelopment was to a large extent due to Vulcan, its developer, then, to its subsidiary, PQC.
- Vulcan was a civic-minded, well-respected developer with large assets, willing and able to conduct the cleanup of a complex site without public financial incentives.
- Its assets and standing in the State enabled the developer to lobby for and invest in the assessment of significant transportation infrastructure improvements.
- Vulcan had had experience with large-scale projects as well as brownfield projects in the Puget Sound, and had experience managing collaborative processes with multiple agencies, as well as community outreach.
- It was also able to fund a dedicated Ecology staff person to facilitate the formal cleanup process.
- Its assets and its larger corporate network enabled it first to invest in cleaning up the site without a definite redevelopment plan, and also to accept transportation constraints on the site, which limited its development options and reduced its potential return on investment.
- *Institutional Controls on the Baxter property.* Though the JH Baxter property was cleaned, residual contamination remains on site, resulting in the application of institutional controls that limit potential uses. These controls have not significantly impacted the immediate reuse of the site as a sports facility but could affect the cost of future redevelopment. This case highlights the issue of cleanup levels and how institutional controls will affect future redevelopment costs.
- *Larger Port Quendall Site*. Although the redevelopment of the JH Baxter and Barbee Mills sites were ultimately successful, this case study highlights the challenges of multi-site cleanups facing local governments, developers, landowners, and Ecology. Plans for the mega-development faced the following challenges:
    a. The significant infrastructure challenges of the Port Quendall site, a point which demonstrates the importance of understanding and realizing brownfields cleanup as a comprehensive reuse of systems and not just of land.

b. Redevelopment involving land assembly requires significant financial resources and/or stakeholder agreement and plans that are best established through a wider community planning process.

c. Changing market conditions that did no longer generate high enough returns on investment to compensate for cleanup costs.

d. Strained relations among the stakeholders.

e. Very high costs for cleanup of the middle parcel, higher than the market value of the land at the time, which required some type of public funding.

f. Site owners who were not the major responsible parties for the contamination on t he site.

- *Ecology.* Ecology's powers to enforce cleanup actions in sites where hazard conditions rank in the top priority are limited by whether owners are the responsible party for the contamination. If they are not, or if they contest their role in the contamination of their property, especially in the case of high cleanup costs, there are long delays in the process. In addition, market conditions also affect Ecology's effectiveness. Only when an owner had a clear prospect for redevelopment, e.g., the Barbee Mills property, did they willingly engage in a cleanup process.

    a. This suggests that the success of the traditional statutory approach to even the highest hazardous sites is limited to situations where the responsible party is readily identified, and has assets to undertake the cleanup, or when market conditions are so strong to make cleanup feasible as part of a redevelopment effort. When these conditions do not hold, a different approach, less adversarial and more partnership-oriented, with public financial incentives, and involving the larger community in a planning and redevelopment process might be more successful in protecting public health and the environment.

    b. Also, it points to the problems that arise when responsible parties are not Identified and required to enter the cleanup process when polluting activities cease on a site.

The City's Approach. The City's failure over the years to develop a redevelopment plan for its lakefront with wider community participation and its proactive efforts to assist Vulcan to purchase and redevelop the larger site illustrates the contrast between a more traditional economic development approach and a community-wide planning approach to brownfields redevelopment. The City's many efforts to assist Vulcan to purchase the properties and cleanup

the most polluted of the three properties stemmed from the City's desire to have an integrated planned development for the three properties. It counted on a developer with large assets to deliver an integrated plan. But Renton, through its own municipal powers, could have achieved the objective of an integrated plan by preparing a redevelopment plan for the area. This case also illustrates the need for encouraging through public incentives municipal efforts to develop community plans for area-wide, multiple brownfields.

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5. 3 ASARCO, Everett

Formerly, a significant participant in Everett's early industrial boom, the Everett Smelter site is one of Ecology's most complex and difficult brownfields cases. Eighty-five years after the smelter's operations ceased and the property was dismantled, significant arsenic contamination remains on the site, impacting ground and surface water as well as being a risk to human health. The site's former owner, American Smelting and Refining Company (ASARCO), a leader in the mining industry, was held liable for the cleanup. After nearly fifteen years of negotiation and litigation with ASARCO, the most contaminated soils have been removed, but a significant cleanup effort remains for the 686 acres site. The Everett Smelter case was one of the first challenges to MTCA, raising

charges against the constitutionality of liability for overall site contamination and remediation to site-specific arsenic cleanup standards. The case draws attention to the difficulties of managing and enforcing cleanup on a site which was historically industrial but is currently a residential neighborhood. In addition, the analysis of the Everett Smelter site highlights the challenges of negotiating cleanup actions with large industrial companies who may seek alternate paths to handle cleanup liability. Though cleanup at the Everett Smelter is ongoing, the following review focuses on the removal and replacement of the site's most contaminated soils.

5.3.1 Site and Region Description

The 686 acre Everett Smelter site is located in the northeastern section of the City of Everett in Snohomish County, WA, located 25 miles north of Seattle. A small, permanent European settlement started in the early 1860's by Dennis Brigham, eventually lead to the establishment of the Everett Land Company in 1890 by Henry Hewitt (lumberman and land speculator), Charles Colby (an associate of Rockefeller) and Colgate Hoyt (a director of the Great Northern Railroad); their intentions was to develop an industrial city – the Pittsburgh of the West (Oakley 2005). The City of Everett was officially incorporated on May 4, 1893, the same year the Great Northern Railroad reached Port Gardner Bay. Following a devastating economic downturn spurred by the Silver Panic soon after its incorporation, the City of Everett eventually recovered and become home to the world's largest lumber mill in 1912. Frederick Weyerhaeuser, founder of the Weyerhaeuser Timber Company, built and operated the lumber mill. Soon, there were 10 sawmills, 12 shingle mills, 9 paper mills, prosperous foundries, a smelter, an arsenic plant, a 'creosoting' work and many other industrial outlets (Oakley 2005). At the turn of the century, the Everett smelter was one of the largest industrial plants in the city, employing up to 125 people (WSDE 2002a). Everett prospered during both World Wars, supplying the effort with significant amounts of lumber and other wood products. During WWII, an Army Air Corps military base was developed and would eventually become the home of Boeing's 747 jetliner assembly factory (Oakley 2005).

Although the City of Everett's economy was once dominated by primary resource extraction and treatment, chiefly wood-based industries, with a rapidly growing population of over 102,000 a majority of today's workforce is employed in technology, aerospace and service-based industries; major employers are Boeing, Verizon, and the Snohomish County Government (City of Everett).

5.3.2 Site Background

The Puget Sound Reduction Company began operating the Everett Smelter in 1894 (WSDE 2002a) located at the intersection of present-day Broadway and East Marine View Drive. The actual smelter property makes up a fraction of the overall site, which totals 686 acres; the former smelter property was about 44 acres. Smelter operations, also known as chemical reduction, refine ore for metals such as lead, copper, gold and silver. Ore was transported onto the site via rail, primarily from the Monte Cristo mining district. Ore from this mining area contained high levels of arsenic, over 25% total arsenic, thus an arsenic processing plant was constructed on the southern end of the site for the recovery of this element; the arsenic processing plant operated from 1898 to 1912 (SWSCSC 2003a, WSDE 2002a). Both the primary smelter building and the arsenic plant included structures such as rail spurs for the transportation of the ore and metals, a sulfide mill, furnaces, ovens, flues and smokes stacks.

ASARCO Incorporated acquired the Everett smelting plant in 1903 and continued operation until 1912; eventually, smelter operations ceased and the site was dismantled between 1912 and 1915 (WSDE 2002, 2002a, 2002c, 2004, 2004a). It is believed that some of the smelter equipment was “salvaged and used at the ASARCO smelter in Ruston, WA (WSDE 2002a, p. 2). Smokestacks and Flues can be found below fill on the site where the demolition occurred. The former smelter site was parceled-off and sold to various entities between 1914 and 1936. Please refer to Table 13 below of a complete listing of the property transactions.

The property acquired by the State of Washington in 1924 is now the interchange between East Marine View Drive and State Route 529 (WSDE 2002a). The parcel of land acquired by Mr. Spriestersbach was developed into a residential neighborhood; 25 homes were built on the property of the former smelter – this area is now referred to as the 'Fenced Area' - refer to Figure 13 below (SWSCSC 2003a, WSDE 2002a). The 686 acre site includes 600 homes, a low-income housing development and an apartment complex, several mobile home parks, a golf course and a juvenile justice center (ATSDR 1995, Brooks 1999). According to an Ecology News Release (1999a), ASARCO did not inform the parties who had acquired the various parcels of land of the site's hazardous industrial history.

Table 13. Sale of ASARCO Smelter Property

Year	No. of Acres	Property Sold to
1914	1.32	Weyerhaeuser
1914	0.92	Snohomish County
1916	0.11	Mr. & Mrs. Cook
1924	4.19	State of Washington
1924	1.66	Weyerhaeuser
1924	10.28	Weyerhaeuser
1928	17.89	Mr. Spriestersbach
1932	6.01	Model Transfer & Storage
1936	6.01	City of Everett
Source: WSDE 2002a, p. 3-4		

5.3.3 Contaminants Description

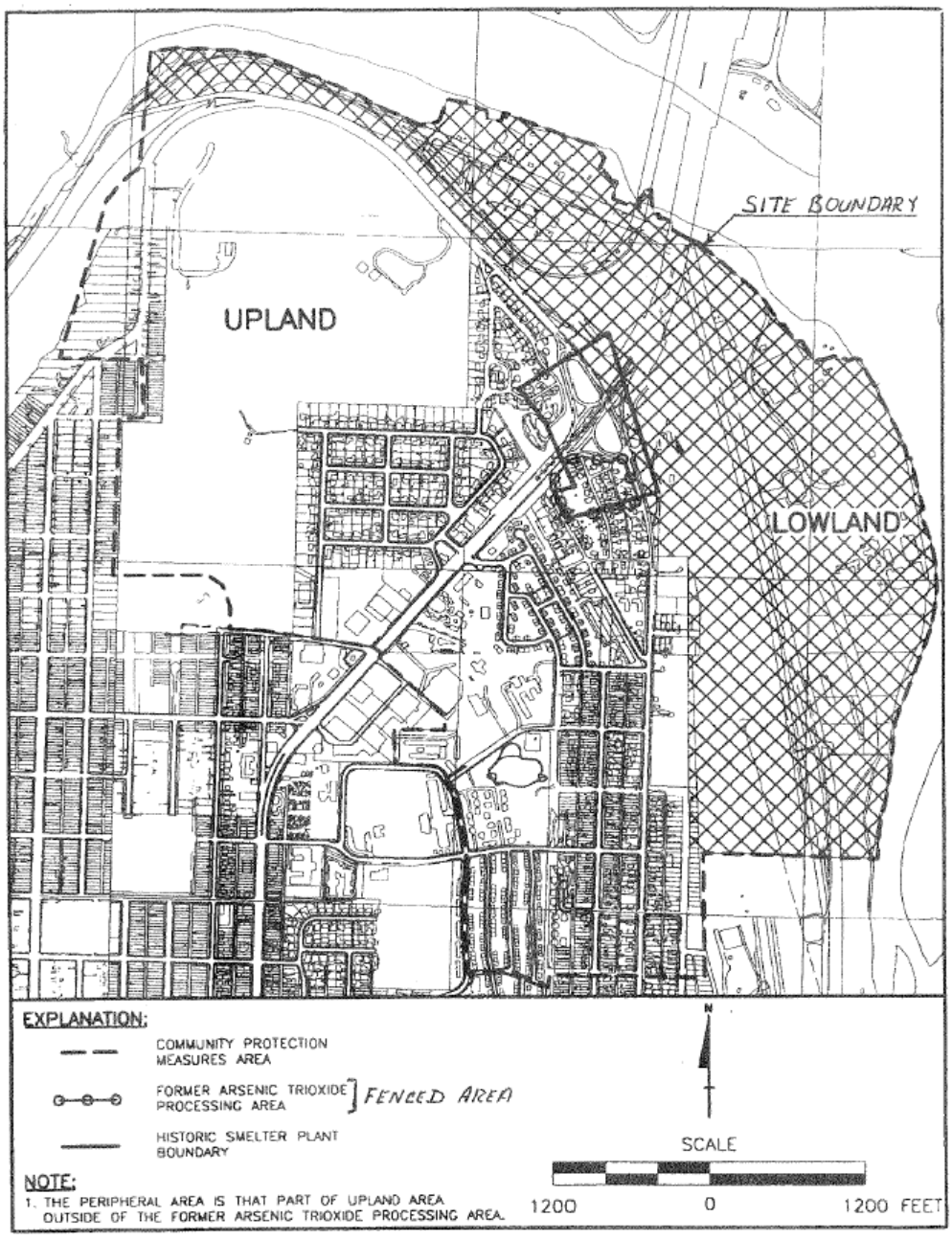
The primary contaminants discovered on the site are arsenic, lead, cadmium, antimony, mercury, and thallium; the levels of arsenic concentrations posed the greatest risk to human health. Contamination is a direct result of historic smelter operations and includes air emissions from the smelter stacks, products spills and smelter waste, such as slag. The demolition and grading of the site during various development periods may have contributed to the spread of contaminants throughout various areas (SWSCSP 2004).

Site Division

For remediation purposes, the site, which is composed of 14 individual property parcels (parcels A-N), is divided into two major areas: the Upland Area and the Lowland Area (ASARCO Consulting, Inc 2002; WSDE 1999, 2000a); please refer to Figure 13 below for a detailed illustration. The Upland Area includes the residential area west of East Marine View Drive and is further divided into the Former Arsenic Trioxide Processing Area (FATPA) and the Peripheral Area. A portion of the FATPA housed several residential properties, which were eventually purchased and demolished by ASARCO (additional details provided below); this area of roughly 20 acres is referred to as the 'Fenced Area' and contains a majority of the site's significant contamination. The former processing facility site, as defined by the Fenced Area and peripheral area are bisected by SR 529. The Lowland Area includes "industrial properties at the base of the bluff east of East Marine View Drive, extending across the Weyerhaeuser east site to Snohomish River (ASARCO

Consulting, Inc. 2002, p 19). This case study focuses on the Upland Area of the site, primarily investigating the cleanup efforts for the Fenced Area.

Figure 13. Everett Smelter Site



Source: Asarco Incorporated (2002, December) *Interim Action Report Fenced Area Cleanup Everett Smelter Site.*

Soil Contamination

The highest concentrations of contaminants in the soil can be found on and immediately adjacent to the original smelter property; refer to Figure 13 above for the location of the historic smelter plant boundaries (WSDE 1999, 2000a). In most cases, as distance from the original smelter property increases, the contaminant concentrations decreases (WSDE 1999, 2000a). High concentrations of antimony, mercury, and thallium were found within FATPA, which is "associated with samples containing very high arsenic levels due to the presence of flue dust and/or arsenic trioxide product" (WSDE 1999, p. 20). Concentrations in FATPA occurs at depths up to 15 feet below the current ground with varying distributions as a result of smelter debris (such as wood and bricks), underground structures (such as abandoned flues) and chemical waste (WSDE 1999, 2000a). The highest concentration of arsenic on-site, 727,000mg/KG[51] (72% total arsenic) was sampled at a depth of one foot within the FATPA; the sample was taken from the backyard of the residence at 520 East Marine View Drive (WSDE 1999, 2000a).

Contamination in the Peripheral Area occurred at lower concentrations than in the FATPA and distribution was limited to within the upper few feet of soil (WSDE 1999, 2000a). Samples collected within and immediately adjacent to the former smelter plant boundary resulted in the highest concentrations of arsenic outside of the FATPA and decreased as the distance from the Area increased (WSDE 1999, 2000a). Based on the wind directions patterns along the Snohomish River, contaminants in the Peripheral Area are primarily deposits originating from the smelter smokestack emissions (WSDE 1999, 2000a). As previously mentioned, the development of the land post-smelter operations resulted in the redistribution of contaminants leaving an unclear pattern of varying distribution.

Slag, a by-product of the smelting process, is typically disposed-of in a molten state, which when cooled, resembles volcanic rock. Most of the slag produced by the Everett Smelter and remaining on site is buried below the surface (WSDE 1999, 2000a). It is believed portions of the slag pile was excavated and used for "road ballast, other fill purposes, and to make rock wool," fibers made from metal or mineral oxides for the purpose of insulation (WSDE 1999 p. 22). Approximately 5 acres of the industrial area east of East Marine View Drive in the Lowland Area is

[51] Soil performance standards – average arsenic concentration (0 - below 48 inches in depth) is 20 mg/kg; remediation level average concentration is 60mg/kg (12-24 inches in depth) & 150mg/kg (24 - below 48 inches in depth); remediation level maximum concentration is 150mg/kg (12-24 inches in depth) & 500mg/kg (24 - below 48 inches in depth).

under the ownership of Mr. Boyd Benson. Since the 1950's, this property has been used as a rock wool insulation plant.

Surface Water Contamination

Surface water runoff patterns depend on access point connections to the combined sewer system discharges. Surface water entering storm drains combines with sanitary sewer and connects to the larger system to be processed at the Everett Wastewater Treatment Plant on Smith Island. Storm drains not connected to the larger sewer system, "discharge into the Lowlands Area where it infiltrates or flows through ditches to the Snohomish River"(WSDE 1999 p. 23). Varying levels of arsenic, lead, and cadmium concentration, with some samples exceeding regulatory levels, have been detected in runoff from the site; higher concentrations are typically associated with long duration runoff events. Based on similar levels of dissolved and total arsenic concentrations, it is suggested that "arsenic is being leached from shallow soils and mobilized in runoff as the soils become saturated during prolonged rainfall events. Cadmium behavior is analogous to arsenic" (WSDE 1999 p. 23).

Unlike arsenic and cadmium concentrations, levels of lead concentration vary according to initial runoff period and thus correlate with flow as opposed to storm duration (WSDE 1999). No dissolved lead was detected in surface water samples which suggests that contamination is associated with suspended particles (WSDE 1999).

Ground Water Contamination

Groundwater contamination will require ongoing monitoring at the site. Groundwater contamination was found in wells located closer to the lowlands area and the Smelter site. Wells in this area showed levels of contamination above acceptable MTCA standards. groundwater contamination will be addressed by the cleanup of soil under the FCAP/FEIS but continued monitoring is required as a result of the Consent Decree.

5.3.4 Cleanup Description and Contamination Removal

The Everett Smelter site has a lengthy and litigious remediation history. Though smelter operations ceased in 1912 and plant structures were dismantled by 1914, contamination remained and investigation into the site's hazardous condition did not begin until the 1990's. For a quick reference summary of the site's investigation and enforcement history, please refer to Table 14. With

ASARCO listed as the PLP, remediation and the financing of cleanup activities were the company's responsibility; for the most part, ASARCO shirked their responsibility for nearly 15 years. Six Enforcement Orders directed the performance of interim actions by the site's two main stakeholders, ASARCO and Ecology; these include the deployment of a property buy-out program and the systematic remediation of the contaminated residential yards. Though the most contaminated soils have been removed, a significant amount of contamination remains on the 686 acre site.

Enforcement and Interim Action History

In October 1990, Weyerhaeuser discovered an outcrop of slag during an environmental investigation, conducted by Hart-Crowser, of its property below East Marine View Drive (Shaw 1998; SWSCSC 2003a; WSDE 1999, 2002a, 2007). Weyehaueser notified Ecology on October 30, 1990 of the hazardous conditions. In December 1990, Ecology conducted an initial site investigation which included site visits, a historic review of the property and former operations and a review of the data collected by Weyerhaueser. In February 1991, Ecology conducted a Site Hazard Assessment (SHA), which included the collection of 20 soil samples in the residential area on the site to analyze the type and concentration of contaminants as well as conducted a magnetic survey to identify the extend of the buried slag (SWSCSC 2003a; WSDE 1999, 2002a). The soil samples revealed the presence of arsenic, cadmium, and lead; of the 20 yards sampled, 16 were found to contain concentrations of arsenic greater than 1,000mg/kg (ATSDR 1995).

In May 1991, Ecology conducted a pre-Remedial Investigation (Pre-RI) which included the collection of 285 additional soil samples and the preparation of a site map to determine the nature and extend of the contamination (SWSCSC 2003a, WSDE 2002a). Interim actions included, but were not limited to the paving of alleys and driveways and the replacement of soil and sod in some residential gardens and yards.(ATSDR 1995) Pre-RI results confirmed the presence of arsenic, cadmium, and lead throughout the site. Following its investigation, in April 1992, Ecology issued ASARCO the site's first Enforcement Order No. DE92TC-N147. The company was required to perform a Remedial Investigation/Feasibility Study (RI/FS) and carry out certain interim actions to protect residents from exposure to toxic elements (SWSCSC 2003a, WSDE 2002a). The enforcement order was amended in March 1994 requiring ASARCO to perform additional interim actions, prepare an interim deliverable investigation report, collect additional samples and extend the study area.

In 1994, following calls for assistance from the site's residents, the Washington State Department of Health (WDOH) and the Agency for Toxic Substances and Disease Registry

(ATSDR) conducted an exposure investigation which included the collection of hair and urine samples (ATSDR 1995, SWSCSC 2003a, WSDE 2002a). Many of residents at the time were senior citizens who had resided in the neighborhood for up to 50 years (Shaw 1998). Some reported finding white dust throughout the area, while others recalled the difficulties they experienced trying to grow vegetables in their yards (Shaw 1998). Of the 95 persons tested, 87 showed no detectable levels of arsenic in their urine; only one urine specimen revealed an elevated level of arsenic (ATSDR 1995). Hair samples evidenced elevated levels of arsenic in 6 persons. Following hair and urine samples, ATSDR investigated the homes of those persons with elevated arsenic levels; homes were examined, occupational and environmental histories were collected. Interestingly, those families with pets or family members directly responsible for pets revealed higher elevation of arsenic than those with no pets or limited interactions/responsibility with their household's animal(s). Investigators believed that the animals were transporting arsenic contaminated soil and dust into the homes resulting in higher levels of exposure (ATSDR 1995). ATSDR's analysis of soil and house dust samples showed elevated concentrations of lead and arsenic. All data was shared with Ecology in August 1995 and recommendations were made to immediately stop all exposure to arsenic (SWSCSC 2003a, WSDE 2002a).

Subsequent to these investigations, ASARCO voluntarily implemented a property buy-out program in 1994 and 1995. ASARCO purchased all but two houses located in the main site area in order to mitigate risks to human health and fenced off the area which is referred to as the 'Fenced Area' (SWSCSC 2003a, WSDE 2002a). In September 1995, Ecology issues a second Enforcement Order, No. DE95TC-N350 to ASARCO requiring the company to take immediate action to mitigate risks to human health for those living in the remaining two residences: 520 and 534 East Marine View Drive (SWSCSC 2003a, WSDE 2002a). ASARCO subsequently purchased the final two homes on the site and arranged for all families to move to off-site residences. ASARCO purchased 37[52] of 52 homes, 22 of which were inside the Fenced Area; these homes were torn-down 2 years later.

Pursuant to the first Enforcement Order, No. DE92TC-N147 from April 1992, ASARCO prepared an Interim Deliverable report which it presented to Ecology in April 1994 and a RI/FS report in September 1995. The data collected confirms the presence of elevated levels of arsenic, cadmium and lead in the soil and also revealed evidence of arsenic and lead in both groundwater and surface water. ASARCO expanded its property buy-out program and purchased all but 15 homes in

[52] 22 homes were built directly above the former smelter and 15 homes were built nearby, for a total of 37

the area south of Broadway, east of Balsam Lane, north of Butler Street and west of East Marine View Drive (SWSCSC 2003a, WSDE 2002a). All of the homes located with the Fenced Area were vacated and demolished; many homes adjacent to this area were also vacated, though some are being leased by ASARCO for residential purposes.

In August 1996, ASARCO developed a framework for solution which it recommended to Ecology as an outline for potential remedial actions (SWSCSC 2003a, WSDE 2002a). The framework focused on a phased approach to cleanup which included certain activities for immediate deployment. Ecology was satisfied that the proposed framework was consistent with MTCA and issued a third Enforcement Order No. DE97TC-N119 which included the framework for solution and ASARCO's proposed immediate actions. The Enforcement Order called for the demolition of all residences within the former arsenic processing site, for further feasibility studies on the Lowlands Area of the 686 acre site and for drainage area studies to create a best practices document regarding the elimination of contaminated drainage water from the site. Some of the Enforcement Order's requirements were part of the ASARCO's framework but had been included by the company at a later phase.

To negotiate a continued attempt to begin cleanup of the site, Ecology and ASARCO entered into mediation in October 1997. The process included the City of Everett, Snohomish County, Snohomish Public Utility District (SPUD), Snohomish Health District (SHD), Everett Housing Authority (EHA), Northeast Everett Community Organization, and Northwest Everett Neighborhood Association (SWSCSC 2003a, WSDE 2002a). Though mediation concluded without an agreement in August 1998, all stakeholders were able to share their concerns regarding the site.

Ecology amended Enforcement Order No. DE97TC-N119 in October 1998 requiring ASARCO to continue implementing the Community Protection Measures (CPMs)[53] until February 2000 and to provide Ecology with assistance in implementing State Environmental Policy Act (SEPA) requirements for the site (SWSCSC 2003a, WSDE 2002a). Please refer to Figure 13 above for an outline of the CPMs. ASARCO refused to comply with the directive.

In July 1998, prior to the conclusion of the mediation process, ASARCO brought a preemptive challenge to any subsequent enforcement from Ecology by filing suit in Thurston County Superior Court. The company challenged the constitutionality of Ecology's cleanup decision which would hold ASARCO liable for cleanup outside the Fenced Area; ASARCO did not challenge its liability for the Fenced Area. ASARCO contended that Ecology was inaccurate in its application of

[53] According to WSDE 2000a, CPM "define the site. It is the best estimate available of the area contaminated or potentially contaminated with arsenic, lead, and related metals above regulatory levels, based on current data" p 8.

MTCA by requiring that the soil be cleaned until "only unreasonably low levels of arsenic remain" (Tom Aldrich as quoted by Post Intelligencer 1998). In support of this argument, the company referred to its Superfund site, a copper smelter-plant in Ruston, Pierce County WA, whereby an agreement with the EPA, which was signed by Ecology, allows for arsenic levels of 230 mg/kg as opposed to the MTCA requirements of 20 mg/kg[54](Brooks 1998). The company estimated the cleanup cost between $20 to $100 million (Post Intelligencer 1998) and that nearly $10 million had already been spent on various interim actions and the property buy-out program (Brooks 1998). ASARCO *anticipated* that Ecology's decision would be made on "constitutional and non-constitutional grounds" (Brooks 1998); it contends that imposing environmental standards established by MTCA in 1989 to actions dating back to 1912 as unfair (Ramsey 1998).

In December 1999, Thurston County Superior Court Judge Gary Tabor ruled it unconstitutional to "impose retroactive liability" under MTCA upon ASARCO for property it did not historically own, thus making ASARCO liable only for cleanup of the Fenced Area, 44 acres that make up the historic boundary of the smelter property, but not of the remaining 645 acres outside of the Fenced Area (SWSCSC 2003a; WSDE 1999, 2002a). Ecology argued that the ruling would leave a significant number of citizens, most of whom were unaware of the site's industrial history until 1991, unprotected and at risk; a violation of MTCA's assurance to rights to healthful environments (Brooks 1998, 1999; WSDE 1999a). Ecology estimated that cleanup costs for the entire site would be $60 million (Brooks 1999); a considerable amount, most of which would have to be funded by the government if ASARCO is liable for only 44 acres. Subsequent to the ruling, Ecology asked the State Legislature for $3 million to continue cleanup of residents' yards; at this time, the State had cleaned the 10 most contaminated yards, but hundreds of contaminated yards remained (WSDE 1999a).

Prior to the conclusion of the Thurston County Superior Court ruling, on November 19, 1999, Ecology issued the Integrated Final Cleanup Action Plan and Final Environmental Impact Statement (FCA/FEIS) for one portion of the site (SWSCSC 2003a, WSDE 2002a). According to the report, all materials within the Fenced Area with an arsenic concentration greater than 3,000 mg/kg[55] had to be excavated and removed off-site to a facility licensed to handle the waste (SWSCSC 2003a, WSDE 1999), to reduce risk to the health of the neighborhood's residents. In addition, the report called for the construction of a Consolidation Facility within the Fenced Area for the containment of contaminated soil from the Peripheral Area with arsenic concentration less than 3,000mg/kg (WSDE

[54] MTCA cleanup standards for an industrial site is 200 ppm and for residential 20ppm.

[55] milligrams/kilograms is equivalent to parts per million

2002d). In April 1999, Ecology issued its fourth Enforcement Order No. DE99TC-NC356 which required ASARCO to cleanup the 80 most contaminated homes; ASARCO refused to comply with the order. Subsequently, in May 1999, Ecology began cleanup of the residential properties (WSDE 2002c).

In January 2000, ASARCO issued a draft of the Comprehensive Lowland Area Remedial Investigation Report (LL Report) as required by the third Enforcement Order No. DE97TC-N119 of 1997. The report indicated that (1) materials within the top four feet of a portion of the Fenced Area contained arsenic concentrations in the thousands up to 25,000 mg/kg from residuals stemming from flue dust; (2) under ambient leaching conditions these materials containing arsenic trioxide or flue dust can act as sources of arsenic contamination to groundwater; (3) according to 2 surface run-off samples collected from the northeast corner of the Fenced Area and two manholes south of the fenced area, arsenic levels exceeded, by 78 times, the City of Everett's sewer discharge limit of 500µl/L for arsenic; (4) in an area of approximately 2.8 acres within the Fenced Area, there is approximately 20,000 to 25,000 cubic yards of soil with arsenic concentrations exceeding 3,000 mg/kg – and within this area, 1.4 acres contains approximately 10,000 to 15,000 cubic yards of soil with arsenic concentrations exceeding 10,000 mg/kg, which directly coincide with the historic arsenic processing facility; (5) arsenic loading from the Fenced Area was on the order of 3-4 pounds per day during periods of storm water sampling from January and February 1999, with over 75% of the observed arsenic load discharging into the City's sewer/storm water system (SWSCSC 2003a p. 9-10). The report concluded that the planned remedial activities for the Fenced Area would successfully intercept and remove arsenic sources for ground and surface water.

Following the Thurston County Superior Court's 1999 ruling, both Ecology and ASARCO filed appeals against the decision in Washington State Supreme Court which issued its opinion on March 21, 2002. The WA Supreme Court ruled that ASARCO's challenge of Ecology's *anticipated* cleanup plan was premature as Ecology had not yet *formally ordered* the cleanup of the site (Queary 2002); enforcement orders are legal tools stipulating interim cleanup actions and are not a negotiated overall site cleanup contract. As result, the Thurston County Superior Court decision was vacated and the case dismissed without prejudice (SWSCSC 2003a, WSDE 2002a). In addition, Justice Tom Chambers noted the lack of evidence supporting ASARCO's claim that cleanup constituted a significant economic loss (Queary 2002).

On April 8, 2002 Ecology issued ASARCO its fifth Enforcement Order No. 02TCPNR-3878 requiring the company to implement the FCA/FEIS for the residential and commercial portions of the site, also referred to as the Upland Area and to perform a FS of potential cleanup action for the

industrial and port portion of the site, also known as the Lowlands Area of the site (WSDE 2002, 2002a, 2002b). The implementation of the FCA/FEIS calls for the removal of materials with high levels of arsenic concentration from the Fenced Area and the construction of the Consolidation Facility; the schedule stipulated that engineering plans and fieldwork were slated to begin by April 30, 2003, the FS of the Lowland Area by mid 2003, the removal of contaminated soil from within the Fenced Area by October 1, 2004 and the Upland Area cleanup by 2009. On April 9, 2002, ASARCO filed a motion with the Washington Supreme Court for a partial reconsideration of the Court's March 2002 ruling on the case, thus effectively suspending the fifth Enforcement Order, No. 02TCPNR-3878 (WSDE 2002b). Meanwhile, Ecology would proceed to cleanup 9 residential yards.

By June 10, 2002, Ecology issued ASARCO its sixth Enforcement Order No. 02TCPNR-4059. As with the previous Enforcement Order from April 2002, this Order required the company to perform interim actions to remove contaminated soil from the Fenced Area and transport it off-site to an authorized facility. To ensure that work would commence in 2003, Ecology insisted that the mobilization of equipment to the site be completed by April 30, 2003 with all work completed by October 30, 2004 (SWSCSC 2003a). Violation of these actions would lead Ecology to seek appropriate legal action. ASARCO asked that the Enforcement Order be amended. Thus, in December 2002, changes were made to the Order by Ecology, allowing ASARCO to include (1) removal of materials outside the Fenced Area with arsenic concentrations exceeding 3,000 mg/kg; (2) to remove material with concentrations between 150-3,000 mg/kg and regrade the site with clean fill to make it suitable for residential development (SWSCSC 2003a p. 11). Based on the work plan submitted by ASARCO in 2004, the company proposed to accomplish the work in 2 years and acknowledged that this timetable violated the deadlines set by the sixth Enforcement Order. ASARCO planned to transport the excavated soil to its Ruston Superfund site.

In March 2003, ASARCO requested a second amendment to the Enforcement Order No. 02TCPNR-4059 to reflect its expected receipt of federal funds for the cleanup (SWSCSC 2003a), however on April 7, 2003, Ecology denied ASARCO's request for the second amendment, stating that federal funding was not secured and that the contaminated materials needed to be removed from the residential area as soon as possible, regardless of anticipated funding. Prior to the April 7, 2003 dismissal for modification, Ecology sent notice to ASARCO of its approval of the company's December 2002 draft work plan and reminded ASARCO of the April 30, 2003 equipment mobilization deadline (SWSCSC 2003a). In a letter dated April 29, 2003, ASARCO responded to Ecology's notices from April and March citing delays in its ability to dispose of the excavated soils

at the Ruston site and again broached the subject of the potential federal funding to be applied to cleanup efforts. On May 1, 2003, Ecology visited the site and observed no equipment.

The ASARCO cleanup plan for the Fenced Area calls for the transportation of excavated materials from its Everett site to a landfill[56] at its Ruston smelter near Tacoma; however the company was awaiting approval from the EPA for its Everett to Ruston soil disposal plan (Schwarzen 2003); the total cost of the plan was $3 million, which could double, should the soil have to be taken to a site other than Ruston (Schwarzen 2003a). In turn, the EPA planned to make its decision based on the outcomes of public meetings and after some sort of confirmation that ASARCO had the funds to finance both cleanups. Ruston's EPA Superfund manager, Kevin Rochlin noted that the soil from the Everett site could not be disposed off at the Ruston landfill until the soil from the Superfund site was excavated and landfilled; should the excavated material from the Everett site fill-up the Ruston landfill, the Superfund project could not be completed (Schwarzen 2003). Financial strain at the Ruston site had slowed the excavation process, which led the EPA to seek out some certainty that ASARCO had the funds to complete both cleanups. Delays in the Ruston cleanup timeline would subsequently make it difficult for ASARCO to meet the April 30 2003 deadline required by Ecology; Ecology hoped a comprise could be reached with EPA to ensure cleanup of the Everett site.

Ecology sent ASARCO a letter on June 3, 2003 to inform the company of its violation of Enforcement Order No. 02TCPNR-4059. On June 13, 2003 Ecology sued ASARCO for not complying with the Enforcement Order and sought a court order directing the company to remove the most highly contaminated soil (within the Fenced Area) from the Everett site (WSDE 2003a). According to Ecology's complaint, the agency sought (1) the immediate enforcement of the previously issued MTCA order, Enforcement Order No. 02TCPNR-4059 which required the mobilization of excavation equipment on site; (2) the reimbursement for costs incurred performing remedial actions, which include the removal of contaminated soil from 47 residential yards and the sampling of an additional 10 properties for future remediation as well as costs associated with the pursuit of legal actions against ASARCO; (3) an assessment of civil penalties, up to $25,000 for each day ASARCO refused without sufficient cause to comply with the Enforcement Order; (4) to secure relief for the necessary protection of human health and the environment from the continued releases of arsenic in ground and surface water from contaminated soil – this action requires the immediate (2003 construction season) removal and replacement of nearly 4,700 cubic yards of soil with arsenic concentration exceeding 3,000 mg/kg and the eventual (2004 construction season) removal and

[56] Built as part of the Superfund cleanup of the Ruston Smelter.

replacement of nearly 20,000 cubic yards of contaminated soil with arsenic concentration exceeding 3,000 mg/kg (SWSCSC 2003a).

ASARCO continued to assert that its timeline had been halted because of an awaiting EPA's decision regarding the removal of the Everett to soil to the Ruston site. Meanwhile, the EPA continued to seek certainty from the company that both the Everett and Ruston cleanup plans could be paid for. According to the EPA, ASARCO received $5million in 2003 for cleanup at the Ruston site, with an additional $150,000 earmarked for the Everett site[57] (Schwarzen 2003a); as previously mentioned $3 million was required to fund the removal of 4,700 cubic yards of contaminated soil. Ecology felt that irrespective of the EPA's delayed decision, the responsibility to cleanup the Everett Smelter site remained with ASARCO. Regardless of which plan the company decided to pursue, ASARCO was responsible for meeting the approved timeline agreed by both parties and included in the Enforcement Order.

On October 20 2003, Snohomish County Superior Court Judge Thomas Wynne granted Ecology's request for an injunction to enforce the last MTCA order, Enforcement Order No. 02TCPNR-4059, requiring ASARCO's immediate compliance with enforcement's amended schedule (South 2003; SWSCSP 2003 – please refer to this document No. 03-2-08502-1 for the complete schedule). In summary, the schedule required ASARCO to (1) submit to Ecology by January 30, 2004 the engineering plans for the removal of the soil; (2) to have a contractor mobilize excavation equipment on-site by June 1, 2004; (3) to remove the most highly contaminated soil by August 20, 2004; (4) to have the site stabilized by the end of October 2004, thus ensuring that all contaminated soil would be removed and replaced from the Fenced Area by October 31, 2004 (South 2003). ASARCO was seeking moneys from the Environmental Trust Fund (refer to footnote 7) to finance the enforcement order cleanup plan for the Everett site, which had to be approved by EPA. Regardless of whether ASARCO received money from the trust, the company was court-ordered to comply with the enforcement order and court approved schedule.

Cleanup and Redevelopment History

[57] The funds were awarded from a $100 million Environmental Trust Fund established in 2003 by ASARCO/ Grupo Mexico as a result of a federal lawsuit. The moneys result from the sale of a copper mine in Peru. The Federal Government claimed that ASARCO's parent company, Grupo Mexico was attempting to strip ASARCO of its assets in the US leaving tax payers with the responsible of paying for toxic land cleanup. The trust fund will help secure cleanup moneys for projects at 25 sites across 12 states (Welch, C. 2003, January 13. ASARCO Oks trust fund for toxic cleanups. *Seattle Times).*

The cleanup of the Everett site's Fenced Area finally began in June 2004, nearly 15 years after the initial discovery of contaminants but would be stalled by ASARCO's strained financial condition.

In December 2003, ASARCO and the Everett Housing Authority (EHA) entered into a Purchase and Sale Agreement, a property transaction, for the remaining ASARCO homes and property within the Fenced Area. This led to the negotiation of two Prospective Purchaser Consent Decrees (PPCD) with Ecology in April 2004 (WSDE 2004); the first defines EHA limited environmental liability within the Fenced Area and the second addresses EHA's liability for the 15 ASARCO-owned homes the agency seeks to purchase (WSDE 2004). A change was made to the first PPCD, further limiting EHA responsibility for required soil, ground and surface water monitoring and any additional subsequent cleanup required as a result of the monitoring for an area outside the Fenced Area; ASARCO would remain liable for activities outside the Fence Area (WSDE 2004a).

As mandated by the Enforcement Order from 2002 and the Agreed Judgment from 2003, ASARCO began cleanup of the Fenced Area in June 2004, with soil being removed and transported to the Ruston site. Once the most contaminated soil was removed, the EHA would purchase the site from ASARCO for $1.3 million and assume liability for the remaining cleanup actions. The least contaminated soil remaining on the site was to be removed by EHA and the site brought to MTCA residential standards (WSDE 2004, 2004a). EHA planned to purchase 15 ASARCO-owned homes outside the Fenced Area for $2 million and ASARCO would cleanup these contaminated residential yards as a condition of the transaction (WDSE 2004). Under a separate agreement between EHA and ASARCO, the company would cleanup contaminated residential yards for an additional 22 homes in an area not owned by ASARCO (WSDE 2004a).

EHA was to provide ASARCO with funds for the proposed cleanup as consideration for EHA's purchase of the Fenced Area and the 15 ASARCO-owned homes (WDSE 2004). An additional $1 million was issued from the ASARCO Environmental Trust Fund and $1 million in matching funds was to be issued to EHA by Ecology (WDSE 2004). Total cleanup was estimated to cost between $5.5 and $6 million. EHA planned to redevelop the properties after cleanup was completed to meet MTCA residential standards. EHA secured funding from the Bank of America for a $5.7 million line of credit to purchase the land; and, the City of Everett guaranteed that the money would be repaid. The Fenced Area was to be redeveloped as a single-family owner-occupied neighborhood (WSDE 2004); EHA planned to “sell most of the land to a developer who could built up to 85 homes and townhouses on the site” (Tuinstra 2004). Of the 15 ASARCO-owned homes,

EHA was to refurbish 8 and demolish 7 while the other 22 listed and privately owned homes would remain in place (WDSE 2004).

On August 10, 2005 ASARCO filed for bankruptcy protection, seeking Chapter 11 reorganization in an effort to preserve the company's "long-term viability" (Daniel Tellechea, ASARCO president as quoted by Gordon, 2005). The company was believed to be liable for $1 billion in pollution liability, from toxic land cleanup to personal-injury claims for asbestos use, at numerous sites across the country (Gordon 2005, Seattle Times 2005). At the time of the filing, ASARCO owed the State of Washington $13 million in cleanup costs (Seattle Post Intelligencer, 2005). A condition of declaring bankruptcy prohibits ASARCO from paying for the cleanup on property is does not own, which could impact its agreements with EHA (Seattle Post Intelligencer, 2005).

On August 17, 2005, the Everett City Council approved the sale of a 7-acre parcel of EHA's property within the Fenced Area for $3.2 million to Barclays North, a Lake Stevens developer with plans to begin construction as soon as cleanup was complete (Daily Herald 2005, Kapralos 2005). By late August 2005, Ecology agreed to grant $450,000, in matching funds to the City of Everett and EHA, to continue the stalled cleanup efforts and allow development plans to proceed (Kapralos 2005). The City[58] and EHA each provided $225,000 for a total of $900,000 to complete the cleanup of the Fenced Area at the site. By November 2005, the Fenced Area was deemed clean (Kapralos 2005a) and EHA estimates that $7.1 million was spent on all cleanup activities (Alexander 2006).

In December 2005, Snohomish County Council approved a 20-year growth plan to spur the construction of new homes, the creation of new jobs and a population increase. In March 2006, Everett City Council unanimously approved changes to the City's community renewal plan to allow the developer of the Smelter's Fenced Area, Barclays North, to build 90 two-, three-, four-unit buildings (Kapralos 2006). The renewal plan was initially approved in 2004 to protect the City's investment in the site's cleanup and ensure it would recoup the costs it incurred. In addition, the Council approved an increase in maximum density allowance from 70% to 80% for allowed attached dwellings in the plan. Barclays North said that changes were required in order to secure funding for the development and reuse of the former brownfield. Barclays North houses were to be market-rate triplexes and fourplexes and were expected to sell for $250,000 to $350,000 (Alexander 2006) Barclays North subsequently sold the site to another developer, Bonterra Homes, who developed the property as planned, a total of 90 units in two-, three-, and four-unit townhouses.

[58] Funds will be drawn from the City's Capital Budget but will be seeking reimbursement from ASARCO. The City will provide the EHA share of the match; EHA will reimburse the City once proceeds from the sale of the Park Ridge Condominiums in south Everett (Kapralos 2005).

In May 2007, Ecology excavated and replaced contaminated soil from 10 residential yards located just north of the Fenced Area. An additional 34 residential yards were cleaned in May 2007. To date, only the Fenced Area and residential yards adjacent to the former smelter operations have been cleaned; the rest of the site, although it contains lower levels of arsenic concentration remain to be cleaned. As a result, Ecology is undertaking the cleanup of residential properties in manageable caseloads. No monitoring program or additional cleanup action plans have been submitted regarding the Everett Smelter site.

The State of Washington filed claims exceeding $135 million for past and future cleanups at the Everett Site and overall filed $600 million worth in claims for the entire state. The Federal Government and numerous states filed $11 billion worth in claims as well as 95,000 filings stemming from personal injury claims related to asbestos worth an estimated $2.7 billion (Blumenthal 2008). In the meanwhile, ASARCO's bankruptcy case has been wending its way through federal bankruptcy court and some relief for the State may be in sight. In August of 2008, ASARCO agreed, pending federal bankruptcy court approval, to pay $200 million to Washington State to clean up the toxic contamination around the Ruston site, and six other sites in Washington State, including the Everett site. (News Tribune 2008)

5.3.5 Key Arrangements

Though the most contaminated soils have been excavated to ASARCO's Ruston landfill and replaced, contamination remains on the site of the former Smelter operations. Integral to understanding past and future cleanups is the complex network and arrangements between stakeholders. The previous section provides a detailed account of the enforcement and cleanup arrangements between stakeholders, thus this next section will draw from the previous discussion to focus on key actions such as legal options, acquisition and cleanup, and financial tools.

Legal Options

Several legal tools were employed to ensure cleanup of the most contaminated soil and proposed reuse of the Everett Smelter Site: Enforcement Orders, issued by Ecology to Asraco and Prospective Purchaser Consent Degree involving EHA, Ecology and ASARCO. Enforcement Orders are legal documents issued by Ecology to PLPs outlining any required remedial actions to be taken on a particular site. Ecology issued six Enforcement Orders to ASARCO for the Everett Smelter site; ASARCO's failure to comply with jointly approved actions and timelines provided Ecology with the agency's only legal recourse against the company. This highlights the enforcement and liability difficulties Ecology encounters during the course of such an extensive site cleanup. The Prospective

Purchaser Consent Degree (PPCD) provided the legal framework to initiate the redevelopment of the site once the most significant contamination was removed. In the case of the Everett Smelter site, EHA, not a traditional brownfields stakeholder, was able to acquire the site's most contaminated portion, in exchange for a substantial part of the cleanup of the property conducted by ASARCO, the seller. EHA had a prospective buyer for part of the property it purchased, and was able to secure state and city financial assistance to complete the cleanup of the property it bought.
Schedules detailed in the Enforcement Order were intentionally designed so that completed cleanup actions would coincide with the construction season, to maximize work efficiency on the site. The schedules would also ensure that cleanup could be completed prior to the upcoming rainy season, thus minimizing the potential for additional releases of arsenic into to ground and surface water.

ASARCO applied a variety of legal tools to limits its liability to the site, such as arguing against the constitutionality of the application of MTCA for contamination that pre-dated the 1989 law's environmental standards by over 75 years. Though the company was held liable for cleanup of the former smelter site, its liability for contamination within the overall site (stemming from historical toxic releases), property which ASARCO did not historically own, was never formalized.

Attempts made by ASARCO's parent company, Grupo Mexico, to liquidate the mining giant's assets would have effectively left US taxpayers with the ultimate responsibility of paying for all the company's cleanups. ASARCO's filing for Chapter 11 bankruptcy, though providing a limited legal avenue for filing claims against the company, left many government agencies with little assurance that moneys could be recaptured from ASARCO. Under bankruptcy protection, a company is only liable for property currently under its ownership; thus, claims against a company for environmental contamination on lands it did not historically own have limited legal recourse. This effectively stalls agreements between the company and other parties regarding cleanup and redevelopment, as was the case with EHA.

Unlike other sites reviewed for the case studies, a major portion of the Everett Smelter site was 'in use' when contamination was initially discovered; this was not an abandoned and derelict site as typified by many brownfields. At the time of the discovery of contamination, the PLP was not the owner of the properties affected by the pollution; in fact, ASARCO historically owned less than 50 acres of the overall 686 acre. Yet, under MTCA, because ASARCO's former smelter operations resulted in the release of arsenic into the environment, the company is held liable for the overall site. ASARCO has argued against this liability on constitutional grounds, which, coupled with its filing of bankruptcy protection, leaves a majority of the cleanup unclear and unfunded.

Acquisitions and Cleanup

A unique combination of land acquisition agreements in exchange for remediation occurred during the course of the redevelopment process. The acquisition of land and residential properties by EHA in exchange for cleanup of the acquired lands, some of which were not historically owned by ASARCO, was facilitated by a Consent Decree issued by Ecology. ASARCO had re-purchased the contaminated land under the direction of an Enforcement Order. Under these arrangements, EHA issued restrictive covenants in order to mitigate liability regarding risks associated with the homes it purchased from ASARCO. These covenants stipulate regulations regarding the uses of the properties in question such as limitations on digging and soil disturbances by anyone holding title to these properties. Although the consent decrees transferred ownership of the land to EHA through a purchase and sale agreement with ASARCO, thus initiating the redevelopment process, the company remained liable for cleanup of certain properties. The key acquisition and cleanup arrangement was disrupted when ASARCO filed for Chapter 11 bankruptcy protection, and further with the decline in real estate market conditions, which has brought a halt to the site's redevelopment plans.

Funding and Financial Tools

There are several examples of interesting combinations of financial tools coupled with legal options to ensure the redevelopment of the cleaned site. Most importantly, was ASARCO's compliance with the last Enforcement Order and court ordered cleanup of the Fenced Area only after a Consent Decree in partnership with EHA was reached. Analysis of the site's enforcement and cleanup history details a company's unwillingness to pursue legally required cleanup activities before funding from external sources, such as the Environmental Trust Fund or the sale of the property to EHA, were negotiate. ASARCO's stall tactics leveraged the company considerable opportunities to find alternative means of funding cleanup efforts. Although the company did not profit from these means, e.g., the sale of the properties to EHA, it avoided greater economic losses.

The Bank of America issued a line of credit to EHA for purchase and rehabilitation of the land and the associated ASARCO homes; the loan was supported by the City of Everett, thereby making the City a stakeholder in the redevelopment of the former smelter site. The City's support was reinforced by the Snohomish County growth plan which called for the construction of new homes and the creation of new jobs to increase population, which in turn would leverage new tax dollars for the City. The City's support of EHA's loan was a risk which makes the City liable if the loan cannot be repaid by the agency.

The sale of seven acres from the Fenced area to Barclays North Development was accompanied by a rezoning of the area by the City of Everett, thus increasing the density of the proposed development; the developer stated that an increase in density would make the project feasible and profitable. Though Barclays North did not declare bankruptcy when it closed its doors in July 2008, it is unclear how the redevelopment of the former smelter site will proceed.

5.3.6 Effectiveness – what worked and what didn't?

What Worked

State contributions to Ecology's cleanup efforts of residential yards at the site were an effective means of ensuring people's rights to a healthy environment. As ASARCO liability was limited to the site of the former smelter plant, contamination identified outside the boundaries of the historic operations would have remained without financial intervention on behalf of the state. This suggests difficulty of applying MTCA to contamination derived from historically toxic operations on land not formerly owned by the liable party. In the Everett Case, ASARCO was held liable by the Thurston County Supreme Court for land it historically owned and yet, its operation contaminated lands beyond the boundary of the property. The historical boundaries are small in comparisons to the distribution of the contamination throughout the 686 acre site. This is a subject that required legal clarification.

The case study is a good example of the challenges associated with the property transaction phase – the phase when a potentially liable party transfers property to a prospective purchaser. In brownfields cleanup and redevelopment; it can be a lengthy and complex phase of the project. Without the creative involvement of the EHA, who was financially backed by a loan from the Bank of America, which, in turn, was guaranteed by the City of Everett, ASARCO may not have been able to move forward with the cleanup. EHA's ability to find private funds in the property transaction phase of the process provided ASARCO with the assurance that their property would be sold and ultimately leveraged the cleanup of the site's most contaminated soil. This assurance came at a crucial time for ASARCO, when it was pressed on several fronts in Washington State, especially at the Ruston site, and was waiting for the release of funds from the Environmental Trust Fund.

What Did Not Work

Though Enforcement Orders were effectively used by Ecology to outline the interim remedial action necessary for ASARCO to undertake, they were not easily enforced by state agency. Six different ordered were issues by Ecology to the PLP and only one led to a court enforced order.

The resources invested to develop and enforce the orders did not leverage the required cleanup actions on the part of ASARCO; this highlights the difficulties and limited legal power provided to Ecology to ensure cleanup and redevelopment of toxic lands.

5.3.7 Links to Economic Development

No economic developments studies have been reported to date. However, the portions of the site which have been cleaned, have also been rezoned to allow for higher residential development and once developed would provide the City of Everett with an increase in tax revenue. The construction of new homes in this area would also create new jobs for the duration of the development project. The remaining contamination on the site does create employment opportunities through cleanup efforts performed by Ecology.

5.3.8 Issues Raised/Lessons Learned

- Like the Morton site, the Everett Smelter site highlights the importance of tracking the history of industrial uses at the state and local level. Unlike brownfields typified by their under utilized, abandoned or derelict conditions, the site of the former Everett Smelter left little physical memory of its industrial past and thrived as a working class neighborhood. Though the knowledge of the hazardous operation was not passed along as the former ASARCO properties were parceled out and acquired by different parties, the knowledge of the smelter's presence and historic economic contributions to the city remains an integral part of Everett's history and basis for its claim to be the 'Pittsburgh of the West'. Contamination was initially discovered in the early 1990's by Weyerhaeuser but historical records clearly identify the operation of a smelter on the site.
- Polluters seeking protection against liability for significant cleanup bills may seek bankruptcy protection. As polluters are held liable for the cost of cleanup, companies may seek alternative arrangements to paying their remediation bill. This point is particularly salient when dealing with contamination on land not currently owned by the liable party. Bankruptcy protection, in the case of ASARCO, stated that the company restructuring under Chapter 11 was not responsible for property it did not currently own (Seattle Post Intelligencer, 2005), thus effectively limited its cleanup responsibilities. The Everett Smelter case raises concerns about how well equipped the State is to handle similar situations in the future.

- In addition, the case also highlights the lack of financial tools for prospective buyers in the transaction stage of the process, as indicated in our summary of financial instruments for different phases of the cleanup process in Chapter 3. CTED's RLF is one of the few tools available for this phase of the process. And, although EHA could have applied for a loan from CTED, the State's RLF total capital of $5 million at that time, could not have matched Bank of America' s line of credit to EHA.
- The linkages between the EPA-led Superfund ASARCO case in Ruston and Ecology's Everett case raise issues of coordination and consistency. ASARCO itself raised the issue of consistency in applying standards between the two cases in one of its legal suits against the State. The disposal in the Ruston site of excavated soils taken from the Everett site, its timing, and how the funding of the Everett's disposal plan hinged on decisions made by EPA illustrate the need for greater internal state and federal coordination.
- EHA's creative role in ensuring that the most contaminated soils on the site were finally cleaned up and made ready for redevelopment highlights the role that redevelopment agencies and public authorities can play in brownfields redevelopments. Typically, these agencies can borrow funds and issue revenue bonds, and as public entities, they also have access to state and local grants and guarantees. They are more administratively flexible then municipalities, can enter into contracts with PLPs to facilitate cleanup, and typically, since they are development-oriented, they can better ensure the redevelopment of a site.

Table 14. Investigation and Enforcement History Summary

Year	Action	Major Stakeholders	Notes
1990	Environmental Assessment	Weyerhaeuser Ecology	Discovery of contamination
1991	SHA	Weyerhaeuser Ecology	Demonstrates releases of arsenic, cadmium and lead in soil
	Pre-RI	Ecology	Confirms release of contaminants throughout the site
1992	Issuance of Enforcement Order No. DE92TC-N147(1)	Ecology ASARCO	Requires ASARCO to perform RI/FS and interim actions to limit residents' exposure to contaminants
1994	1st amendment to Enforcement Order No. DE92TC-N147(1)	Ecology ASARCO	Issued by Ecology to ASARCO requiring additional interim actions, additional sampling, and the preparation of an interim deliverable remedial investigation report
	Collection of human samples	WDOH ATSDR	Analysis of samples from site residents evidenced exposure to greater than normal amounts of arsenic
	Collection of soil and house dust	ATSDR	Analysis of samples evidenced elevated concentrations of lead and arsenic
1995	Property buy-out program	ASARCO Residents	ASARCO initiated a volunteer property buy-out program; area know as 'Fenced Area'
	Issuance of Enforcement Order No. DE95TC-N350 (2)	Ecology ASARCO	Issued by Ecology to ASARCO requiring immediate action to stop exposure to arsenic of residents. ASARCO to purchase the two remaining houses.
	Interim Deliverable Report (1994) & RI/FS (1995)	Ecology ASARCO	Supports evidence of elevated concentrations of arsenic, cadmium, and lead in soil; arsenic +lead in groundwater and surface water on site.
	Property buy-out program extended	ASARCO Residents	Purchased additional residences in and adjacent to Fenced area
1996	Framework for solution	ASARCO Ecology	ASARCO proposes a phased approach to site cleanup. Ecology agreed and issues Enforcement Order No. DE97TC-N119 (3)
1998	1st amendment to Enforcement Order No. DE97TC-N119 (3)	Ecology ASARCO	Issued by Ecology to ASARCO requiring the continued implementation of CPMs and to assist Ecology implement SEPA requirement for the site
1999	ASARCO non-compliance		

Please note that the (#) following Enforcement Order No. indicate the number of orders issued to ASARCO.

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5.4 Wyckoff Site/Eagle Harbor, Bainbridge Island

Extensive, expensive, and unique cleanup challenges continue to face Eagle Harbor and the Wyckoff property, site of former wood treatment and ship building facilities. The Wyckoff property is about a 50 acre site of the larger (500 acre) Eagle Harbor Superfund site. The wood treatment plant at Wyckoff property, which operated from 1904-1988, treated wood with creosote, the main source of contamination in the Harbor. In 1985 EPA designated Eagle Harbor as a Superfund site, and remedial investigations and cleanup began at the site. By the mid-1990s, as part of a final settlement with EPA, the Wyckoff Company which owned and operated the site until the late 1980s, put the Wyckoff property into a trust. The trust had the task of auctioning off the property to partially pay back EPA for the cleanup activities it had undertaken at the site, which to date amounts to over $125 million. The City of Bainbridge Island followed the cleanup and disposal of the property closely, and organized city agencies and citizen groups to develop a vision plan for the site. Successfully leveraging resources and community support, the City completed the purchase of the Wyckoff property by 2006, with the purpose of redeveloping it into parkland. The cleanup and redevelopment of Eagle Harbor has taken place with a high degree of participation from the City and community groups in the decision-making and community planning process. The redevelopment process has included a full array of possible stakeholder groups including: a set of liable parties; federal and state agencies; the City; active community groups; and natural resources trustees. However, the City of Bainbridge Island continues to face challenges with the potential park due to lingering cleanup issues at the most polluted part of the Wyckoff property, Bill Point.

5.4.1 Site History Prior to EPA Discovery

Since the Suquamish Tribe ceded the territory in 1855, Eagle Harbor has served primarily industrial uses capitalizing on the surrounding wealth of natural resources (Bainbridge Island 2007a).

Historical Uses of Wyckoff Property & East Harbor

Wood treatment plants operated on the former Wyckoff property for 84 years. In 1904, the Pike Preserver Plant, one of the largest wood-treatment plants in the world, moved to Bill Point at Eagle Harbor. Ships supplied the plant with creosote while logs were trucked and shipped for treatment. The town was named Creosote after the chemical used to treat the wood (Bainbridge

Island 1999). Shortly after, the company changed its name to the Pacific Creosoting Company (WSDE 1984f). The West Coast Wood Preserving Company took over the plant around 1940.

Contamination and Redevelopment at the Wyckoff Property & East Harbor

Following common practice for the time, the sludge from wood treatment operations on the former Wyckoff site was buried from the 1940s through 1971. During the 1940s the sludge was also used as backfill to reinforce bulkheads that armored the shore (WSDE 1984f). The wastewater system used from 1946 to 1957 discharged large amounts of phenols and oils into Puget Sound. In 1957, the West Coast Wood Preserving Company changed the wastewater system to discharge phenols and oils into the groundwater below the site until 1981 (WSDE 1984f). In 1960, the Baxter-Wyckoff Company acquired the plant. By late 1965 the Wyckoff Company became the sole owner and operator of the site (US District Court 1994).

In 1971, EPA began an investigation of the site after receiving several complaints of oils on the beach adjacent to the Wyckoff property (US EPA 2002a). Consequently, the plant's sludge disposal methods were changed and the sludge was shipped to the county landfill (WSDE 1984f). A year later, EPA and Ecology requested that the Wyckoff Company investigate their chronic oil seepage problem. CH2MHill and Harbinger, Inc. were hired to drill and test the soil. Creosote was discovered in some stratum in all soil borings. After this study, the Wyckoff Company drained and capped a leaky creosote line, removed sludge and disposed of it at a certified landfill, and tested a depuration unit. In 1975, the US Coast Guard issued the Wyckoff Company a Notice of Violation due as a result of oil discharge from their facility into the Puget Sound (US EPA 2002a). In 1981 further modification was made to the plant's sludge disposal system (WSDE 1984f).

5.4.2 Site Context and Description

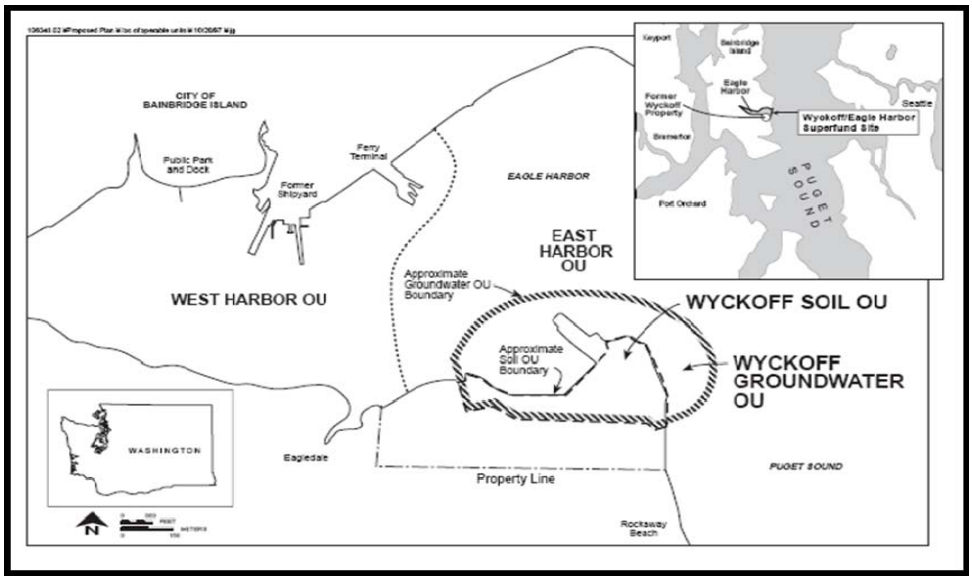
Due to the complex history and nature of contamination of the multi-property Eagle Harbor site, a brief review of the site's characteristics is summarized in Table 15 below. See also Figure 14 below for a map of the sites.

The Superfund site is located along the eastern coast of Bainbridge Island, WA and covers multiple parcels in Eagle Harbor, as well as the harbor itself. Bainbridge Island is a semi-rural city, with a population of 21,760 (as of 2004), which is concentrated around Winslow by Eagle Harbor (Bainbridge Island 2005). [59]Approximately, 6,500 people live within 1 mile of the Eagle Harbor site (US Census 2000). Approximately 38% of the population commutes via the island's ferry transit

[59]

system to work in Seattle (Bainbridge Island 2004). The Island generates 80% of its tax base from residential property taxes. Businesses on the island generated $300 million in revenue in 1995 (Bainbridge Island 2004).

Figure 14. Location of the Eagle Harbor/Wyckoff Superfund Site and Operable Units



Source: EPA 1998a

Eagle Harbor, in its entirety, stretches 500 acres and is composed of multiple zones or operable units (OU), made up of different properties. The State owns aquatic land and the Suquamish Tribe has a usual and customary fishing designation in the harbor[60]. The Superfund site includes the harbor, approximately 40 acres of the 54-acre Wyckoff property and other upland areas such as 6-acres of the Washington State Ferries' Maintenance Boatyard. Several small creeks feed into Eagle Harbor, which has a watershed of roughly 3,280 acres. The harbor varies in depth, with the upper harbor being relatively shallow and the central channel ranging in depth from 20 to 50 feet. A sandbar known as Wing Point stretches south from the north shore. The sandbar and creeks give shelter to a wide array of marine wildlife, such as salmon, various types of flatfish and invertebrates (US EPA 1992).

[60] The Boldt Decision, of February 12, 1974 by Federal Judge George Boldt reaffirms the rights of Washington's Indian tribes to fish in accustomed places. Western Washington tribes had been assured the right to fish at "usual and accustomed grounds and stations" by Federal treaties signed in 1854 and 1855. Historylink.org

Table 15. Characteristics of Site's Operable Units

Operable Units (OU)	Summary Description	Contamination Summary
OU 1 – East Harbor	• The Wyckoff Soil and Wyckoff Groundwater OUs are located in the East Harbor. • History: Ship Building Operations	• Contamination: PAH - 64 acres of subtidal area • 54 acre cap – 1994; requires long term monitoring & maintenance • Permanent no-anchor zone • EPA in charge of Cleanup
OU 2 --- Wyckoff Soils[61] & OU 4 - Wyckoff Groundwater	• History: Wood treatment facilities • Zoning: Water Dependent Industrial uses • Key Arrangement – Wyckoff Company Trust Fund set up to pay for cleanup • *Redevelopment: Park and Memorial; started 2006*	• Soil Contamination: pentachlorophenol, dioxins/furans & 9 PAHs • Groundwater Contamination: 13 PAHs, dioxins/furans, and pentachlorophenol • Cleanup still underway
OU 3 – West Harbor	• History: Ship Building Operations • Zoning: Ferry Terminal District (WS Ferry Facility); Situated adjacent to Winslow town center • Uses: Eagle Harbor Condominiums(112 Units); mid-1970s & WSF Maintenance Boatyard	• Contamination: Mercury and other metal; 55 to 82 acres require cleanup • Majority of cleanup 1997; site in monitoring stage • Mitigation work to compensate for loss of habitat.
Refer to Figure 14 for location of the site and individual OUs		

Formal investigation into Eagle Harbor began in 1984, after the National Marine and Fisheries Service conducted a study, which revealed that samples of sediment, fish, and shellfish taken from the site contained elevated levels of Polyaromatic Hydrocarbons (PAHs). In 1985, after Eagle Harbor received a hazard ranking score (HRS) of 32.5, EPA proposed adding Eagle Harbor/Wyckoff Site to the National Priorities List (NPL). The site was officially added to the NPL under CERCLA in 1987. Prior to formal listing, several cleanup actions were conducted on the site under EPA's federal authority through the Resource Conservation and Recovery Act (RCRA). Based on the contamination characteristics and liability of identified parties, the site was later divided into three main operable units (OU). When the Eagle Harbor Feasibility Study was completed in late 1991,

[61] While OU 2 and OU 4 overlap each other in terns of property, they have been identified as separate operable units for cleanup purposes but are administered in most respects as one operable unit.

EPA planned for the division of the harbor into East and West Harbor operable units (US EPA 1994a,b). Finally, the Eagle Harbor site was divided into four OUs:

- OU 1/East Harbor
- OU 2/Wyckoff Soils
- OU 3/West Harbor
- OU 4/Wyckoff Groundwater

While OU 2 and OU 4 have been named as separate operable units for cleanup purposes, they have been administered in most respects, as one operable unit. Figure 14 above shows the relative division of operable units at Eagle Harbor. Both OU 1 and 3 are in primarily marine environments, whereas OU 2 and 4 are concentrated at the Wyckoff property, extending to some inter-tidal areas in the East Harbor. OUs 2 and 4 are the main subjects of our study.

5.4.3 Contamination Description

Eagle Harbor qualified for federal listing on EPA's National Priorities List because of its extensive contamination. Interest in Eagle Harbor was sparked by sediment and fish samples taken by Dr. Malins of National Marine Fisheries Service (NMFS), which were reported in March 1984 to the EPA and the public press. Dr. Malins findings showed that sediments from Eagle Harbor contained elevated levels of PAHs and indicated the presence of carbazole, dibenzofuran, and pentachlorophenol (WSDE 1984d). Dr. Malins study found that 75% of the english sole (*Pleuronectes vetulus*) in Eagle Harbor had tumors or liver lesions (Stiffler 2002). As noted above, creosote was heavily used by the wood treatment facility which operated on the site from 1904 to 1980's. The chemical Creosote, which is composed of several PAHs, is used in wood treatment.

In 1984, Ecology conducted a historical and facilities review of the sites suspected of generating the pollution and concluded that most of the pollution was due to the result of wood-treatment operations at Bill Point and historical shipbuilding at what is now the Washington State Ferry maintenance yard. (WS DE 1984b). The greatest concentration of PAHs was found by the Wyckoff facility and by the ferry terminals to a smaller degree (US EPA 1992).

Wyckoff Property

Extensive contamination existed on the Wyckoff property. The area of contamination and the volume of contamination are significantly higher than typical wood treatment hazardous waste

sites (Nearman 2007). Investigations at the Wyckoff facility revealed soil contamination existed in all areas sampled, although the highest concentrations were found at the facility's Processing Area, where logs were treated. Contaminants of concern in the soil include pentachlorophenol, dioxins/furans, and nine PAHs: benzo(a)anthracene, benzo(a)pyrene, benzo(b&k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and naphthalene. Five of these PAHs are listed as probable human carcinogens by EPA. Contaminants of concern in the groundwater include 13 PAHs, dioxins/furans, and pentachlorophenol. These hydrocarbons existed both as Dense Non-aqueous Phase Liquid (DNAPL) and Non-Aqueous Phase Liquid (NAPL) contamination (US EPA 2000b).

Remedial Investigations/Feasibility Studies

After Dr. Malins' 1984 study, under the authority of RCRA, EPA issued a Unilateral Administrative Order (UAO), which mandated the Wyckoff Company to conduct an environmental investigation. The same year, Ecology issued an Order that required immediate efforts to control stormwater runoff and seeping contaminants. Data from the investigations revealed considerable soil and groundwater contamination (US EPA 2002a). After the Eagle Harbor site was added to the EPA's NPL in 1987, the Wyckoff Company cooperated with EPA and entered into an Administrative Order of Consent which committed the company to performing further investigations at the site, which revealed greater contamination in soil and groundwater than in typical wood treatment hazardous waste sites (Nearman 2007) In 1988, the company entered into another Administrative Order of Consent agreeing to conduct an Expedited Response Action at the site, which involved implementation of a groundwater extraction and treatment system at the site (US EPA 2002a). Later in 1988, the company ceased its limited operations at the property. (US EPA 1996b) In November 1989, the Remedial Investigation was completed, and two years later the Feasibility Study was completed. (US EPA 1994a,b). Disagreement between the company and EPA increased, and in 1991, the EPA issued another Unilateral Administrative Order to the company to continue with the groundwater extraction and treatment process with further enhancements and to remove buried sludge at the site (US EPA 1994a,b). In late 1993, the Wyckoff Company could not afford to continue operation and maintenance on the groundwater extraction and treatment plant leaving EPA to assume the responsibility (US EPA 2002a).

EPA named the Wyckoff Company, also known as Pacific Sound Resources (WYCKOFF COMPANY),[62] the solely liable party for cleanup of OU 2 & 4. In 1994, after its inability to carry out its cleanup obligations at Wyckoff as well as at a West Seattle Superfund site, the company settled its liability under CERCLA through a consent decree with EPA. Wyckoff's liability was released by establishing an environmental cleanup trust funded by the liquidation and sale of all its assets, including its land, in order to pay for the cleanup (US EPA 2002a).

Redevelopment Plans

In 1995, the City of Bainbridge Island, through the Bainbridge Island Zoning Advisory Committee, began coordinating future land use designations for the Wyckoff property. The City struggled with the original Wyckoff trustee appointed in the 1994 consent decree, who was an independent manager appointed by EPA to manage the liquidation of the Wyckoff assets. While EPA had approval powers, strategies and appraisals were managed by the trustee. The trustee wanted to maximize the profits for the trust set up to pay for the cleanup at the Wyckoff site as well as at a West Seattle Superfund site (Nearman 2007). The Wyckoff Site was marketed as a potential conference center/ resort, which, at the time was a permitted use under a zoning conditional use permit. The City was concerned that the proposed development of a hotel or resort on Bill Point was inconsistent with the comprehensive plan recommendation for growth in Winslow's core, the City's commercial center. The City did not have an established system to collect impact fees to accommodate growth in outer-lying areas. Additionally, the transportation and other capital facilities infrastructure on this part of the island was limited. The site is served by one arterial road, Taylor Ave, which also serves most of the southern parts of the island. Similarly, city sewers do not extend to the property and groundwater wells would need to be drawn from the property (Hudson 2007).

The City's final recommendation included the following uses: 39 acres of Residential Uses on the hillside; 10 acres of Mixed Use Water-related, Water Dependent Commercial on the log storage peeler area; and approximately 8 acres of Recreational Open Space Uses in the former process area (US EPA 2000e). [63]

The EPA replaced their originally appointed trustee in response to the City's concerns over a proposed partnership between the trustee and a development entity for the reuse of the site—a

[62] For the sake of consistency, this study will use the name, Wyckoff Company, instead of WYCKOFF COMPANY, throughout the rest of the case study.

[63] The inclusion of residential uses requires the most protective level of cleanup under the Risk Based Corrective Action (RBCA) standards. This designation influenced the cleanup remedy pursued by EPA.

potential conflict of interest (Hudson 2007). After the trustee was replaced, the City re-examined the proposed uses in an effort to identify the best use for the site. The City appointed a Wyckoff Acquisition Task Force after it decided to pursue public ownership of the site. The City partnered with the Trust for Public Land (TPL) for the acquisition of the site. TPL then negotiated an option for the site with the new EPA trustee allowing for a phased acquisition. Following the acquisition, TPL created an option with the City for the site, leaving TPL with some of the risk during the option period (Hudson 2007)

The Wyckoff Acquisition Task Force worked with the new trustee to professionally re-appraise the land after the city raised concerns that the first appraisal had been too high. In 2001, the land had been appraised at $23 million to $34 million (Hudson, 2007). In 2002, the new appraisal determined that the site was valued at $8 million. EPA attorneys questioned the legitimacy of the second appraisal due to the steep reduction in value. However, the discrepancy is likely attributed to different assumptions on whether the land was appraised 'as is" or unimpaired, and on the presumed land uses, open space versus hotel. (Hudson 2007). The City involved its federal congressional delegation in promoting the idea of making the property public and in providing assistance in dealing with EPA (Hudson 2007).

Based on the City's history, in 2001, the City signed a resolution supporting the inclusion of a Japanese-American memorial in the park at the location of the former Eagledale dock, part of the Wyckoff Superfund site (Bainbridge Island 2007b). During World War II, following President Roosevelt's authorized forceful internment of Japanese Americans, 227 Japanese-Americans had been forced from their homes on Bainbridge Island and shipped out off the Eagledale dock in Eagle Harbor (Bainbridge Island 2007a,b). In 2001, The City and the Bainbridge Island Japanese-American Committee began raising private and public funds for acquisition of the site (TPL 2004b). In 2006, the City began the master planning and design process for the park, now called Pritchard Park (WSDE 2006b). In April 2006, the City began construction of phase I of the Nikkei Memorial, and completed this phase in 2008; the second phase was due to begin Spring 2008.

5.4.4 Key Arrangements

Potentially Responsible Parties (PRPs)

As already discussed, Ecology's historical and facility reviews of the site indicated that wood treatment operations at Bill Point, as well as at shipbuilding facilities were major sources of the pollution at the site. (WSDE 1984c). Under the authority of CERCLA, EPA conducted a Potentially Responsible Party (PRP) search in 1987. Eleven parties were originally notified of their

PRP status, however four were eventually cleared from the list, and another reached a bankruptcy settlement with the EPA (US EPA 1994). Table 16 below summarizes the known parties that have settled liability with EPA for Eagle Harbor Cleanup.

Table 16. Liable Parties and Affected Areas of Eagle Harbor

Liable Party	OU(s) involved in liability
Wyckoff Company (also WYCKOFF COMPANY)	Wyckoff groundwater, soil, East Harbor
US Government (Army, Navy, Coast Guard and other depts.)	West Harbor, East Harbor
PACCAR Corporation	West Harbor, East Harbor
Washington State Dept. of Transportation	West Harbor, East Harbor
Washington State Department of Natural Resources	East Harbor

Wyckoff

Wyckoff Company owned and operated the wood treatment facility on approximately 50 acres of land at Bill Point for over 33 years. The facility regularly used creosote and PCP for wood treatment. The company was found liable for the soil and groundwater contamination at the Wyckoff facility and also partially liable for contamination in the East Harbor.

Wyckoff Company resolved its liability on the superfund site on May 1994 by establishing an environmental cleanup trust fund for the liquidation of all company assets, which became the sole shareholder of Wyckoff Company. The trust was set up with five natural resources trustees and beneficiaries: EPA, NOAA, US Dept. of Interior, Suquamish Tribe, and Muckleshoot Tribe (US EPA 2001a). Upon completion of the consent decree, the officers of the Company dissolved the Company to the trust (US District Court 1994). Half of the funds in the trust were allocated to the US Hazardous Substances Superfund Trust and the remaining half was paid out according to a memorandum of agreement administered by the District Court to the plaintiffs (US Department of Interior, Suquamish Tribe, and Muckleshoot Tribe) for the restoration and environmental response on lands damaged by Wyckoff's wood treatment facilities (US District Court 1994).

US Navy, Coast Guard and Other Departments

The US Navy, Army, Coast Guard, and other departments built and repaired ships in the West Harbor, which constitutes environmental liability under CERCLA. The US government jointly settled their liability through a Consent Decree in April 1997 by providing $4.8 million for the future

cleanup of East Harbor. They also paid $100,000 for EPA oversight of the West Harbor cleanup (US EPA August 1998).

PACCAR Corporation

PACCAR, a truck manufacturing company, was party to the same April 1997 consent decree filed with the EPA. As a former owner and operator of the shipyard, they were held liable for contamination in the West and East Harbor. Under the settlement, PACCAR agreed to take responsibility for completing cleanup of West Harbor sediments and the former shipyard. They also paid $100,000 for EPA oversight of the West Harbor cleanup (US EPA 1998c).

Washington State Department of Transportation and Department of Natural Resources

EPA listed the State's Department of Transportation and Department of Natural Resources as PRPs because they owned properties that contributed to the contamination. In their 1998 consent decree, Washington State agreed to pay $2.2 million to cleanup a portion of the East Harbor and to pay $100,000 to EPA to oversee cleanup activities in West Harbor and any further capping work in the East Harbor. The State was also held accountable for mitigating habitat loss from cleanup activities and for long term operations and maintenance in the West Harbor (US EPA 1998c).

EPA and Ecology

At Eagle Harbor, the state urged EPA to choose thermal remediation of the Wyckoff property groundwater instead of a containment strategy, which would leave some contamination on site (US EPA 1998a). According to CERCLA and the National Oil and Hazardous Substances Contingency Plan, the State of Washington is required to pay 10% of the remedial action costs and a 100% of the operation and maintenance costs at sites where responsible parties are unable to pay for cleanup (WSDE 2006a). This economic calculation factors into Ecology's decision-making on cleanup strategies, since the State would be faced with such costs under a containment strategy. An Ecology representative currently estimates that operations and maintenance costs will be approximately $1 million per year (Nord 2007). See the section below on cleanup strategies and arrangements for a fuller discussion of the thermal remediation strategy.

There is a natural tension between the EPA and Ecology as both agencies work independently and in concert on environmental protection projects. The tension is especially acute when large sums of moneys are considered and the technical issues are highly complex, as is the case with Eagle Harbor. The agencies have different interpretations of the implications of the geo-

hydrology on the Wyckoff site, which leads to different opinions regarding the design of a cleanup plan (Nord 2007). Ultimately, each agency has arrived at the Eagle Harbor cleanup from different standpoints. Ecology manages and operates under MTCA, one of the more aggressive state environmental protection laws, while EPA manages projects on the NPL under CERCLA.

Eroding budgets have placed internal pressures on the EPA, which resulted in staffing turnover in the management of the project (Nord 2007). These conditions influenced the project and, just as importantly, how others in the process viewed EPA. As the primary financier of the Eagle Harbor cleanup, EPA's cleanup choices have inevitably been influenced by budget considerations. This has led the EPA to opt for cleanups that are short-term in the estimation of Ecology, which prefers to assess a cleanup from a long-term, generational perspective. Ecology believes that thermal remediation can work at the site; though costly, this strategy is seen as a longer-term remediation than containment.

EPA Superfund led sites also have constraints on allowable uses of cleanup money. It can be easier for a privately funded cleanup to incorporate "twofers"—cleanup actions that are development necessities or integrate well into the development's design. At Superfund-financed sites, this can be more difficult to achieve due to funding laws. According to EPA's project manager, EPA always looks at future land use to the extent they can make their actions consistent with future land use. However, when EPA conducts the cleanup of Superfund sites, redevelopment plans for the site may not have been developed yet.

Similar to EPA, Ecology faces a growing list of contaminated sites and limited financial resources to attend to all of them (McClure 2002). Both agencies, however, understand that what they might want to do, can be quite different than what they can do (Nord 2007). Nonetheless, Ecology is motivated to avoid the long term financial and ecological costs of a containment strategy. Both agencies continue to dispute their responsibility for the potential recontamination of the site from a natural disaster or act of god that damages the containment systems. EPA holds that it would not be responsible for cleanup of recontamination in this event; Ecology holds that EPA would.

City of Bainbridge Island and EPA

Responsible for managing the City's water supply, land use, and economic development, the City needed to closely coordinate with the EPA on certain actions. However, the role for local jurisdictions is less clearly defined in CERCLA. Even though the City is the party most intimately involved with the property before and after the site's listing, only state approval is required for RODs. City laws, unlike state laws and mandates do not fall into the applicable, relevant and

appropriate requirements (ARAR) that EPA uses to assess cleanup alternatives.. Instead any relevant local laws are part of a list of items to be considered (US EPA 1991).

The City and EPA experienced points of contention that reflect the parties' different goals and priorities. One of the most significant dilemmas was the valuation of the Wyckoff property. Appraisals of contaminated property have often widely diverged due to the inherent uncertainties involved with a contaminated parcel. It was to EPA's best interest in funding the cleanup that the parcel received the highest value possible. Conversely, the City benefited by the second appraisal, which valued the site at much less, enabling them to acquire the parcel.[64] As a facilitator of redevelopment, however, EPA provided financial assistance to the City in the form of a $50,000 Superfund Redevelopment Initiative Grant for planning the redevelopment of the Wyckoff site and $125,000 in Technical Assistance Grants to the Association of Bainbridge Communities (ABC), a local organization for community involvement and education (US EPA 1998b, US EPA 2002c).

City of Bainbridge Island and Ecology

Both Ecology and Bainbridge Island view their interaction as positive and self-reinforcing. They share the overall same goals for the site—the most comprehensive cleanup possible (Hudson 2007, Nord 2007). Whereas Ecology is typically responsible for the landscape over a hazardous waste site, the City's park department will maintain the space, as it would for any of its parks. With respect to maintenance of the groundwater system, the Agreed Order postpones the decision to a later date (WSDE 2006a). Ecology and the City have discussed plans for the City to manage the maintenance with funding support and oversight from Ecology.

Community Groups, Non-Profit Organizations, Tribal Groups & Government Agencies

In addition to the key relationships discussed above, several other groups and organizations have been involved in the cleanup and redevelopment of the site. These include community and non-profit organizations such as Bainbridge Island's ABC and the Trust for Public Land. The Suquamish Tribe and several government agencies, such as the NOAA, the US Army Corps of Engineers, and the National Marine Fisheries Services and US Fish and Wildlife Service have also had input into the decision-making process.

[64] Assessing real estate values, however, especially in this type of valuation is dependent on the zoning designation. And cities and local governments, not EPA, have jurisdiction over zoning.

5.4.5 Cleanup Strategies and Arrangements

Within the larger Superfund site, as the source of most of the pollution on the site, the Wyckoff property required the most complicated cleanup measures. EPA engaged in numerous efforts to control contaminant seepage from the Wyckoff property. Originally, containment measures included the erection of a sheet pile wall around the site as well as a groundwater extraction and treatment system to reduce the contamination and pressure on the wall. Despite several upgrades and redesigns over the course of the cleanup, the system intermittingly failed, which left contaminant leaks at the seals of the sheet pile wall (US EPA 2005b).

Thermal Remediation Pilot Study

In 1997, EPA released its final proposed plan for cleanup at the site, which selected containment as the preferred remedy. Containment leaves pollutants onsite isolated behind a containment wall around the perimeter of the property and a cap over the surface (US EPA 2000e). Consequently, this scenario would require more institutional controls limiting the use and flexibility of the site, as well as lead to a higher level of risk for the new owner of the site. This remaining risk reduces the feasibility of private development on the site. In addition, the containment wall strategy around the Wyckoff site will need to be in place for 175 years and will include a new groundwater extraction and treatment system.

This strategy, thus, entails long-lasting operations and maintenance responsibilities for Ecology and for the City, as a new owner of the Wyckoff site. Under this strategy, after EPA's cleanup, Ecology would assume ongoing operations and maintenance of the East Harbor cap and the Eagle Harbor Site. In the agreed order that Ecology negotiated with the City on the Wyckoff site, the City agreed to assume responsibility for some operations and maintenance cost. Many of these responsibilities are akin to standard park maintenance tasks (Nord 2007). But as the containment cap and groundwater extraction and treatment plant systems age, maintaining them will be expensive. (Nord 2007, US EPA 2000b). EPA's 2000 ROD estimated future action at the Wyckoff site could cost anywhere from $28 million to $49 million in present value depending on cleanup strategy chosen (assumes 30 years at a 7% discount rate).

As mentioned in section 5.4.3 above, Ecology had concerns about the long-term operations and maintenance associated with the plan and urged EPA to consider thermal remediation on the site, a relatively new technology. EPA set up a panel to investigate the possibility of using thermal remediation at the Wyckoff property because it was used successfully at another former wood treatment facility in Visalia, California to remove subsurface creosote (Nearman 2007). The final

ROD selected thermal remediation as the preferred cleanup strategy for the site, if an in-situ pilot test demonstrated its feasibility and there was a containment strategy in place (Nearman 2007).

Thermal injection treatment requires a significant source of water to pump vapor under the surface to extract creosote from soil and groundwater. The City grew concerned that pumping groundwater would strain its only source of water on the island. The City urged EPA to use wastewater effluent, despite groundwater being the most cost-effective for EPA on the pilot portion of this test. To compromise with the City, EPA examined how to modify the system to use less water. They agreed to use effluent for the full-scale project if the pilot was successful using groundwater (US EPA 2001a).

However, after a few months of operation, the pilot test encountered technical problems. Pipes clogged, and seals and gaskets broke due to the unexpected high content of naphthalene extracted, which disintegrated the rubber. The test was delayed for further redesign in 2003 and eventually cancelled in 2004. By 2006, there were still one million gallons of creosote contamination on a portion of the site at Bill Point (WSDE 2006b, US EPA 2001a).

Containment would be the least expensive option, running at least $6 million less than full thermal remediation, likely much less after taking into account the unforeseen technical problems associated with the thermal remediation pilot test (US EPA 2000e). Apparently overlooked in the earlier planning stages, the volume of contamination was significantly higher than the successful Visalia project, and the site's proximity to a waterbody created uncertainty about the impact to the harbor (Nearman 2007). The final ROD outlined a contingency remedy if the thermal remediation pilot test at the site did not meet performance standards.

Risk Liability and Acquisition Arrangements

The City first moved ahead with acquisition of the Wyckoff site without considering the use of tools to protect itself against risk, such as pollution legal liability insurance or a prospective purchaser agreement with Ecology. This is important given EPA's long-term remediation strategy as discussed in the previous section. During the third phase of purchase, the City entered into an agreement with Ecology as a Prospective Purchaser to protect itself from future liability. Taking the advice of legal counsel, Bainbridge Island began assembling a multi-part solution to protect itself from future liability on the site. The new acquisition strategy narrowed the City's liability through the following measures:

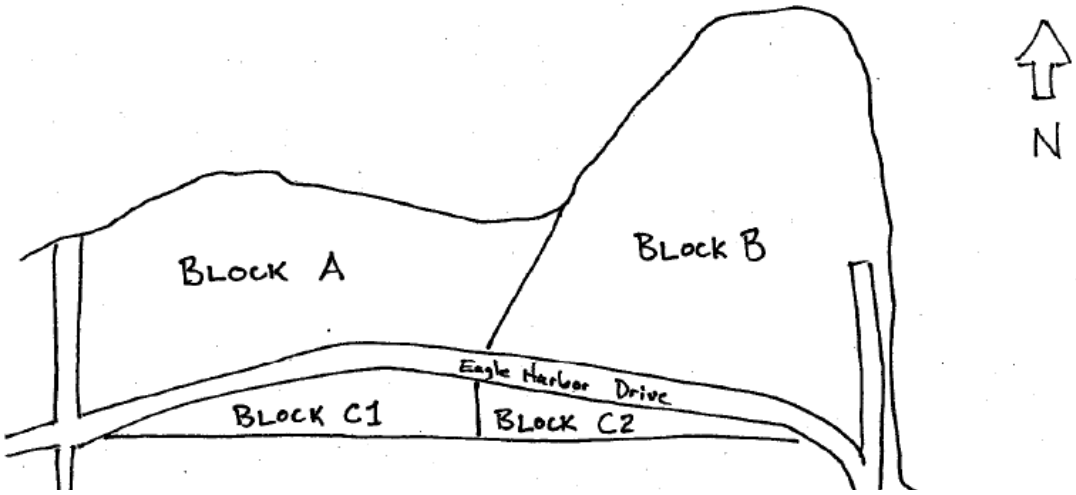
- Pursuit of an option on the land first which allowed time for fundraising and coordination of agreements with EPA and Ecology;
- Acquisition of the site in three phases, starting with the acquisition of parts of the land that had already undergone full cleanup;
- Negotiation of an EPA Prospective Purchaser Agreement , a Covenant Not to Sue for all portions of the site , and an Ecology Agreed Order for the third phase of acquisition which involved contaminated land;
- Utilization of the Trust for Public Lands (TPL) as a facilitator to increase their fundraising network as well as leverage TPL's technical experience in land acquisitions;
- Purchase of an environmental insurance package on the property.

Option Agreements to the Land & Phased Acquisition

As of May 2002, the Wyckoff property was divided into two parcels—one clean parcel of approximately 23 acres of uplands and 1600 feet of beach and the remaining Wyckoff property, which was still undergoing EPA cleanup (KRCC 2002). In 2001, the EPA declared the former log peeler and log storage area of the parcel clean after 10,000 cubic yards of soil were excavated (US EPA 2001a). The City of Bainbridge Island directly purchased an option to this portion of the land. As discussed above, the value of the entire Wyckoff property was professionally re-appraised at $8 million, however it was difficult to appraise the value of the entire Wyckoff site because the subsurface was still significantly contaminated; associated contaminated offshore sediments were still present and uncertainties regarding future redevelopment of the site remained (WSDE 2006a).

Acting as a facilitator for the City, the TPL negotiated another option agreement with Wyckoff on April 11 2003 and on May 14, 2003. The option was refundable if Bainbridge Island could not get the Prospective Purchasers Agreement from EPA to meet its liability protection needs. The City purchased the option from TPL for $10, which was set to expire June 30, 2004. The contract allowed an extension to June 30, 2005 if the buyer made payments on the options according to a schedule and had bought at least a portion of the property. Under this option, the 49.5 acre property was subdivided into 4 purchasable portions; refer to Figure 15. A second option extension was included, based on meeting the conditions described above. This option would extend to June 30, 2006. The agreement allowed land to be bought in phases, but beginning in 2005, the set price for each piece would increase 3% annually.

Figure 15: Division of Wyckoff Property Blocks for Sale (WSDE 2006a)



The City began plans and partnerships in 2001 which involved Block A, a clean portion of the Wyckoff site. This block contained the former Eagledale dock, which was the planned site of the 8-acre Nikkei Memorial. In March 2001, the City passed a resolution for the memorial and a year later in 2002 approved Resolution 2002-02, which was devoted to, "encouraging the Washington State Legislature, the United States Congress and appropriate federal authorities to continue to endeavor to designate the former Eagledale ferry landing on Bainbridge Island as a national memorial" (Bainbridge Island 2007b). Merely *seeking* this historic designation enabled the City to expand their fundraising parameters and gain even greater political momentum for site acquisition.

December 8, 2004 the City of Bainbridge Island and the EPA entered into a Prospective Purchaser Agreement, which included an EPA Covenant Not to Sue under CERCLA, 42 U.S.C. §9601 et seq (WSDE 2006a). After receiving this liability protection, the City and Park District exercised the option to purchase Blocks A and C1 for approximately $4.7 million (Hudson 2007). The money to purchase the property was funded through a combination of federal, state, county, and city grants and funds, as well as private donations (TPL 2004b). The first phase of the acquisition represented the least risky acquisition at the site, as EPA sampling in the former log peeler storage area indicated no need for institutional controls or land use restrictions on that portion of the Wyckoff site (WSDE 2006a).

After an amendment to the Purchase Option Agreement, which included an extension of the final phase purchase to allow time to complete negotiations with Ecology over an Agreed Order, the

City and Park District purchased approximately seven acres of the phase II purchase for $650,000 (Hudson 2007).

The final acquisition involved the remaining contaminated area on Bill Point (Block B). The second option to the amended option on the Wyckoff property set a new schedule for this acquisition, including a closing date on Block B of February 28, 2006. The City bought the final pieces of the Wyckoff property on February 27, 2006 (WSDE 2006a).

To protect itself against future liabilities under CERCLA, the City obtained a prospective purchaser agreement from EPA, and negotiated an Agreed Order with Ecology. In addition, the City purchased environmental insurance brokered through Marsh. The policy, which cost the City approximately $255,000 to obtain, would cover the first $20 million if unknown contaminants were found on the site (Belsky 2007). Eagle Harbor's unique circumstances called for a customized insurance package. Though the extensive number of completed investigations lowered the risk of uncertainty, the underwriters had concerns about potential reopeners and natural resource damages for the site (Belsky 2007).[65]

Funding Strategies and Arrangements

The City relied on key consultants and facilitators to better manage their risk during acquisition and redevelopment. The City and its partners capitalized on a wide array of funding sources for the acquisition and development of Pritchard Park and the Nikkei Memorial; these are summarized in Table 17 below.

Most of the financing for the Wyckoff soils and groundwater OU has come through the Superfund trust whereas the West Harbor cleanup was entirely financed through Potentially Responsible Parties. As of today, EPA has spent about $125 to $130 million on cleanup of the Superfund site (Nearman 2007). The sale of the Wyckoff properties at West Seattle and Eagle Harbor financed less than 10% of the total cleanup costs (Dietrich 1996). While the City is responsible for ensuring that development does not conflict with EPA's chosen remedy for the Wyckoff site, it is not responsible for any cleanup action or costs (Hudson 2007).

[65] The City also mitigated its risk of acquisition by partnering with TPL (Hudson 2007). As a national non-profit organization specializing in land acquisitions, TPL could manage the risk of holding an option on the Wyckoff property better than the City. Ultimately, the option agreement on the Wyckoff site was with TPL, which had the right to create an option for the land with the City (Hudson 2007). TPL had technical expertise that the City leveraged to their benefit in negotiating terms of the option agreement on the Wyckoff property.

Table 17. Funding Sources for Pritchard Park and the Nikkei Memorial

Funding Agency	Grant Amount
Phase I: City & Park District Acquisition of Blocks A & C1	
Washington State Department of Community, Trade and Economic Development	$981,250
City of Bainbridge Island Open Space Bond Funds	$500,000
Kitsap County Open Space Future Funds	$500,000
Washington State Interagency for Outdoor Recreation (IAC Local Park)	$500,000
Federal Coastal Zone Management Funds (NOAA)	$1,978,955
Private Funds (administered by the BI Land Trust & TPL)	$330,00
City of Bainbridge Island Road End funds	$90,000
Phase III: City Acquisition of Block B	
Washington State Department of Community, Trade and Economic Development	$1,312,500
Federal Coastal Zone Management Funds (NOAA)	$488,246
Kitsap County	$350,000
Private Funds (from BI Land Trust & TPL)	$449,254
Total	**$7,390,205**

Development Strategies and Plans

Cleanup is largely completed on most of the Eagle Harbor site, excluding Bill Point, with some institutional controls placed mainly over areas that required capping or containment.

West Harbor

While the West Harbor underwent cleanup in 1997, and further remediation of a small seep discovered in 2000, it is still monitoring the cleanup and has yet to receive an EPA NFA letter.

East Harbor

Over the East Harbor cap, a no-anchor zone has been implemented by the US Coast Guard. The final remedy for the Wyckoff property will likely involve similar institutional controls preventing disturbance of surface caps.

Wyckoff Site

With strong public backing, the City is moving forward with a two phased approach to develop Pritchard Park. In order to develop the site, the City had to conduct additional planning processes to ensure the integrity of the cleanup by submitting plans to Ecology for approval: Cover and Capping Subplan; Excavation Management Subplan; Worker Health and Safety Subplan; Park Management, Park Upkeep and Compliance Monitoring Subplan; Best Management Practices Subplan; and Institutional Controls Subplan (WSDE 2006a).

Development has been completed on the westernmost portion of the site where the memorial is located. This area has completed full cleanup and redevelopment. Phase I involved site and environmental planning, the construction of the memorial gates and kiosk out of Yellow Canadian Cedar and work on the infrastructure and parking. Phase II involving design of Nikkei Wall is telling the story of the families interned is under construction.

5.4.5 Effectiveness—what worked, and did not?

From an early stage, it became clear the contamination at Eagle Harbor was extensive and would require massive cleanup. Similar to other Superfund sites, the expense of such a cleanup was a significant barrier. Full cost recovery of cleanup was not possible and so the gap between the cost of cleanup paid by liable parties and the actual costs had to be covered by an increasingly cash-strapped Superfund trust. Budgetary constraints have played a primary role in the cleanup and redevelopment considerations at the site. They have shaped the motivation, goals, and strategies of each party involved, all of which have finite amounts of financial resources available. With $125-$130 million already paid towards cleanup efforts, both the EPA and Ecology face further costs to cleanup the remaining 1 million gallons of creosote still beneath Bill Point on the former Wyckoff property. Cost has been the primary motivator for EPA's preference for a containment strategy at Bill Point and likewise has been a major motivator for Ecology's push for a more extensive cleanup there.

The most challenging OU was the Wyckoff property groundwater, which flowed into the

East Harbor. Innovative solutions and new technologies were used to address these issues, however, EPA faced unforeseen technical challenges with both the original extraction and treatment system that utilized bioremediation, and the latest attempt at thermal injection.

It is too soon to judge the overall effectiveness of the full cleanup and park development as it is still underway at portions of the Wyckoff site. However, the cleanup thus far of Eagle Harbor has already created beneficial effects. Fewer fish are developing liver problems and there is an increased sighting of fish by the old Wyckoff wood treatment facility since the cap was placed in the East Harbor (Puget Sound Action Team 2006). The future of the harbor largely depends on the effectiveness of the remaining cleanup at the Wyckoff OU. EPA's decision to move forward with the contingent containment strategy for the remainder of the contamination will impact the park's overall design.

Despite being a relatively small city with no previous experience with contaminated property cleanup and redevelopment, Bainbridge Island has effectively incorporated outside agencies and organizations that have the expertise needed for difficult projects. Much of the City's success in negotiating with EPA and other federal and state agencies is due to the extensive community planning and participation, which the City encouraged and led.

The City has utilized a range of available risk-reduction tools. They have managed potential liability by obtaining a Prospective Purchaser Agreement with a Covenant Not To Sue from EPA, as well as an Agreed Order with Ecology and an environmental insurance policy. Through its environmental insurance, the City has $20 million in cost protection for the next 10 years if any of the natural resource trustees holds the City liable for natural resource damages at Eagle Harbor or if EPA or WSDE holds it liable for discovery of unknown contaminants on the site. The EPA and Ecology agreements provide a relatively strong assurance that neither agency will hold the City responsible for cleanup of contamination caused by former uses on the site. However, the city's strategy for protection was a piecemeal solution, often taken at the last minute or in hindsight. Their eagerness to acquire the site before conducting all appropriate inquiry or considering the uncertainty involved with cleanup at Bill Point resulted in ownership of a site that may never be fully clean and may be critically different than what they have envisioned for the park. While the city has a 10-year insurance policy now, it is difficult to say how much it will cost them to purchase insurance in the future. They will surely need it to prevent potential liability for natural resource damages, if the containment strategy at the site breaks down, fails, or is compromised by a natural disaster.

5.4.6 Links to Economic Development

It remains too early in the site's cleanup to fully understand the economic outcome of the redevelopment of the Wyckoff property. With roughly 80% of the City's assessed land values composed of residences equaling an assessed value of approximately $1.5 billion, Bainbridge Island's economic development is more focused on preserving the Island's rural character (Bainbridge Island 2004). The City garnered strong support for the public acquisition of the Wyckoff property for the development of Pritchard Park. While development of the park will inevitably improve the property values of homes nearby the site, traditional economic development geared to increase employment or economic activities was not a major aim in the City's strategy for this property.

EPA did the only known economic development studies, specific to cleanup, conducted specifically for the Eagle Harbor/Wyckoff site. According to their analysis, the cleanup resulted in 15 jobs during cleanup; 10 follow-up remediation jobs; 21 long-term and site maintenance jobs; $607,000 in income from remediation jobs; and a cleaner waterfront allowing for future development (US EPA 1999a). Operations and WSF jobs at the WSF facility at the West Harbor were largely unaffected by the cleanup of Eagle Harbor.

5.4.7 Issues Raised/Lessons Learned

The City's Participatory Planning Process

Community participation and planning in the cleanup and redevelopment of the Wyckoff property is the hallmark of this case.

- Before the City's plans for acquisition of the Wyckoff property, the City and its community organizations, and the Suquamish Tribe actively participated in cleanup decisions(e.g. attending meetings, touring the site, hiring technical consultants for advice), and brought to bear the City's Comprehensive Plan and zoning regulations to cleanup issues.
- As soon as plans emerged for the City's purchase of the Wyckoff property, the City led extensive community participation in a visioning and planning process to acquire, design and develop the Wyckoff property.
- The planning process was consistent with the City's Comprehensive Plan which seeks to retain the rural character of the Island, and to take into account the limited capacity of its infrastructure systems, and to increase its parklands.

- The resulting plan capitalized on the site's history. The incorporation of the Nikkei memorial and the movement to make it part of the Minidoka National Memorial, not only raised recognition for its development but provided funding opportunities through the National Park Service and other cultural or recreationally based funds. The potential Suquamish Tribe ceremonial area by the beach reconnects the Tribe to the future of the park.
- Consequently, the City's strong participatory planning process enabled the City to:

  Raise funds to acquire the Wyckoff property, and to redevelop the property as parkland; successfully negotiate with EPA on the price of the land; and continue to negotiate on the final cleanup remedy for Bill Point.

Cleanup Issues

- Pilot studies are crucial for untried technologies, such as the thermal remediation strategy attempted on the site.
- Containment strategies in sites that involve aquatic and groundwater contamination carry considerable ongoing operations and maintenance costs for the remaining responsible parties, which can lead to conflicts between government agencies, as here illustrated between EPA, on one side, and Ecology and the City, on the other.
- Such containment strategies also represent considerable risk management problems for local governments that assume legal responsibility after cleanup. Traditional environmental insurance packages with 10, and at most 20 year terms may not be sufficient to offer liability protection in the case of containment strategies with long-term maintenance and operations requirements.
- Lack of adequate federal and state funding for cleaning up and maintenance of highly contaminated sites over the long-term, which can result in conflicts between EPA and state environmental protection agencies over cleanup strategies.

Redevelopment Issues

- When responsible parties are unable to meet their liabilities and settle their assets into an environmental trust, the interest of the trust in maximizing the price of the land may conflict with the interest of the local community in development appropriate to the community's character and plans. Local government plans do not currently fall under the applicable, relevant and appropriate requirements (ARAR) that EPA uses to assess cleanup alternatives, although relevant local laws are part of a list EPA considers. This case illustrated how the

lack of coordination between local plans and EPA cost recovery strategies can lead to differing land appraisals, and initial conflicts over redevelopment plans.

- Large and highly contaminated properties often require public redevelopment or a public-private partnership. The extensive risk involved is usually beyond the threshold of most private developers or their financiers. Public agencies can more readily access grants and funding to acquire, cleanup, or develop properties of this type. Although cities may not have to pay the cost of cleanup, as in this case, they may bear a higher future risk. In the case of Eagle Harbor, the City was able to afford 54 acres of prime waterfront, without paying cleanup costs. However, the City will have operations and maintenance costs associated with the cleanup, although some of these would be necessary for maintenance on any park they managed (Nord 2007).

EPA and Ecology Relations

- Cleanups that involve both the EPA and Ecology have an added layer of complexity. Both agencies must sort out their responsibilities and costs in regards to the site. This can result in delays or tension between agencies that affect redevelopment goals.

From Brownfields to Greenfields

- The decision to develop a park at the Wyckoff site is a common trend in Superfund site reuse. As of 2001, 50 out of the 190 Superfund sites that were being reused were being used for recreational purposes (US EPA 2001c).

In conclusion, Eagle Harbor can serve as a guide for other public redevelopment of contaminated property into a park or recreational area. The city deployed a unique strategy using local history to provide a vision for the site which helped them gain access to otherwise unavailable grants. The site also serves as an example of a complicated cleanup and redevelopment with source control issues involving upland, groundwater, and marine environments. The chosen cleanup strategies raise ongoing questions and issues that can prepare others planning the cleanup and redevelopment of complicated sites.

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5.5 Custom Plywood

Custom Plywood is a waterfront site off the western shores of Fidalgo Bay in Anacortes, Skagit County. The site was first a sawmill, which was later transformed into a wood-box factory, and most recently operated as a plywood mill until operations ceased in 1992. Soon afterwards, the site was devastated by a fire. A century's worth of past industrial uses on the site left behind features such as hog-fuel (combination wood-fired) boilers, transformers, and above ground storage tanks containing fuel, oil, gasoline, diesel and/or propane, and phenolic formaldehyde resin (WSDE 2007a). Contaminations stemming from these previous industrial operations have resulted in amounts of oil and gasoline, arsenic, cadmium, lead, chromium and PCB in the soil that exceed MTCA cleanup levels; contamination has also been detected in the groundwater and in marine sediments (WSDE, 2007b). Though the site has been purchased and sold several times, most recently in 2008, there has been no significant remedial investigation and feasibility studies conducted and little cleanup has taken place. In 2007, Ecology and Concorde, Inc[66] entered into an Agreed Order, stipulating that the landowner carry out an RI/FS work plan and report in addition to a CAP to remediate the contamination on the site. Lack of adequate funding, private and/or public, and strained relations between stakeholders are perceived as key obstacles in the cleanup of the Custom Plywood site.

5.3.1 Site and Regional Description

Established in 1877, the City of Anacortes was originally planned to be the western terminus of the transcontinental railroad. Although the City did not end up becoming the terminus, the town was officially incorporated in 1891. Its principal industries, historically as well as currently, are lumber milling and fishing. During the 1950's, oil companies built large refineries near Anacortes and this remains the area's largest industry, along with other marine operations such as yacht construction. However, the City's traditional industries have experienced a general decline since the 1990's. The Port of Anacortes operates a busy marine terminal, shipping forest products and bulk goods to nations of the Pacific Rim, giving the city a real "working waterfront." Anacortes is also home to the Washington State Ferry terminal, serving the rest of the San Juan Islands and Sidney/Victoria, British Columbia.

The Custom Plywood site is located along the waterfront of Fidalgo Bay, at 35th and V Avenue in Anacortes, on Fidalgo Island, the easternmost of the San Juan Islands. Though the

[66] During the writing of this report, the site was purchased by GBH. An Agreed Order is being negotiated between Ecology and GBH.

boundaries for the site remain under review, it is currently comprised of 8 parcels and includes 6 acres of upland and 28 acres of aquatics. The site was given a hazard ranking of "1" (Ecology's highest priority for cleanup) in 2001, and remains on Ecology's Hazardous Sites list.

Historically, the site has featured the following: a compressor building, a hog-fueled boiler located in a boiler house, a drum storage tank area, three known outfalls and three press pits, industrial transformers, a mixed glue tank over a concrete pad, a pitch collection tank, a former hardboard plant, resin/caustic tanks in a storage shed, numerous ASTs[67], machine and metal shops with an oil storage area, piers, a rail spur, area for paint and oil spraying and several concrete structures (WSDE 2007c). After the fire of 1992, the only remaining features left on the site were concrete structures, slabs and foundations, concrete and brick debris along the intertidal area[68], the mixed glue tank, the resin/caustic storage tank shed, the former machine shop and mill offices, three press pits and decaying piers (WSDE 2007c). What was once the hardboard plant is currently operating as a boat building facility and the rail spur has been transformed into a recreational hiking trail, the Tommy Thompson Trail (WSDE 2007c).

5.5.2 Site Background

The Fidalgo Lumber and Box Company operated a sawmill and box-factory on the site from 1900 until a fire damaged the facilities, sometime between 1925 and 1937 (WSDE 2007c). The Anacortes Plywood Company purchased the property in 1937 from Bill Morrison, who had acquired the property in 1913 (WSDE 2007c). A few years later, in April of 1939, the Anacortes Plywood Company was reorganized as the Anacortes Veneer Company and continued operations as a cooperative venture of worker-shareholders on the site until 1969, when it was sold to Publisher's Forest Products (WSDE 2007c). In 1960, the City determined that 179 acres of land from 24th to 34th Streets and R to Bay Avenues were blighted and thus no longer suitable for residential uses. The City then established the Anacortes Urban Renewal District to allow the City of Anacortes with the purpose of developing the Anacortes Industrial Park. The Custom Plywood Site is located at the intersection of 35th and V Avenue, outside the southernmost edge of the Urban Renewal Area boundary. The proximity of the Urban Renewal District is important to the case, because Custom Plywood is "defined by the extent of the contamination – not limited by property boundaries"

[67] Containing fuel oil, gasoline, diesel and/or propane

[68] One of the concrete slabs located in the intertidal area is submerged under water during high tide and exposed to the elements during low tide.

(WSDE 2007c, p.3). Portions of the contamination may reside within the boundaries of the Urban Renewal Area.[69]

In 1984, Custom Plywood took over the mill facilities but ceased operation in 1992. In 1991, Brent Homes assumed control off the site as a result of bankruptcy proceedings while Custom Plywood continued as the operating entity on the site (WSDE 2007c). In October 1992 there was a second fire on the site shortly after the closure of the plywood mill. Later that same year, the industrial transformers on the site were moved to an area adjacent to the Hardboard Building (Means 2007; Goodman 2008a). In 1997, EPA observed that the transformers were missing, investigated and found that the landowners had transported the devices to a property in Stanwood, WA. The oil from the transformers was found in an abandoned U-Haul and resulted in the successful prosecution of one of the landowners in April 1997, who pled guilty in US District Court in Seattle to improper storage and transportation of PCBs.

In 1999, Anacortes Joint Venture acquired the property through a quit claim (Goodman, 2008a). The property was purchased in 2006 by Gilbert Villarreal of Concorde, Inc., and most recently, it was acquired in 2008 by GBH.

The site has good access and is a good location water-dependent industrial uses. But taking advantage of these features is problematic due to sediment contamination. Currently, water depth along the site is 10 feet, while Federal regulation regarding channels requires a clearance of 18 feet (Munce 2007). In order to create water access, significant dredging at the site would be required.

5.5.3 Contamination Description

A century of industrial occupation has resulted in petroleum, heavy metal and PCB contamination on this site. Soil, sediment/aquatic samples were collected from the site by various environmental consulting firms employed by owners or prospective purchasers of the site between 1993 and 2003; these are summarized in Table 18 below. In general, these samples revealed levels of oil and gasoline, arsenic, cadmium, lead, chromium, and PCB that exceeded MTCA cleanup levels. There are approximately 3,000 cubic yards of known petroleum-impacted soil in the southern portion of the site; the full impact of aquatic contamination remains unknown at this time. There are also issues regarding wood waste in the aquatic portions of the site. Wood waste is not

[69] Of the 179 acres, 100 acres were set aside for private industrial development, 40 acres were devoted to streets and public right of ways, 28 acres remained as tidal lands, and the remaining 8 acres were developed as parkland (WFB). The $6.8 million Urban Renewal Area plan was projected to generate hundreds of new jobs and significant revenues from increased property taxes. Approximately 150 dwellings were relocated (WFB). By 1974, most of the land in the Anacortes Industrial Park has been sold off for private industrial development.

comprehensively defined in MTCA regulations and may require additional cleanup in the future once such a cleanup standard is established. Despite the scientific sampling on the site, to date, no RI/FS process has been completed for the site.

Glue-making was significant to the industrial operations which took place on the site, especially in the manufacturing of plywood. The process to make the glue included the use of an average of 20,000 gallons of phenolic resin and caustic a month, which were mixed and stored in 3 above ground storage tanks (AST) housed in a shed adjacent to the maintenance shop; a pump supplied the finished glue to the mill (WSDE 2007c). Veneer was dried in one of the site's two large kiln driers, which were heated by hog-fuel boiler steam. The dried veneer was graded and transformed into plywood after a series of gluing processes that included a passing through hydraulic presses (WSDE 2007c). To minimize the use of solvent during the cleaning process, other than the use of toluene, a wax coating was applied to the glue rollers (WSDE 2007c). Please refer to Table 19 below, for a summary of historical releases dating from 1974 to 1994.

5.5.4 Cleanup Description and Contamination Removal

Although no significant cleanup efforts have been undertaken at the site, the City of Anacortes did effectuate cleanup of a small portion of the Custom Plywood site, which is currently excluded from the overall Ecology site. The City of Anacortes purchased a small portion of the land in 1984 and used WA remedial grant funds to finance the soil remediation efforts which where conducted by Woodward Clyde in 1998 (Goodman 2008a; Munce 2007). Approximately 1,939 tons of oil-contaminated soil was removed from the site and three down gradient wells were placed for the long-term monitoring of the groundwater. The wells were in operation for three years monitoring for diesel and oil-range petroleum[70]; results indicated no impact (Goodman 2008a). The City of Anacortes was issued an NFA letter for soil and groundwater in 2002.

In July of 2007, interim action was conducted by Geomatrix on the northern (half) portion of the uplands to remove contaminated soil (Goodman 2008a). Approximately 1,485 cubic yards of contaminated soil were removed, transported to Everett by truck, and loaded into rail containers for disposal at the Roosevelt Landfill in Klickitat County (Goodman 2008a).

[70] Woodward Clyde merged with URS, thus the groundwater monitoring was completed by URS.

Table 18. Summary of Site Investigations

		Soil Samples		Aquatic & Sediment Samples	
Year	Consultants	Sample Location	Sample results	Sample Location	Sample Results
1993	John A. Pinner & Associates/Site Owner (Brent Homes)	(#1) from immediate area of hydraulic press #3	heavy oils, heavy metals, phenolic compounds and PAH	(#2) Press pit area (#3) 50 feet south of sander	(#2) Heavy Oil (#3) Heavy Oil
1995	Enviros, Inc[71]	Near-surface soils around press pits & compressor house in central part of site	Petroleum hydrocarbons, heavy metals, & PAHs (exceeding MTCA A levels) PCB, diesel-range hydrocarbons, formaldehyde, phenols analyzed but not above reporting limits	12[72] samples collected near shore area	PAHs, phthalates, BNAs, and metals. Total PCBs and Benzoic Acid (BNA) above Sediment Management Standards when TOC normalized.
1996	HartCrowser			Fidalgo Marina: HC-SS-04 &05 samples in front of site, HC-SS-01 &02 &03 samples south of site, remaining 5 samples north of site	All sediment samples contained metals & resin acid concentrations above reported limits[73]; 01 & 02 had PAH concentration above reporting limits; Phenols detected in 04. No PCBs & SVOCs detected.
1997 May	Woodward-Clyde	Upland portion of the site[74]	PCB (Aroclor 1254) near broiler house & compressor building above MTCA cleanup levels & PCBs below MTCA Method A cleanup levels near Hardboard Plant. In the resin/caustic[75] shed formaldehyde in 2 resin		

[71] Phase I and Limited Phase II Environmental Site Assessment

[72] 11 samples had "TOC values above the guidelines for normalizing, indicating high volumes of wood waste and requiring the use of non-normalized data (dry-weight for comparison" WSDE 2007d

[73] This is an indication of high wood debris (WSDE 2007d).

[74] According to report, 'investigation was reportedly conducted at the direction of EPA after transformers located on the south side of the Hardboard Plant had been removed fro the site improperly." Selection of sample location was performed with assistance from Mike Burnett, EPA (WSDE 2007d).

[75] The shed is located in the property owned by Ray Sizemore of Cimarron Trucking (WSDE 2007d)

			tanks and low concentrations of phenols in one of the tank. Low concentration of chromium and sodium found in the caustic tank. pH levels for all tanks below Dangerous waste criterion of 12.5		
1997 Aug	Woodward-Clyde	Area in the vicinity of the former Hardboard Plant & adjacent to V place street	Highest concentrations of TPH in area SE of V Place below MTCA Method A Cleanup. High concentration TPH-Diesel in area NW of V Place.		
1997 Oct	Woodward-Clyde[76]	Upland portion of site – press pit area (soil & and groundwater) and resin/caustic shed & mixed glue tank area	High concentrations petroleum hydrocarbons and presence of SVOCs (5 of which PAHs)	Press pit area ground water and surface water from press pits 2 & 3.	High concentration of petroleum hydrocarbons and presence of 6 SVOC (including phenanthrene). Surface water - concentrations petroleum hydrocarbons
2000	EPA PA/SI	79 samples[77] total taken from the site, including soil samples	Surface soil – 33 SVOCs, 8 pesticides, PCBs, 1o VOCs, 22 metals; subsurface soil (fill material) – 21 SVOCs, dioxins, furans, 6 VOCs & 22 metals; subsurface soil (native material) – 3 SOVCs, 5 VOCs, 21 metals	79 samples total taken from the site, including groundwater (using direct push method) and sediments	on-site groundwater -19 SOVCs, 2 VOCs, 23 metals; near shore desiments – 29 SOVCs, 1 pesticide, 1 PCB, dioxins & furans, 2 VOCs & 21 metals[78]

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Table 19. Summary of Historical Releases

Release/Investigation	Contaminants	Release Area
1974 - National Pollutant Discharge Elimination System Application	• 32,000 gallons/once per week of plywood dryer discharge water • Boiler heat exchange cooling water	Fidalgo Bay
1979 – Ecology Memorandum	• Boiler blowdown • Plywood dryer water sent to boilers for preheating purposes	drainfield
1988 – Letter from Anacortes Plywood Inc	• Release caused by cracked hydraulic line under and behind Press Pit 2	
1989 - Ecology Memorandum	• 60 gallons light lubricating oil • Several 5-gallon containers overflowing with glue	• North end of mill yard (where hog fuel and veneer stored) • South end of mill (where laminated glue offloaded from tank trucks)
1989 – Ecology Inspection Report	• Glue wastewater and dried resin solids (from raw materials) • Solids from raw phenolic resin glue tank removed and left outdoors. • Multiple discharge points for non-contact cooling water from boiler area	• Soil around glue machine wash water holding tank • Rain dissolved chunks resulting in purple puddles • Grounds and Fidalgo Bay & around machinery (some in intertidal area)
1989 – Ecology Notice of Violation	• Discharged phenolic formaldehyde resin glue wastewater	Fidalgo Bay
1990 – Ecology Inspection Report	• Press pits discharging cooling water	Tidal Flats in Fidalgo Bay
1992 - Ecology Inspection Report	• Caustic spills (on floor) washed away by boiler blowdown	Fidalgo Bay
1992 – Ecology Environmental Response Team Report (Caller)[79]	• Fire on site • Pools of heavy oil under main building	
1993 – Ecology Environmental Response Team Report (Caller)	• Chemical dumping (by contractors)	Mill grounds
1994 – Site Visit	• Soil in the vicinity of presses appeared oily	
Source: WSDE 2007d		

[79] Called in report

5.5.5 Key Arrangements

Though the Custom Plywood site is not challenged with problematic topography or a complex series of scientific or engineering obstacles, the development of the site has been significantly disabled by a lack of secure private and public financial assistance to conduct remediation work and the strained relations between stakeholders. Potential developers seem apprehensive to invest heavily into the site without knowing the extent of the contamination (Goodman 2008a). Nonetheless, considerable, though unsuccessful, efforts have been made towards the development and reuse of the Custom Plywood Site.

Since 2002, the City of Anacortes has been attempting to develop a plan for the cleanup and reuse of the Custom Plywood site. In 2002, the City initiated Resolution No. 1609 which sought the creation of a public corporation, the Anacortes Public Development Authority (APDA), to establish a redevelopment plan for the site (City of Anacortes 2002; Walbeck 2002). Through the City's Community Renewal Act, the APDA would have the power to develop a Community Renewal Plan and assist the landowners in the cleanup of the site (City of Anacortes 2002; Walbeck 2002). The development of a public authority such as APDA would allow the City to leverage Federal funds to support remediation efforts.

At that time, the City of Anacortes aimed to obtain a Consent Decree from Ecology enabling it to pursue a phased approach to the cleanup of the Custom Plywood Site (Goodman 2008a; Munce 2007). The Seattle firm URS worked with the City, APDA, and CTED to develop a $68,000 funding package to support cleanup costs. The City planned to initiate cleanup efforts for the uplands portion of the site, which once cleaned could be sold (Munce 2007). The proceeds from the sale of the uplands portion of the site would then be used to repay any outstanding loans and the profit would be shared evenly with the Anacortes Joint Venture, the landowners at the time (Walbeck 2002). The City's portion of the profits would be used to cleanup the aquatic portion of the site (Munce 2007). The phased plan collapsed when landowners and the City were unable to negotiate a price for the property and Ecology did not provide a Consent Decree. At the time, Ecology was unable to pursue a Consent Decree due to fiscal constraints and concerns regarding wood waste, as described in the previous section.

Gilbert Villarreal, President of Concorde, was the owner of the Northern Marine site, adjacent to the Custom Plywood site. In 2006, Mr. Villarreal purchased the Custom Plywood site and soon afterwards sold the Northern Marine site. Though no formal redevelopment plans have been submitted for the Custom Plywood site, based on conversations between Ecology and Mr. Villarreal, it was suggested that the possible intended use for the site and the neighboring Northern

Marine site was to operate a boat launch. However, as previously mentioned the current depth of the channel is below Federal regulations and would require substantial dredging.

In early 2006, Concorde proposed to clean up the site through a Consent Decree with Ecology. At that time, however, Ecology did not have the resources to assist Concorde and instead suggested the VCP (Means and Caldwell 2007). The Washington State Department of Community, Trade, and Economic Development (CTED) worked closely with Concorde to encourage cleanup under Ecology's VCP by providing RLF funding to the landowner. CTED promoted VCP as the means for a private landowner to leverage State funds, such as assessments funds for Phase I and II, loans under the Revolving Loan Fund Program (RLF), and other Federal funds, for cleanup efforts. RLF funds are also made available to private landowners who seek to cleanup their sites through a formal agreement with Ecology.

But by the end of 2006, given the uplands and aquatic characteristics of the site contamination, Ecology was no longer in favor of a cleanup through VCP, concerned that the issuance of a NFA letter was not sufficient enough to ensure comprehensive cleanup (Means and Caldwell 2007). As cleanup standards are further refined and legislations made more rigorous, sites processed under VCP could require additional cleanup. By November 2006, Ecology was interested in pursuing cleanup through a formal agreement with Concorde, while CTED continued to promote a VCP approach, by offering funding for the assessment of the in-water portion of the site. And in 2007, CTED funded a $33,000 grant to conduct benthic/eelgrass surveys, carried out by Geomatrix, on the marine properties owned by the City, Concorde, and DNR (Goodman 2008). According to Ecology a benthic study would assist a property owner to acquire water permits to do aquatic remediation work (Means and Caldwell 2007).

CTED and Concorde were concerned that a formal agreement would make Concorde financially responsible for the entire cleanup and believed that there would be no financial assistance through grants or loans such as RLF funding. As previously stated, RLF funding is available to private landowners who enter into an agreement with Ecology. However, this issue still needs clarification since CTED's RLF website states that as part of a site's eligibility for loans, "The cleanup must also be approved through the Department of Ecology's *Voluntary Cleanup Program*" (WA CTED 2008). To date, no formal applications to VCP or to CTED have been submitted by Concorde.

On June 12, 2007 Ecology issued a preliminary PLP status letter to Concorde. Concorde, in turn, accepted its status as PLP for the site by waiving rights to notice and comment (WSDE 2007c). On July 13, 2007 Concorde was formally notified of its status as PLP (WSDE 2007c). An Agreed

Order between Ecology and Concorde was negotiated in late 2007, and put forth for public comment from November 30, 2007 to January 2, 2008. The agreement stipulates that according to MTCA, Concorde must conduct RI/FS and draft a Cleanup Action Plan (CAP) based on the results of the RI/FS (WSDE 2007b,c). Remedial action costs incurred by Ecology must be reimbursed by Concorde (WSDE 2007c). In addition to these requirements, Concorde is to fence the property and post warning signs, in addition to removing all physical hazards, such as concrete and steel debris remaining from past industrial activity (WSDE 2007c). Once cleanup has been completed, a Consent Decree between the landowner and Ecology will be negotiated.

In December 2007, GBH acquired the Custom Plywood site and the company is negotiating an Agreed Order with Ecology (Goodman 2008a,b). GBH has indicated intentions of using the site for boat storage, although, negotiations regarding water access have not taken place between the new landowner and the City (Goodman 2008a).

5.5.6 Effectiveness—what worked, and did not?

The Custom Plywood site is in the initial stages of working towards remedial actions, therefore the effectiveness of cleanup cannot be assessed. Nonetheless, there are concerns regarding the involvement of stakeholders and the transparency of information regarding cleanup. Though the City spent considerable resources, in terms of time and effort, developing a phased approach for the cleanup of the site, it is unclear what role the City of Anacortes is playing during recent proceedings. The City has expressed apprehension at being excluded from the process. Based on discussions with City representatives, significant local concerns and doubts regarding the cleanup of the site remain. However, local representatives were optimistic for the future, and noted that the Puget Sound Initiative has improved relations with Ecology.

As a streamlined process, VCP can provide expedited cleanup options for certain types of brownfields. In the case of Custom Plywood, the combination of soil and aquatic contamination made the site a questionable fit for the VCP program. The fact that two State agencies, Ecology and CTED advocated for different cleanup approaches suggests a need for better coordination and clearer inter-agency guidelines for assessing remediation actions for sites. In addition, there was confusion regarding a private landowner's access to RLF moneys under a formal agreement; it was suggested that Mr. Villarreal would not be able to access these funds should he enter into a formal agreement with Ecology. As previously stated, RLF moneys are available to private landowners who have negotiated a formal agreement with Ecology, but this is not the message that CTED's RLF program provides on its web page.

5.5.7 Links to Economic Development

Economic studies of the redevelopment have not been carried out at this point, and any jobs brought to the site, increased value of adjacent parcels, or projected increase in tax revenue for the city is undetermined at this point and depends on future use.

5.7.8 Issues Raised/Lessons Learned

- This case illustrates Ecology's lack of effective powers to require or arrange for cleanup of sites that have serious pollution before property transfers. Although, since 1993, several sets of samples have been taken at the site that showed significant land and water contamination, and some limited remediation has occurred, no site RI/FS has yet been completed for this site. And this is for a site that, in 2001, Ecology gave a hazard rating of "1", with the highest priority for cleanup.
- The City of Anacortes in 2002 tried to organize itself through a redevelopment district to clean up and redevelop the site, and enter into a consent decree with Ecology. Site contamination issues and lack of resources prevented Ecology from reaching an agreement with the City. The Puget Sound Initiative provides another opportunity for the City and Ecology to partner to finally clean up this site. But this episode clearly illustrates a major disconnect between two parties who are natural partners.
- In 2006, the private owner was willing to clean up the site, but disagreements between Ecology and CTED over which administrative path would be best to pursue, and eligibility criteria for CTED's RLF delayed the process for at least a year. This indicates a need for a closer working relation between Ecology site managers and the CTED brownfields coordinator.
- Lack of adequate funding for private owners of this site has also delayed the cleanup. In 2006, the private owner was willing to cleanup his site, but he needed financial help. But sources of funds for private parties in Washington State are limited, and it is more difficult to estimate the cost of cleanup of complex soil and aquatic contamination. Also, these cases are more likely to be liable for natural resources damages, and reopeners, and have greater need for liability insurance.

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5.6 Jimmycomelately Creek

The cleanup of the Jimmycomelately Creek (JCL) and south Sequim Bay complements a larger, integrated restoration project of wildlife habitats in Sequim Bay, off Washington's Olympic Peninsula. Until early 2001, the intertidal zone at the mouth of the JCL was used as a log storage and shipping yard and was one of the top six sources of pollution of Sequim Bay; the yard's pilings were treated with creosote, the source of PAH contamination. Following mounting concerns for declining fish populations in the creek and increased flooding in south Sequim Bay, the Jamestown S'Klallam Tribe, along with the Clallam Conservation District, Clallam County and handful of other stakeholders sought to realign the creek and restore the surrounding habitats. A phased project was collaboratively planned and funded through multiple grants. This case focuses on the cleanup, included in project's phase two, that involved the removal of 99 creosote treated pilings, the structures which made up the former log yard. This cleanup was carried out with the assistance of EPA's Brownfields Program and conducted under the Tribe's jurisdiction, US EPA and other federal agencies provided oversight. Ecology was not involved. In concert with the successful "undevelopment" or brownfield to greenfield redevelopment of the JCL Creek and the healthy return of wildlife, the removal of the contaminated pilings has reduced the total PHA contamination levels in the area of the former log storage and shipping yard.

5.6.1 Site and Regional Description

The Jimmycomelately watershed comprises an area of 15.4 square miles, of which the Jimmycomelately Creek is the main tributary which flows directly into Sequim Bay. Located along the northern edge of Washington state's Olympic Peninsula, the City of Sequim was incorporated on October 31, 1913 and currently has a population of 5,330 people. The city's name is derived from "S'kwim" meaning quiet waters in the native language of the S'Klallam Tribe. The Jamestown Reservation is located south-east of the city, along Highway 101 on 20 acres of land along the southern shores of the Straight of Juan de Fuca. There are currently 574 registered tribal members of the Jamestown S'Klallam Tribe; the majority of the tribal members live in Clallam and Jefferson counties (JamestownTribe 2008).

The JCL Creek and its surrounding area has traditionally been an important gathering, fishing and shell fishing ground for the Jamestown S'Klallam Tribe. Chum salmon, an ESA listed species, is indigenous to the creek and is now nearly extinct; there is an established and historically significant summer chum salmon run in JCL. In 1999, only 7 chum salmon return to their JCL spawning

grounds (Newberry 2003). The restoration of this area is thus vitally to the local tribal economy, as well as for historical and cultural reasons.

5.6.2 Site Background

The site itself is a 7.3 acre site at the mouth of the Jimmycomelately Creek, which was the location of an industrial log storage and shipping yard facility. It was one of the top six most polluted sites on Sequirm Bay. From 1892 to 2001, the intertidal zone at the mouth of the JCL Creek was used for the storage and shipping of logs. Timber logged throughout the Olympic Peninsula was brought to the storage yard for sorting and was rafted in preparation for transportation to regional sawmills by way of the Straight of Juan de Fuca and the Puget Sound. Logs were tied to pilings, pilings which had been treated with creosote. To further facilitate the storage and shipping of logs, JCL Creek was relocated, channelized, and straightened to provide straight drainage into the bay and facilitate the settlement of a community known as Blyn (Newberry 2003; NRCS 2007). Surrounding wetlands were filled for commercial uses, such as a mill.

By the late 1990's, as part of the broader JCL Creek restoration project, land and easements in the area of the storage yard were acquired by the Jamestown S'Klallam Tribe, Washington Department of Fish and Wildlife (WDFW), and Washington State Department of Transportation (WSDOT). Based on survey work completed, 104 pilings were identified in the storage yard, 99 of which were found to have been treated with creosote (Weston Solutions 2006), a wood preserver employed for commercial usage (EPA 2008). The pilings that make-up the footprint of the storage yard occupy tidelands of eelgrass and mudflat habitats which support a variety of shellfish species and salmon. In addition, the accumulation of sediment deposits at the mouth of creek restricted the passage of salmon and eventually became a serious flooding hazard (NRCS 2007).

The 'Undevelopment' of Jimmycomelately Creek

The cleanup of the JCL Creek and south Sequim Bay are only a portion of a larger integrated program to rehabilitate the creek for the protection of culturally significant local wildlife, in particular chum salmon and shellfish populations. The goals of the phased project are to realign the creek; restore the estuary habitat by removing non-native species and replanting native vegetation along the realigned stream course; and, to reduce flooding hazards in the southern portion of the bay, which had resulted in the closure of highway 101 at times, closing off access to the northern portion of the Olympic Peninsula.

Sam Bobboney, former project coordinator, explains:

> "We like to call it an 'undevelopment' project [.] The goal is to pull back the human development that has occurred and give the creek and the estuary a chance to move and do its thing naturally. That's a driving philosophy behind the restoration project; we are not really in the business of trying to create habitat so much as we are in the business of giving some room in form and function and letting the habitat recreate itself" (Sustainable Northwest 2007).

Please refer to Table 20a for a brief outline of the four phases of the restoration project and Table 20b for the project's budget.

5.6.3 Contamination Description

The contamination area, affected by the creosote treated pilings that made up the former log storage and shipping yard, comprises 7.6 acres of mostly shallow waters in the south end of Sequim Bay. As a derivative of coal tar, creosote is composed primarily of polycyclic aromatic hydrocarbons (PAHs) as well as smaller amounts of phenolic and sulfur, nitrogen and oxygenated compounds (Weston Solutions 2006). Pre-extraction analysis of PAH levels in the yard would help determine the effects of removing the piling on the areas which were currently harvested by the Jamestown S'Klallam Tribe. According to the EPA (2008a), PAHs and tars were leached into the water column, thus posing a safety hazard; each piling was reported to have contained between 30 to 40 gallons of the contaminant.

Collected samples included sediment and clam tissue samplings which were analyzed for PAHs. Included in the analysis was water-column monitoring for the detection of suspended particulate matter and PAHs (Weston Solutions 2006). The results from the pre-extraction analysis would help determine the method used for the removal of the creosote treated pilings.

Table 20a: Restoration Project Phases		
Phase One	*Channel Realignment*	Completed in 2003
	Construction of the new creek is located west of the former channel & is 3,500 feet long. It is designed to meander naturally in both freshwater and intertidal areas	
Phase Two	*Estuary Restoration & Fill Removal*	Completed in 2005
	- Includes the removal of a log deck road, Old Blyn Hwy, log yard pier and wetland fill. - Restoring log yard to 1870 shoreline conditions and remove creosote log yard pilings - restore Dean Creek and RV park area and remove sediment accumulation at old creek mouth - acquire and restore private properties within project area - provide public access and interpretation along the Olympic Discovery Trail	
Phase Three	*Bridge Replacement*	Completed in 2004
	Construct new Hwy 101 bridge over the realigned channel. Design accommodates flood flow, allows sediment transportation to the bay and improves fish and wildlife passage.	
Phase Four	*Diversion of Existing Creek Flow*	Completed in 2004
	Majority of stream flow diverted into the new channel. The old channel closed in summer 2005	

Table 20b: Restoration Budget Summary	
Estuary and Riparian Acquisition	$2,645,000
Estuary and Salt Marsh Restoration	$1,200,000
Restoration Planning and Monitoring	$ 262,500
Channel Relocation and Restoration	$ 450,000
Bridge Design and Construction	$ 1,400,000
Total	***In-kind contribution + $5,957,500***
Source: Jamestown S'Klallam Tribe	

Sediment Samples

Sediment cores samples were taken between December 7th and 9th 2004 and again January 6th 2005 in the vicinity of 12 pilings. These samples were taken at different intervals or strata throughout the former shipping yard's footprint to determine the levels of horizontal and vertical

PAH contamination (Weston Solutions 2006). Samples were collected using three methods depending on the location and tidal access: piston corer sampling for collection close to the pilings; hand auger for those areas accessible during low tides; vibracore sampling for deep core samples, but at a distance from structures such as pilings (Weston Solutions 2006). Samples using the piston corer were collected at 2" and 6", at 6" with the hand auger, and at 12" with the vibracore. All surface samples indicated detectable levels of PAHs while only one of the subsurface samples (sample B3) evidenced creosote odor or sheen; the substance collected in sample B3 was not creosote but another petroleum product. Subsurface samples were statistically significantly lower in contamination concentrations than surface samples. PAH concentrations were highest in those samples taken closest to the pilings (1,261 µg/kg dw to 386,726 µg/kg dry weight) and concentrations decreased as one moved away from the pilings. Samples taken at 2" showed the highest concentration of PAHs, ranging from 1.13 to 235 times those sampled at 6", while those collected at 12" showed the lowest concentration of PAH (59 µg/kg dw to 5,258 µg/kg dw), which were below WA Sediment Quality Criteria (Weston Solutions 2006, p. 35). In all, the distribution of PAHs was considered "patchy" and no consistent pattern could be established between levels of contamination and piling type[80]. Visual analysis (above the water) of the pilings were not consistent with their chemical analysis; pilings considered to have the highest concentration of PAHs based on their creosoted appearance indicated low to moderate levels of PAHs while pilings observed not to be heavily creosoted indicated high levels of contamination.

> "This may indicate that there is no relationship between piling appearance and sediment PAH concentrations. However, this could also indicate that pilings which appear to be weathered and less heavily creosoted (based on the above-water observations) may be related to creosote that has sloughed or lost into the sediments" (Weston Solutions 2006, p. 36).

Analysis indicates that surface sediments were composed mainly of fluoranthene, phenanthrene, and pyrene, "with relative contribution of other PAHs such as naphthalene, acenaphthene, and chrysene increasing in samples with lower total PAH concentrations" (Weston Solutions 2006, p. 36). Suspended sediments and turbidity measurements were taken because "the creosote-related PAHs in the sediment surrounding the pilings are likely to be strongly bound to the sediment and organic particles,

[80] Single pilings versus dolphin pilings, which is a quasi-symmetrical assemblage of single pilings.

suspended...[thus]...sediment monitoring was used to provide additional information regarding the potential redistribution of PAHs ” (Weston Solutions 2006, p. 17).

Tissue Samples

Clam tissue samples were collected from Japanese littleneck and native littleneck specimens on November 30, 2004, “from [three] locations that represent a presumed concentration gradient in sediments from high PAHs to low PAHs ” (Weston Solutions 2006, p. 14) and were limited to intertidal areas exposed during periods of low tides. The availability of samples was inconsistent throughout the footprint of the former storage and shipping yard. Clam tissue samples were also collected from control sites within Sequim Bay, 150m and 500m from the yard.

Tissue analysis indicated that PAH concentrations decreased as distance from the pilings increased; total detected concentrations ranged from 0.0 µg/kg to 7,726 µg/kg (Weston Solutions 2006). “The highest observed concentration for any constituents was 350 µg/kg, despite higher concentrations in the co-located sediment ” (Weston Solutions 2006, p. 48). Thus shellfish tissue samples did not indicate the same level of contamination concentration as co-located sediment samples.

5.6.4 Cleanup Description and Contamination Removal

The Jamestown S'Klallam Tribe initiated the JCL Creek and Sequim estuary project in the 1990's as a direct result of growing concerns for diminishing chum salmon populations and increased flooding hazards. By the summer of 2002, the Tribe began the process of restoring meanders in the JCL Creek (NRCS 2007), while the actual cleanup, that is, the removal of the 99 creosoted pilings located to the west of the creek's mouth was initiated in 2003. The voluntary cleanup of the former log yard was largely funded through the EPA's Brownfield Program; the Jamestown S'Klallam Tribe received a $156,000 Brownfields Grant. The restoration projects total budget, not including in-kind support and contribution, is estimated at nearly $6 million. As property owner, program designer and coordinator, the liability and risk of cleanup was carried by the Jamestown S'Klallam Tribe. By March 2006, the final report for the cleanup was issued by Weston Solutions, the consultants.

Pre-Extraction Monitoring

Pre and post extraction monitoring was conducted to determine if and how removal activities would have an impact on sediment and shellfish contamination levels. Initial samples taken from control sites outside the former log yard footprint in south Sequim Bay evidenced no detectable levels of PAHs, indicating that the contamination from the creosote treated pilings had not spread throughout the bay. According to sediment samples, PAH contamination was highly localized to the area immediately surrounding the creosoted pilings, limited to those samples within 12" to 48" of the pilings. The concentration of contamination decreased significantly as the distance from the pilings increased; samples collected 2" away from pilings had PAH contamination values on average 29 times greater than those from 6" away and 90 times that of those 12" away (Weston Solutions 2006). Those samples collected from the immediate area of pilings had total PAH contamination values ranging 677 to 189,868 µg/kg (dw) (Weston Solutions 2006). In addition, contamination was found to be limited to depths above two feet, thus mostly concentrated in surface sediment, with the exception of a few hot spots (Weston Solutions 2006).

The analysis of PAH concentrations provided vital data to assist in the rehabilitation efforts for the JCL Creek's chum salmon run; of particular interest is the impact of contamination on the foraging areas for out-migrating juvenile salmon. PAH concentrations above certain standards, as measured according to Ecology's Sediment Quality Standards (SQS) and Sediment Cleanup Standards (CSL), are considered to cause adverse effects to wildlife. Randomly selected samples from 10 test areas within the footprint of the former log yard demonstrated values below SQS and CSL threshold, though samples from 3 test areas exceeded SQS threshold and 2 exceeded CSL standards (Weston Solutions 2006).

Piling Extraction

The pilings from the area of the former log storage and shipping yard were removed on July 25th, 27th, and 28th 2005 using a vibratory hammer suspended from a crane stationed on a work barge. A tug boat was used to maintain the location of the work barge, a necessity in the absence of operating spuds which would have held the barge in place. The hammer was placed on the head of each piling in order to loosen the structure from the bedded sediment (Weston Solutions 2006). Once loosened, the piling was removed and stored within a containment basin on the deck of the work barge. In order to contain oil sheen and creosote treated wood debris from spreading beyond the extraction site, floating oil booms and absorption pads were placed around each piling prior to it extraction.

Extraction Monitoring

During the removal process, suspended-sediment plumes were created by the maneuvering tug boat, which made it difficult to assess the spread and length of time the plume would remain; the tug was in constant operation in order to maintain the location of the work barge. PAH concentration remained unchanged or increased slightly during the application of the vibratory hammer. Pilings removed from the bedded sediment did create sediment plumes which did at times result in small surface slicks. In some cases, extractions were followed by "large amounts of creosote and gas bubbles" which would create a surface slick around the immediate work area (Weston Solutions 2006, p. 53). Sediment plumes visibly reached the mouth of JCL creek. Water samples around the removed pilings were collected at different time intervals and from at three levels/depths (bottom, mid and surface) to measure PAH concentrations. Piling extractions resulted in a detectable increase in PAH concentrations along the bottom, with the highest concentrations ranging from 100 to 200 μg/L . However, elevated concentration of PAH were identified in all three measurable depth-ranges, without subsiding within 5 minutes of the extraction. The following were identified PAHs in the collected water samples: acenaphthene, fluorine, phenanthrene, anthracene, fluoranthene, and pyrene (Weston Solutions 2006). At the end of each day during the removal period, control sites in central and eastern south Sequim Bay were monitored and indicated that there were no measurable amounts of PAHs in the water; thus there was no migration of materials from the extraction site in the former log yard to other portions of the south Sequim Bay.

Aside from Washington's Administrative Code (WAC) 173-201A-240 on surface water criteria for toxic substances (Washington State Legislature), the State of Washington does not have ambient water quality criteria for *total* PAH in the water (Weston Solutions 2006). Consultants from Weston Solutions used guidelines published by NOAA which demonstrated that concentration levels recorded during the extraction of pilings were below those specified by the NOAA guidelines.

Post-Extraction Monitoring

Following the extraction of the pilings, 50 randomly collected surface and sediment samples were taken from the area of the former log storage and shipping yard, in the surrounding areas and near the mouth of the JCL Creek. Sediment samples were taken five weeks after the extractions were completed, on September 7, 2005. Samples were also taken from two control sites; all yard and control sediment samples indicated low concentrations of PAHs, with total PAH concentrations ranging from 0 to 500 μg/kg dw (Weston Solutions 2006). In addition, an analysis of 18 PAHs and

TOCs were conducted on 8 of the yard samples and 2 from the control sites; results were relatively low, ranging from 57.4 to 576 µg/kg dw.

In contrast to pre-extraction monitoring, post-extraction samples demonstrated low concentrations of PAHs. Clam tissues samples also demonstrated lower concentrations of PAHs; post extraction samples were comparable to those pre-extraction samples taken *at a distance* from the pilings. According to the Weston Solutions' health risk assessment, post-extraction collected clam tissue samples demonstrate that the low concentrations of carcinogenic and non-carcinogenic PAHs would cause, "no unacceptable increased cancer [or health] risk to tribal members or the public from the consumption of clams currently found in the former log yard (2006, p. 94). As post-extraction sediment samples equally indicated dramatically lower concentrations of PAHs in contrast to pre-extraction samples, contact with sediments posed minimal risk to humans. These results also indicate that there was no significant redistribution of creosote contaminated sediments in south Sequim Bay as a result of the piling extraction, a significant concern held by the WSFW. The low concentrations are below SQS and CSL standard and therefore do not represent a significant risk to invertebrates and fish in the area.

5.6.5 Key Arrangements

Key to the cleanup efforts at the JCL Creek is the rehabilitation of the estuary's natural and culturally significant habitats. The Jamestown S'Klallam Tribe, in partnership with consultants and other government and non-government stakeholders, were very successful in leveraging considerable funds to finance the projects outlined by the program's phased approach. The successful monitoring and removal of the creosoted pilings is indicative of a well structured and coordinated integrated approach to brownfield redevelopment.

Published information on individual achievements, such as the cleanup effort, within the overall rehabilitation project are limited. As the Jamestown S'Klallam Tribe was enormously successful are attaining multiple grants to complete this integrated project, a complete list of stakeholders and funders is provided in Tables 21 and 22 below.

Table 21. Restoration Team and Roles

Jamestown S'Klallam Tribe	Property owner, project design and coordination
Clallam County	Permitting, roads and infrastructure, & Olympic Discovery Trail
WDFW	Land acquisition, technical assistance
Clallam Conservation District	Channel Relocation and vegetation assistance
Environmental and Engineering Consultants	Shreffler Environmental, Sam Gibboney Engineering & ESA Inc.
US EPA	Technical Assistance
WSDOT	Hwy 101 bridge design, land acquisition, technical assistance
USFWS	Construction assistance
Local landowners	
Source: Jimmycomelately Creek Restoration Brochure, Jamestown S'Klallam Tribe	

5.6.6 Effectiveness – what worked and did not?

The well coordinated efforts of this EPA funded, voluntary cleanup resulted in the successful removal of contaminants from a unique aquatic environment. The project was coordinated by a project manager hired by the Jamestown S'Klallam Tribe. This central structure for project management assisted the project's coordination amongst multiple stakeholders. EPA and other federal agencies provided oversight on the cleanup and restoration, and Ecology was not involved. Given the nature of the site's reuse as a creek rehabilitation project, the stakeholders' ability to leverage such considerable funds is remarkable. Pre, during and post extraction monitoring was an effective means of mapping the changing concentration of PAH contamination and directly attributing the pollution of the creek and south Seqium Bay to the presence of the pilings.

One of the most direct results of the cleanup efforts has been the vital return of spawning chum salmon to their traditional grounds in the JCL Creek. Since 2003, over 460 chum salmon have returned to spawn in JCL creek, a significant increase since the dismal count of 1999. Efforts to 'undevelop' the Creek and remove the creosote treated pilings have had significantly positive impacts on a very unique species of Pacific Ocean salmon.

Table 22: Financial Assistance for Overall Restoration Project

Agency	*Amounts & Projects*
NOAA/NWIFC – Pacific Coastal Salmon Recovery Program	Bridge Construction FY 2000 - $1.34 million Restoration & Acquisition FY 2000 - $133,607
USFWS – North American Wetlands/Conservation Act & National Coastal Conservation Grant	NA Wetlands/Conservation Act -
	National Coastal Conservation Grant – $977,243[81]
US EPA – Wetland Protection Program, CWA Sections 106 & 319, Brownfields, GIS Grants	Wetland Protection
	CWA Sections 106 & 319- ($294,683)[82]
	Brownfields - $156,000
	GIS Grants
US BIA – Watershed Projects, Jobs in the Woods	Watershed Projects
	Jobs in the Woods
USDA – Farm Service Agency, Conservation Reserve Enhancement Program	Farm Service Agency -
	Conservation Reserve Enhancement Program -
WA DNR – WA Aquatic Lands Enhancement Account	NA
WA Ecology – WA Centennial Clean Water Fund	NA
WA IAC – WA Wildlife & Recreation Fund	NA
WA SRFB – WA Salmon Recovery Fund	
WSU Cooperative Extension	
Source: List of stakeholders from Jimmycomelately Creek Restoration Brochure, Jamestown S'Klallam Tribe. Amounts/Project Names from Agency websites	

5.6.7 Links to Economic Development

Though no economic studies have been conducted to date, the economic relevance of the cleanup efforts at the JCL Creek could provide for new tourism and recreational opportunities. Most notable is the Olympic Discovery Trail, a 120 mile non-motorized multi-user transportation system connecting communities in northern Olympic Peninsula. Starting at the eastern end, the trail extends between Port Townsend to the Pacific Ocean and roughly follows portion of the former Chicago,

81 The National Coastal Conservation Grant awarded to the Dungeness-Meadowbrook Coastal Wetlands and Estuary Habitat application of which the Jamestown S'Klallam Tribe was a partner, along with Audubon/Rainshadow Natural Science Foundation, the North Olympic Land Trust and the North Olympic Salmon Coalition. The Washington Department of Fish and Wildlife, in cooperation with the Salmon Recovery Funding Board, will protect--through a combination of acquisitions and easements 140 acres in the Dungeness and Meadowbrook Creek Estuary. A variety of salmon species will benefit from this project. The State share was for $344,090 and partners' $83,300 for a total $1,424,633. SOURCE: U.S. FISH AND WILDLIFE SERVICE GRANTS FUND WETLAND CONSERVATION – November 18, 2002

82 Tribes become eligible to compete for and administer funding available under Section 319 of the Clean Water Act . According to the EPA's grants database, the Jamestown S'Klallam Tribe was the recipient of 13 grants totaling $944,010. It is unclear how the moneys were allocated to the project or the individual phases of the project. Grants under CWA 106 and 319 are: CD – 98042901-0, C9 – 98083501-1, I – 99046900-0, I – 99046997-2, I – 99046998-1, I – 99046999-0.

Milwaukee, St. Paul, and Pacific Rail Road right of way. Currently, 2 segments of the trail are complete, Port Angeles and Sequim, totally approximately 30 miles of active trail. Access to the water will be provided along the train, which would allow people to access by kayak new shorefront environments.

The Jamestown S'Klallam Tribe does harvest various species of clams in the and around the footprint of the former log yard. Based on human health risk assessments conducted by Weston Solutions, the consumption of shellfish and salmon collected from the area is now deemed safe which has a positive impact of the economic viability of the area. In addition, the returning chum salmon to their traditional spawning grounds could be assessed as having a regionally significant economic impact.

5.6.8 Issues Raised/Lessons Learned

Community Planning and Stakeholder Involvement

- The Jimmycomelately Case illustrates the role that a well-planned effort involving the various stakeholders has in ensuring a successful outcome. The Jamestown S'Klellam Tribe demonstrated great skill in obtaining support and financial assistance from multiple federal and state agencies. The case highlights the role and skills of Washington State Tribes in addressing brownfields.

From Brownfields to Greenfields

- The project is a model for turning a brownfield site into a greenfield or 'undeveloping' a site, as the Tribe describes it.
- It demonstrates that brownfields exist in rural settings, and shows the extent to which a brownfield in a crucial location can have pervasive effects on natural resources, including endangered salmon population, and how its cleanup can provide substantial public benefits.

Technical Concerns

- Unlike other sites studied for this report, the unique aquatic conditions surrounding this cleanup effort presented the project managers and consultants with concerns over the spread of contamination as a direct result of the piling extraction. The successful monitoring strategies could be well employed in future projects with similar parameters.
- The monitoring process indicated several areas of significant information gaps. According to Weston Solutions and, similarly, as briefly discussed in the Custom Plywood case study, Washington currently does not have water quality criteria for total PAH contamination levels, which required the Tribe's consultants to use NOAA standards.

- The analysis of PAH contamination around pilings noted the lack of information in cleanup assessments regarding the horizontal distribution of contaminants. Currently, there is little data which maps the horizontal distribution of contamination in aquatic sites. The Jamestown S'Klallam Tribe's phased approach to rehabilitating the JCL Creek and south Sequim Bay provided a unique opportunity to better understand the horizontal spread of PAH contamination in piling-structured site and could be used as a standard for assessment.

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5.7 Kendall Yards, Spokane

Formerly used by the railroad industry as a locomotive repair and servicing complex, the Kendall Yards site, also known as the River Front Properties site, (hereafter Kendall Yards) is now being developed into a mixed-use urban village along the Spokane River. The award-winning cleanup of the site is a strong example of successful public and private collaboration towards the remediation and reuse of a brownfields. Cleanup was performed under Ecology's Voluntary Cleanup Program with the ultimate goal of achieving MTCA standards for unrestricted future development. A review of the case study reveals a streamlined and cooperative cleanup effort and highlights the importance of managing a project comprehensively, i.e. incorporating reuse goals as primary drivers for remedy selection and implementation. The project also used an innovative approach to Ecology's site management by dedicating a single experienced site manager to provide timely and decisive oversight and consultation for the investigation and cleanup.

Site and Region Description

The 78 acre Kendall Yards site is located along the Spokane Riverfront in Spokane, WA, the metropolitan center of the inland northwest. The site, which is made-up of 14[83] parcels, lies northwest of downtown Spokane. The general boundaries of the Kendall Yards site run from Summit Boulevard on the west to Monroe Street on the east, from Ohio Avenue to the south and Bridge Street to the north. The site, once part of a busy railroad corridor, housed a rail yard complex, various industrial operations, and a few County warehouses.

The City was settled in the early 1870's as Spokan Falls[84] by the Native American tribe known as the Spokanes, which means the Children of the Sun (City of Spokane). On November 9, 1881, the City was incorporated; it encompassed an area of 1.56 square miles and 350 residents. The City suffered a tragic fire in 1889 which destroyed 32 blocks in the downtown's commercial district.

In 1974, Spokane hosted the World's Fair. A former railroad yard was converted into parkland, the Riverfront Park, in order to host the fair; the park is located on the easternmost edge of Kendall Yards. Today, Spokane is home to nearly 200,000 within the city proper and over 400,000 within the metropolitan area; it's the second largest city in the State of Washington. Timber, agriculture and mining industries have historically and continue to be significant economic drivers for the City of Spokane. The region has also attracted numerous manufacturing operations because of the easy access to primary materials and affordable energy, thanks to its significant river ways.

[83] A small section of Parcel 12 is not included in the Kendall Yards site (WSDE 2006).

[84] Spokane Falls - The "e" was added to Spokan in 1883 and "falls" was dropped from the official name in 1891.

Today, Spokane's economy is well diversified and includes a strong health care sector and other service-oriented industries.

Site Background

Kendall Yards was used as Union Pacific's (UP) repair and servicing complex from 1914 to 1955 (GeoEngineers 2006). Servicing both coal and oil-fired steam powered equipment, the main complex (parcels No. 2 and 3), located on the western portion of the site, housed a railroad turntable, above ground oil storage tanks, oil distribution pipelines, and a six-stall engine house (GeoEngineers 2006, Morlin 2007). Please refer to Figure 16 for a map of the site and the location of various property parcels. Running from east to west was Great Northern's (GN)[85] sunken railroad corridor along the northern portion of the site while the southern edge was occupied by UP's corridor; these corridors were abandoned from 1955 to the 1980's. (GeoEngineering, 2006) Portions of the elevated UP corridor were dismantled and the sunken GN corridor was filled to match the existing site grade (GeoEngineers 2006). Historically, parcels 6 through 10, and portions of 11 were used for light industrial and commercial uses: these historic operations included the Inland Empire Plating Company, the former Spokane County Purchasing Department Warehouse, the former Spokane County Auditors Warehouse, the former Spokane County Paint and Sign site (GeoEngineers 2006).

Both UP and GN used separate bridges onto the site; UP a viaduct at Cedar Street and Ide Avenue and GN near Monroe Street and Ide Avenue (Morlin 2007). Both bridges were demolished in the 1970's when a former railroad along the eastern edge of Kendall Yards was dismantled to make room for the 1974 World's Fair. UP and GN eventually abandoned the use of their rail yards along the north shore of the Spokane River and moved their operations south of the river, between First and Second Avenues (Morlin 2007). Neither railroad company was involved in the cleanup of the site.

The property eventually came under the ownership of Metropolitan Mortgage and Securities Company, which declared bankruptcy under Chapter 11 protection in February 2004. Prior to declaring Bankruptcy, the company had planned to develop the site, with the assistance of Seattle-based firm Nitze-Stagen, as a new urbanism village; a live, work, and play neighborhood with 1,500 housing units and 780,000 square feet of commercial and retail space (Boggs 2004, 2004a) The site, known as the Summit property was auctioned in federal bankruptcy court, with a minimum bid of

[85] In 1970, GN became part of the Burlington Northern which is now know as BNSF Railway Company (Morlin 2007)

$12.35 million. The property was purchased by Marshall Chesrown of River Front Properties, in November 2004 with plans to reuse the site as a mixed-use development.

What remained on the site prior to cleanup in 2005 and the commencement of construction activities in 2008 was concrete debris, foundations, railroad trestles and timbers, and concrete, asphalt, rock and soil fill (GeoEngineers 2006).

Contamination Description

Contamination at the Kendall Yards site results from historic railroad and industrial operations: leaks and spills of Bunker C oil from storage and distribution facilities and the disposal of ash and other contaminated debris from railroad operations (GeoEngineers 2006). Contaminants located on the site include petroleum hydrocarbons, metals such as arsenic, cadmium, and lead, volatile organic compounds (VOCs), and polycyclic aromatic hydrocarbons (PAHs.)

Phase I and II Environmental Site Assessments (ESA) were conducted for parcels 1 through 3, the site of the railroad repair and servicing complex, in 1990 and 1991 by Bison Engineers and Dr. Gordon Bopp (GeoEngineers 2006). In the vicinity of the elevated UP corridor, arsenic, cadmium, and lead contamination were discovered in the soil during Phase II of the ESA. Bunker C oil was detected following the former fueling lines which run through parcels 2 and 3 as well as in a pre-1955 spill area in parcel 2. Asbestos-containing materials (ACM) were located south of the UP railroad embankment.

In 1992, RZA-AGRA engineering and environmental consultants conducted an additional Phase II assessment which included the collection of 105 soil samples from 37 test pit explorations; the test pit explorations were selected based on a 200-foot sampling grid of parcels 1 through 10, 12 and 13 (GeoEngineers 2006). Based on the sample data and field observation, it was reported that a thick layer of black ash located within the upper 2 feet of soil of the UP railroad embankment was the source of elevated metals concentrations at the site. The report also indicated the presence of Bunker C oil, at a depth of up to 30 feet within the area of the upper and lower fuel spill area in parcels 2 and 3. A second Phase II assessment was conducted by RZA-AGRA in September 1992 to investigate the fill conditions along the former sunken GN railroad corridor along the northern portion of the site (GeoEngineers 2006). For the investigation, 9 test pits were excavated at depths ranging from 13 to 27 feet below grade to identify the presence of petroleum hydrocarbons (TPH) and metals such as arsenic, cadmium, and lead. Based in the investigation, it was reported that levels of metal concentration did not exceed MTCA Method A cleanup standards. Some elevated levels of TPH were detected, but RZA-AGRA reports that these are a result of buried asphalt.

Following the Phase II assessments, RZA-AGRA completed a Cleanup Action Plan (CAP) in 1993 and 1994 on behalf of Summit Properties[86], the property's former owners. This plan was completed as an independent action, without the oversight or approval of Ecology.

In March 2005 GeoEngineers, the engineering and environmental consultants hired by River Front Properties, conducted further assessments to better identify the extent of the soil contamination. In doing so, the company identified 14 remedial action areas (RAA) which are summarized in Table 23 below. The Ohio and Cedar Street RAA was not included in the analysis because of significant topographical concerns. The RAAs and associated contamination correlate with historical railway and commercial uses of the site. According to GeoEngineers (2006), groundwater was not encountered on the site; according to regional hydrology, groundwater is believed to be 150 feet below ground.

Table 23. Remedial Action Area and Location of Contaminants

Remedial Action Area	Parcels	Type of Contamination
Northwest Fill Area	1	Ash
Turntable Spill Area	3	Bunker C Oil[87]
Cochrane and Ide Burried Ash	2	Ash
Lower Spill Area	2,3	Bunker C Oil
Upper Fueling Spill Area	2,3	Bunker C Oil
Deep Cinder Area	2,3	Ash
Elevated Grade	1,2,3	Ash
South Bank Debris	1,3	Ash/Bunker C Oil
Landfill Area	1,3	Ash/Asbestos
Containment Cells	4,6	Ash
Ice Plant Area	5,7	Ash
Oak Street Extension Area	7,9	Ash
Spur Road Area	10	Ash
SOURCE: GeoEngineers 2006, p. 6		

GeoEngineers' remedial activities were designed to allow for unrestricted futures uses for the site, such as mixed use residential and commercial development.

[86] Metropolitan Mortgage and Securities and Summit Securities, Metropolitan's sister company in Idaho (Boggs, 2004a).

[87] Bunker C Oil is typically any type of fuel oil used aboard a ship, for that reason it is also known as navy special fuel oil of furnace fuel oil. Bunker C Oil is also referred to as No. 6 fuel oil and is the most common. It is a dense and viscous substance which is produced by blending heavy residual oil with lighter oil (such as No. 2 fuel oil).

5.7.4. Cleanup Description and Contamination Removal

Independent remedial cleanup actions commenced in the mid-1990's by the previous property owners, Summit Property. Following its 1994 CAP, RZA-AGRA excavated 20,700 cubic yards of metal-impacted soils from the UP railroad embankment, an area which encompasses parcels 1 through 10, 12 and 13 (GeoEngineers 2006). The soils were consolidated into two unlined on-site containment cells, located south of Bridge Avenue, between Elm and Nettleton Streets. An additional 3,400 cubic yards of petroleum-impacted soils were also excavated and disposed of to an off-site facility. A collection of cleanup confirmation samples were collected by RZA-AGRA in 1994 to show that cleanup was generally effective, but ash was identified in parcels 1 through 3, 10 and 12 (GeoEngineers 2006). At the conclusion of RZA-AGRA' s 1994 remedial action, contamination remained on portions of the site: Bunker C oil under the railroad embankment in Parcel 2 and 3; contaminated gravel in the vicinity of the lower spill area in parcel 2; contaminated soil beneath the upper fuel area in the eastern portion of Parcel 2 (GeoEngineers 2006).

In the mid-1990's a cluster of properties, along parcel 11, in the northeast portion of the site, with some identified environmental conditions were added to the larger site; these included the former Inland Empire Plating Company, the former Spokane County Purchasing Department Warehouse, the former Spokane County Auditors Warehouse, and the former Spokane County Paint and Sign site (GeoEngineers 2006). Metals, cyanide, volatile organic compounds (VOC), polycyclic aromatic hydrocarbons (PAHs), and TPH were removed from the site and received a no-further-action (NFA) designation from Ecology prior to their incorporation into the site.

In March 2005 GeoEngineers conducted further assessments to better identify the extent of the soil contamination; the company's RAA and associated contamination levels are summarized in Table 24 below. Though initial remedial cleanup activities took place in the mid 1990's, a majority of the site's contaminated soil, over 220,000 thousand tons, was removed by River Front Properties in 2005 under Ecology's Voluntary Cleanup Program (VCP). As the ultimate goal for the reuse of the site was to include residential and commercial development, cleanup levels were initially planned to meet MTCA Method A standards but were eventually altered to meet Method B standards for unrestricted use after the discovery of additional contaminants. In August, 2005, Washington State Community Trade and Economic Development (CTED) provided the developer with a $2.4 million loan for the cleanup of Kendall Yards from its Brownfields Revolving Loan Fund, which was capitalized by EPA; the loan is the largest amount awarded for a brownfields cleanup in the United States to date (WSDE 2006).

Table 24. Remedial Action Achieved			
Remedial Action Area	**Acres**	**Depth of Contamination (Feet)**	**Approximate Volume Removed (cubic yards)**
Northwest Fill Area	0.2	0-1	2,800
Turntable Spill Area	0.1	0-20	800
Cochrane and Ide Burried Ash / Deep Cinder Area	3	0-15	36,860
Lower Spill Area	1.7	0-39	20,000
Upper Fueling Spill Area			
Elevated Grade Area	8.6	0-10	17,000
Landfill Area	1.5	0-20	27,500
Containment Cells	1.5	1-20	21,000
Ice Plant Area	0.3	0-6	2,000
Oak Street Extension Area	2.1	0-2.5	9,8000
Spur Road Area	1.6	0-8	12,350
TOTALS	***20.6***		***140,310***
SOURCE: GeoEngineers 2006, p. 16-17			

Initially, GeoEngineers sought to apply MTCA Method A cleanup standards, but the discovery of Bunker C petroleum contamination in the Upper/Lower Fuel Spill Area required the company to recalculate and apply a site-specific Method B cleanup level for unrestricted land use for TPH; in order to apply a consistent cleanup level, Method B cleanup level were used across the site. GeoEngineers notes that the distinction between MTCA A and B cleanup levels is primarily an administrative one, as Method A levels are "generally equal to the most restrictive Method B cleanup levels" (p. 7). The Upper/Lower Fueling Area cleanup[88] was conducted according with Washington Administrative Code (WAC) 173-340-740 and approved by Ecology on November 29, 2005. Because some of the contamination was located at a depth of up to 30 feet, River Front Properties could have decided to leave the impacted soil in place with deed restrictions. Instead, wanting to allow for unrestricted future use, the developer sought comprehensive cleanup standards (WSDE 2006). According to Robin Toth, director of the Spokane Area Economic Development Council, the assessment completed by GeoEngineers cost the property's developer approximately $120,000 (Yahya 2005).

[88] Site-specific TPH cleanup level 3,230 mg/kg was calculated in accordance with WAC.

According to CTED (2005), the planning of the site's cleanup was completed in 5 to 7 months; typically, applications for such a large site can take one year to process.

The site cleanup began on September 8, 2005 and was completed on January 18, 2006. Prior to excavation, the on-site work crew removed all visible asbestos-containing materials (ACM) from the ground surface. The observation or discovery of ACM because of excavation resulted in the suspension of digging until abatement was complete (GeoEngineers 2006). With depths of up to 30 feet, over 220,000 tons of contaminated soil and 6 cubic yards of ACM were removed from 20 acres of the site; approximately 139,000 cubic yards of backfill, both structural and non-structural, was replaced with safe on-site sources (GeoEngineering 2006). A summary of excavation activity performed at each RAA is listed in Table 24 above. Over 1,100 confirmation samples were collected from throughout the site once excavation work was completed to ensure the effectiveness of the remedial activities. Envirocon Inc, contracted by River Front Properties, conducted all the excavation, backfill and site restoration work as well as transported the contaminated soil for off-site disposal (GeoEngineers 2006). The company also performed all the ACM abatement with oversight by Fulcrum Environmental Inc. Health, environmental and air monitoring measures were implementing during the excavation process to ensure the mitigation of on and off site hazardous releases. Contaminated soil and ACM material were removed from the site and transported by trucks to the Graham Road Recycling and Disposal facility in Medical Lake; in total 7,016 truckloads were delivered to the disposal facility (GeoEngineers 2006, Yahya 2005).

The site was removed from the State's Hazardous Sites List on 5/11/2006.

5.7.5. Key Arrangements – Development and Reuse

The cleanup and planned redevelopment of Kendall Yards is a successful example of key cooperative arrangements between local and state agencies and private industry. Stakeholders include, but are not limited to, River Front Properties, the City of Spokane, the Spokane-Area Economic Development Council, the Downtown Partnership, the Spokane Chamber of Commerce, West Central Neighborhood Council, Ecology, and CTED.

The Kendall Yards site was acquired by River Front Properties for $12.8 million in November 2004 through a federal bankruptcy court auction; the previous owners of the site, Spokane's Metropolitan Mortgage and Securities Company, declared bankruptcy under Chapter 11 protection in February 2004. Several other development companies sought to buy the site, but bankruptcy Judge Patricia Williams accepted Marshall Chesrown's River Front Properties offer

because the prospective buyer did not impose limits on the sale as did other bidders[89] and offered a more significant amount of up-front moneys to Metropolitan (Stucke 2004). The new property owner envisioned a similar mixed-use development as the one proposed by the Metropolitan/Nitze-Stagen team (Boggs 2005).

Marshall Chesrown's development company, now called Black Rock, based in Coeur D'Alene Idaho, proposed a phased mixed-use development, complete with 1,000 to 1,500 residential units, which would include townhouses and condominiums, and 1.5 million square feet of retail and commercial space (Boggs 2005, Yahya 2005).

However, the 20 year-phased plan presented to the Spokane City Council and the public in August 2006, was significantly changed to include 2,600 residential units, a nearly 1,000 unit increase from the initial proposal and 1 million square feet of retail and commercial space, a significant decrease from the previously noted plan. (Boggs 2006) The urban village called for a mix of housing types (with prices ranging from $150,000 to $2 million[90]), retail shops, restaurants, landmark plazas and a connection to Spokane's Centennial Trail[91]. Although most residents supported the development, there were concerns about how the proposed development would protect view corridors to the Spokane River and surrounding wilderness, why low-income housing was not provided and how traffic would impact the surrounding neighborhood, especially on weekends as the development would be a retail destination.

> "Finally, our neighborhood is going to be recognized as the jewel that it is. I just am tired of seeing contaminated barren Land. I'm looking forward to the cleanup. I'm looking forward to the development" (Brenda Corbett, chairwoman of the West Central Council as quoted Boggs 2005).

> "This is part of our urban viewscape that is absolutely precious" (Bea Lackaff, a West Central resident who talked about hearing flocks of geese taking off from the river near her home at night, as quoted by Boggs 2006).

On Thursday, September 21, 2006 the Spokane City Hearing Examiner approved the proposed $1 billion project for the development of Kendall Yards, largely as submitted (Boggs 2006a). Certain conditions were placed on the project to meet the concerns raised during the public hearing; these include a traffic-calming study for streets in the West Central neighborhood; completing a Habitat Management Plan to reduce impacts on the Spokane River Gorge, just south of

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[89] Seawest Investment Associates bid $13.6 million for the site but imposed numerous limits on the purchase of the property

[90] Business Wire 2006

[91] The Spokane River Centennial Trail is a 37-mile non-motorized paved trail which begins at the state line of Idaho and terminates at Nine Mile Falls in Washington.

development, from pets and light; submitting all 8-12 story building for design review and permitting by the city; signing a development agreement with the city that addresses the financing of numerous street improvements (Boggs 2006a). The conditions for approval were agreed to by the developer. Phase I of the development called for the construction of 747,000 square feet of commercial space and 785 residential units between Maple and Monroe Streets, just south of Bridge Avenue (Boggs 2006a, Prager 2007).

To help finance the preliminary work, such as paying for new streets, intersection, sidewalks and other public improvements necessary to allow construction of buildings, a tax increment financing district (TIF) was proposed in February 2007 (Prager 2007). TIFs are a public financing tool applied to a particular geographical area which allocates a certain percentage of property taxes derived from the increased value of the property as a result of (re)development to pay for the improvements; property taxes remain the same in a TIF. Estimates showed that the proposed TIF would only pay for a portion of the total cost for public improvements; the preliminary costs of public improvements at the site are estimated to be $45 million to $65 million and the TIF would generate between $11 million to $20 million in public funding (Prager 2007). Black Rock Development would pay the difference. City officials proposed to expand the TIF district beyond the 78 acre site to include commercial and retail areas to undertake improvements in adjacent neighborhoods. In support of the TIF, Black Rock Development agreed to sign a letter of credit guaranteeing payment on the public improvements bonds; general obligation bond would be sold to finance improvements. The Kendall Yards project manager, Tom Reese believes the application of a TIF is critical for the project to go forward.

Spokane County Treasurer Skip Chilberg challenged the idea of using public tax dollars to pay for public improvements when there was little evidence to suggest that the development could not be built without it (Brunt 2007). Supporters of the TIF believe the public funding measure is essential to the redevelopment of the former urban brownfield, adding that the plan calls for higher density living in Spokane's downtown and does not promote urban sprawl. Certain members of the Spokane County government were concerned with the City of Spokane's request that the County float the bonds; Spokane City charter requires all capital projects that require indebtedness to be put to public vote (Brunt 2007). A move to have the bonds floated by the County would side-step that requirement. In May 2007, Spokane County approved the plan to create a TIF district to help subsidize public improvements associated with the redevelopment of the former brownfield (Craig 2007). Under the TIF, in the West Quadrant Increment Area (WQIA), 75% of the property tax increase generated by the development over the next 25 years will be allocated to public

improvement in and around Kendall Yards; the remaining 25% will go to both city and county for general government services (Craig 2007). As WQIA extends beyond the Kendall Yards site, Black Rock Development will receive 75% of property taxes generated from its portions of the district while the City and County will receive 75% of the taxes generated from the remaining portions of the district; with 70% of the overall 75% going to the City and 30% to the County (Craig 2007).

By late May 2007, Black Rock Development and City officials were deciding whether or not to seek additional tax subsidies to pay for site preparation. Specifically, they were considering applying to a state competition for a LIFT – a 'local infrastructure tool' designation. The LIFT program was established in 2006 and,

> "allows selected local governments to take advantage of tax revenue generated by private investment in a Revenue Development Area (RDA) to make payments on bonds used to finance public infrastructure improvements. Incremental revenue increases in the RDA and revenue from other local public sources are used to match state money and must also be used to repay the same bonds. The state revenue earned is distributed through a local sales and use tax that is credited against the state's sales and use tax" (CTED).

City officials do not expect to apply for a LIFT in the near future, but want to keep their options open to this new public funding mechanism.

During 2008, the proposed work to be completed at the Kendall Yards site includes planning, engineering and the installation of infrastructure such as utilities and street. Building construction is projected to begin in 2009 (Prager 2008).

5.7.6. Effectiveness – what worked and did not?

On April 19, 2006 the EPA announced that the Kendall Yards brownfield cleanup would receive a national award for outstanding remediation activities (Business Wire 2006). The Kendall Yard cleanup can be praised for its extremely successful private-public partnership that resulted in a streamlined permitting and planning process which effectively resulted in a 5 month cleanup effort. River Front Properties' bid to acquire the site was accepted by the bankruptcy court judge in November 2004 and cleanup began under Ecology's VCP in September 2005. The VCP program was an ideal cleanup mechanism for the private land developer who sought to maximize remediation actions to allow for unrestricted future use, thus expanding its redevelopment options. Ecology's role as the provider of technical assistance and approval ensured an expeditious process. Notably, Ecology assigned a dedicated site manager to the project, thus, the project benefited from the flexibility of VCP, and the continuity of technical and procedural advice. Overall, the cleanup team

was composed of a well rounded group of willing stakeholders. The replicability of such a successful cleanup depends significantly on the willingness of the property owner to clean the site and the profitability of reuse. Kendall Yards is a 78 acre riverfront site adjacent to downtown Spokane which lends itself to a variety of large-scale redevelopment projects. During the bankruptcy auction, a host of developers attempted to acquire the site, an indication of how attractive it was for potential redevelopment.

Overall, the final phase in the cleanup of Kendall Yards case highlights the successful collaboration between Ecology and a developer who had a clear redevelopment plan and was highly motivated. Together, the developer and Ecology worked hard to keep the requirements of the reuse plan in mind, and made mid-course corrections to ensure this. The case illustrates the value of having clear reuse plans when undertaking a cleanup process.

5.7.7. Links to Economic Development

According to Washington Governor Christine Gregoire, the Kendall Yards project will "[stand] to enhance Spokane's growing economy significantly." (CTED 2005). It is estimated that 500 jobs will be created through cleanup activities and the development of the property and up to 2,500 permanent jobs from the development's commercial spaces (WSDE 2006). According to Jon Eliassen, president and CEO of the Spokane Area Economic Development Council, "the projected long-term economic return is astounding – more than $2 billion" (WSDE 2006) with some estimates as high as $3 billion (Business Wire 2006). State and local governments, according to Eliassen, are estimated to receive over $32 million during the project's construction.

It is too early in the project's redevelopment timeline to fully understand the impact of public financial tools such as the TIF on the economics of the site. The site's cleanup and eventually development will result in increased property values for the area, which will bring the City of Spokane additional revenues from the collection of property taxes. It is unclear how successful the TIF will be to fund public improvements or if it will become a financial burden for Spokane tax-payers.

The economic downturn, which has had a significant impact on real estate markets throughout the country, has also affected the Kendall Yards Project. Although the site has not been idle since the completion of cleanup, site preparation began in 2007, and in 2008, the construction of infrastructure and streets was to proceed. However, the project is at least 6 months behind schedule, and the first phase has "basically been cut in half" (Howell 2008, August 21).

5.7.8. Issues Raised/Lessons Learned

- *Public financing mechanisms* such as TIF and LIFT provide an alternative source of moneys for the potential reuse of brownfields as well as offering channels for new public-private partnerships in a site's development. The mechanisms' application in future brownfield projects could be beneficial, but it raises questions about its necessity in such a large and well funded private development such as Black Rock's Kendall Yards. CTED, which administers the Brownfield RLF, allocates the state's downtown revitalization LIFT program under the agency's Community Economic Revitalization Board (CERB). This indicates the possibility of creating combination funding packages for brownfield redevelopment which incorporate Ecology's technical assistance and smaller cleanup grants, CTED's brownfields grants and public financial tools, the City's administration of public financial tools, and the developers private funding.
    - A cautionary note on TIFs, they are great financing mechanisms for site improvements and infrastructure when real estate markets are stable or strong, but when markets are in decline, TIFs may not yield sufficient funds to make the annual payments on the debt. In such situations, local governments who are the financial backers of a TIF may be required to assume TIF obligations.
- The successful combination of *private and public cooperation* resulted in an award-winning cleanup effort meeting the standards for unrestricted urban development. A review of the case study's timeline highlights the significance of redevelopment and reuse as irreducible conditions for comprehensive brownfield management.
- *Market condition* is an important determinant of brownfields redevelopment. The strong market was a major factor in Kendall developer's decision to assume the costs of the site's cleanup; the soft market is now a major factor in the slow down and the project cut back.
- *Successful Cleanup*. The Kendall Yards site was cleaned up in record time, and its transformation from a formerly contaminated railroad complex into a mixed-use urban village on the edge of Spokane's downtown is still in the plans.
- The project's success so far has been influenced by the following factors:
    - A *desirable site* for a large mixed use project—78 acres already assembled under one owner, with riverfront views of downtown Spokane. For comparison, the well-known new urbanism development, Seaside, Florida was originally 80 acres.
    - *Previous work done on site*. A site where site investigations and some level of cleanup had occurred in the mid-1990s; where a development plan existed and had

been approved by the City; and a site adjacent to a natural amenity, Spokane River.

- *Contamination was primarily soil contamination*, not water, and so cleaning up site for unrestricted uses was relatively straight-forward, i.e., excavating soil, disposing of it appropriately, and filling in the site.
- When the site was auctioned at bankruptcy court, the potential buyer had a *basis for estimating the cost of cleanup*, and a plan that he could move forward with quickly. Estimating the cost of the cleanup was important for overall project financing, it reduces the risk of cost variability, and for making a determination of how to proceed with the cleanup—e.g., how much needed to be borrowed. A factor that influenced the judge auctioning the site to Mr. Chesrown was his willingness to follow Metropolitan's plan by-and-large.
- *Quickness of cleanup process*. The buyer undertaking cleanup under VCP plus a dedicated site manager enabled a quick RI/FS which was able to build on the mid-1990s cleanup and redevelopment plans.
- *Good partnership between the buyer and the City and State*. The buyer's assuming the costs of cleanup created goodwill for him among city and state agencies, as well as EPA. From the perspective of the City, the buyer's by-and-large agreement with the type of development that the City had already approved for the site also increased its goodwill towards the project. These two factors were instrumental in obtaining quick approvals from the City for the developer's new plan, as well as approval for the Tax Increment Finance district.

- Providing several options to settle liability once the cleanup is complete. For example, the developer initially sought a Pre-purchaser Consent Decree to provide process certainty and liability settlement. However to qualify for an EPA brownfield loan a Voluntary Cleanup agreement was required. Ecology provided a dedicated site manager to provide consultation in cleanup investigation and oversight while the developer resolved future liability by removing all contaminated soils.

- An innovative approach to site management staffing by the Department of Ecology by dedicating a single experienced site manager to provide timely and decisive oversight and consultation for the investigation and cleanup.

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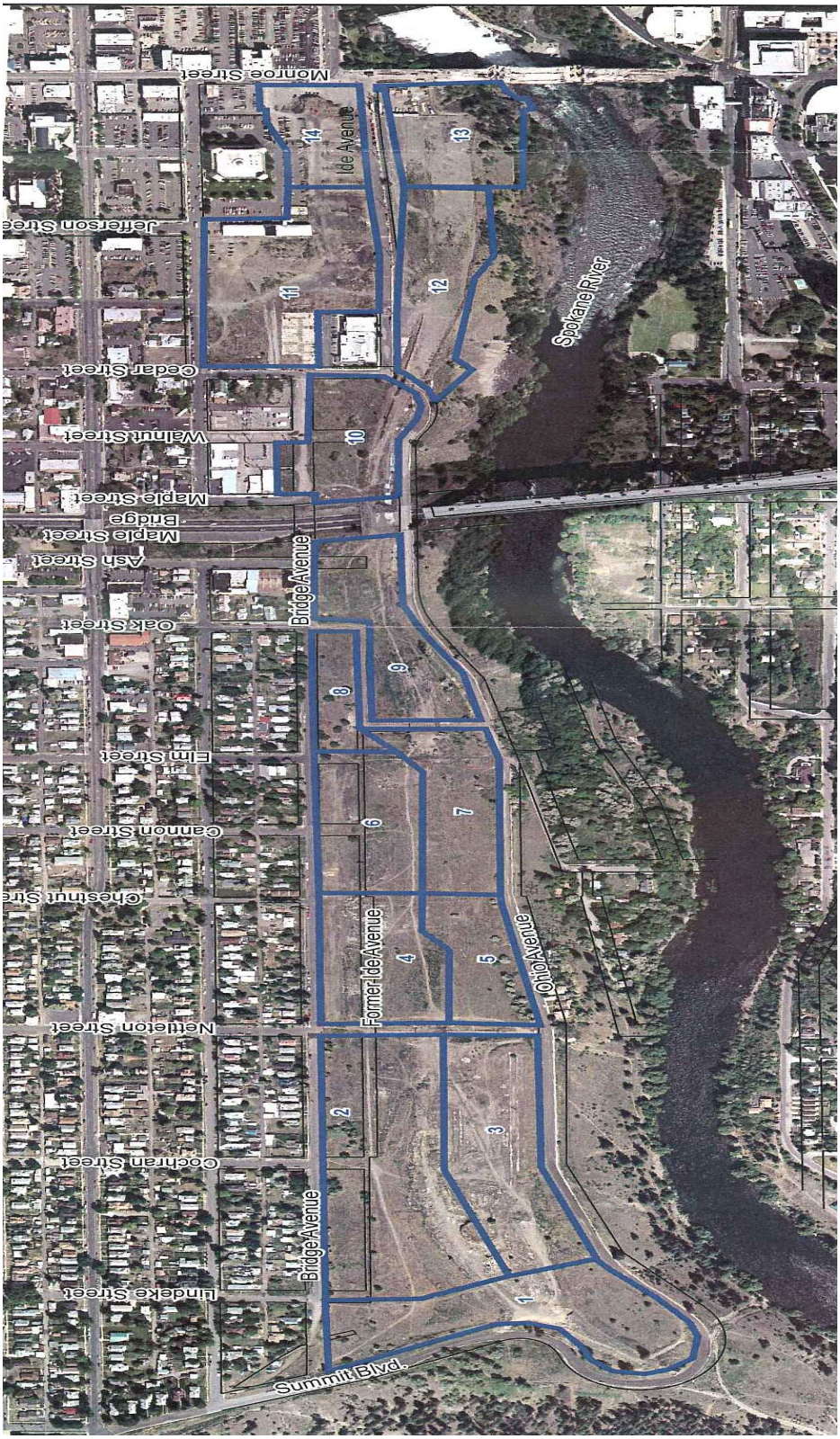
Figure 16. Kendall Yards Site



SOURCE: WSDE April 2006

5. 8 Chevron Bulk Terminal – Morton, WA

The Chevron Bulk Plant in Morton WA is one of the most rural cases to be analyzed among the toxic cleanup cases. The rural context highlights the challenges facing small communities seeking to cleanup underutilized and contaminated sites and demonstrates Ecology's attempts to balance state-wide cleanup goals in dense urban centers and isolated rural communities. Formerly a bulk terminal operated by the Chevron Texaco Corporation, the site is being redeveloped as a tourist destination as part of Morton's downtown revitalization efforts. The site's cleanup was prompted by a citizen call in 2003 alerting Ecology of the potential contamination. Ecology conducted an initial investigation, and upon finding evidence of contamination issued an enforcement order to the PLPs to conduct a remedial investigation and feasibility study. The site was processed as a formal site. The centerpiece of the revitalization efforts is a historic rail station which was relocated to the eastern portion of the cleanup site and restored. The principal developer of the site, the Cowlitz River Valley Historic Society has been working in concert with non-profits and government agency-sponsored railroad improvements and economic development projects to ensure the fulfillment of the site's potential as a driver for Morton's downtown revitalization.

5.8.1 Site Description and Regional Overview

The City of Morton, population 1,025, is located in a valley between Mt. Rainier National Park and Mt. St. Helens National Volcanic Monument, at the junction of Washington SR 7 and U.S. Highway 12 (Morton 2007). Incorporated in 1913, the third largest town in Lewis County has historically been and continues to be dependent on the extraction and processing of primary resources through logging and mining activities. The town celebrates its logging traditions annually at the Loggers Jubilee, held in Morton during the second weekend of August (Loggers Jubilee 2007).

5.8.2 Site Background

The site of the former Morton Chevron Bulk Plant, also known as the Wolfe and Park site consists of two properties, 149 and 167 Main Street (WSDE 2006). To the north of the site is residential property and to the east, a vacant lot. The site is a one acre site that was under common ownership from 1910 until 1993. The Chehalis Western Railroad Company[92], owned by Weyerhaeuser, acquired the property in 1910. In 1924 Standard Oil, now known as Chevron, leased

[92] Formally known as the Chicago-Milwaukee and St. Paul Railroad Company.

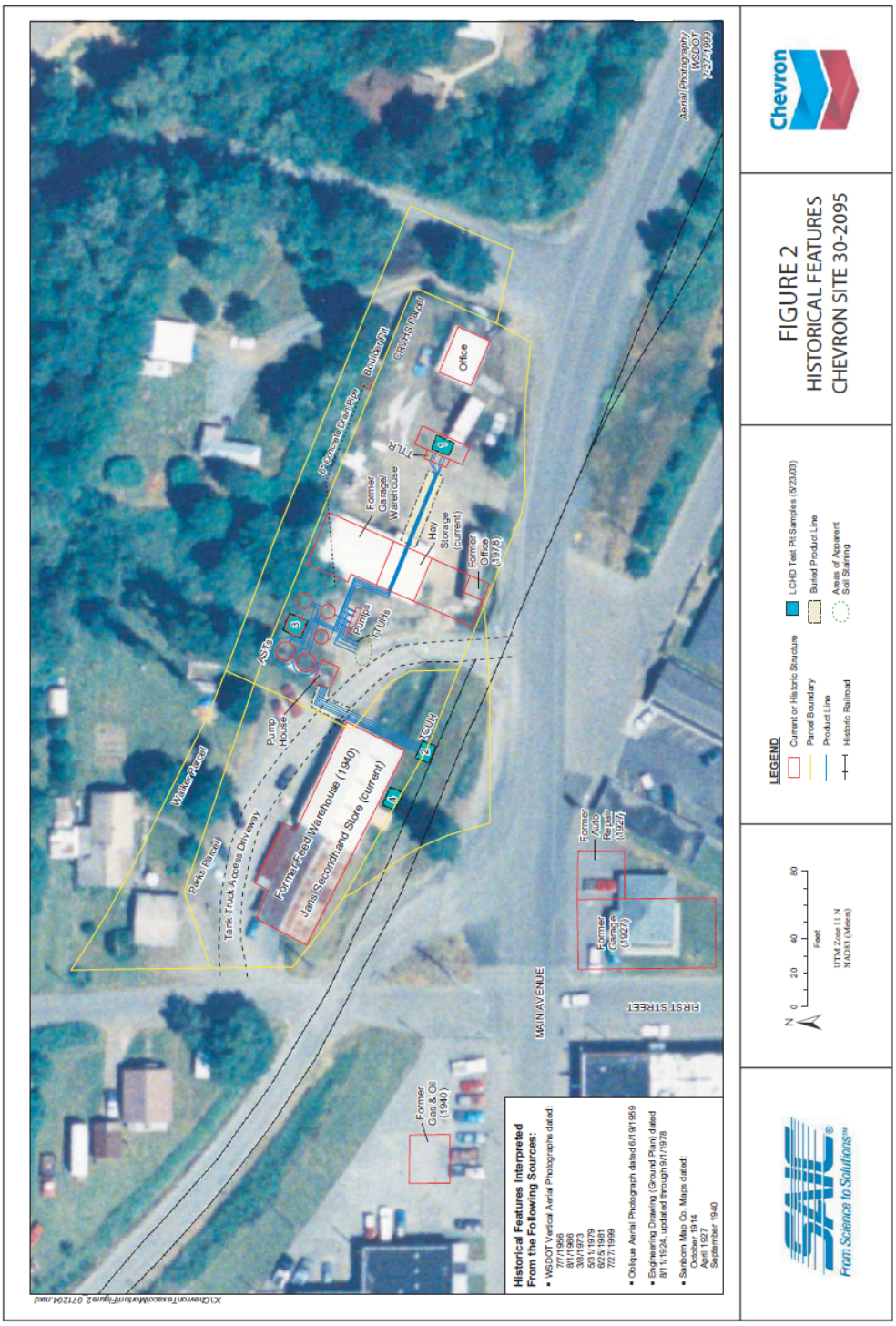
the property from the Chehalis Western Railroad and built a bulk terminal near the intersection of Main Avenue and First Street (SAIC, 2006a, b). Gasoline, diesel, kerosene and heating oil were stored in six vertical above-ground storage tanks (ASTs) (SAIC 2006a, b). The terminal included other structures such as a 2,500 square foot warehouse and tank truck and rail car unloading equipment. A 5,000 square foot building, which would become a feed store and eventually a thrift shop was not directly associated with the operations of the fueling depot. From 1924 until the mid 1950's, the terminal was supplied by rail until later modifications provided access to tank trucks. The terminal remained in operation until the late 1970's. Around 1981, the bulk plant was dismantled by Chevron; pipes and pumps were removed, leaving the warehouse and a 300 sq. ft. office building intact (SAIC 2006a, b). See Figure 17 below for a map of the historic site.

In June 1985, the property was acquired by Pacific Fire Trails, but was not developed (SAIC 2006a, b; WSDE 2004). Again, in February 1988, the property was acquired by Robert Downing, President of Pacific Fire Trails, who then sold the property to Everett and Dorothy Dunlap in December 1989. By March 1993, the property was no longer under common ownership as the eastern portion (parcel number 8492-4) of the site was acquired by Dana and Diane Wolfe and later, in July 1998, the western portion by Janet Parks, now deceased (parcel number 8492-2).

The 5,000 square-foot building stood on the portion of the site owned by Janet Parks. The building was formerly used by the Fairhart's Feed Store, but currently houses Jan's Lost and Found thrift store. This space was heated by oil, supplied by large fuel tanks (AST) which were located in a covered area along the north side of the building (SAIC 2006a, b). The feed store was also a purveyor of gasoline and/or diesel which it pumped into the present day retail portion of Jan's thrift shop from storage tanks located along the southern edge of the building (SAIC 2006a, b).

In June 2005, the Cowlitz River Valley Historic Society (CRVHS) purchased the eastern parcel owned by the Wolfes and in October 2005 moved onto the site a partially restored railway depot (SAIC 2006a, b; WSDE 2006). The current uses of the Morton Depot site include Jan's thrift shop and an adjoining parking lot on the western side while the eastern portion remains underused but houses a historic rail depot, railroad tracks and 2 unoccupied buildings which will all be redeveloped into a larger tourist facility. See Figure 18 below for a photograph of the train depot.

Figure 17. Historical Features of the Chevron Morton Site



Source: WA DOE. 2006. Wolfe & Parks (aka Chevron Bulk Plant, Morton) Environmental Cleanup Information. Sept. 2006. Figure 2. Historical Features. Accessed at author website: http://www.ecy.wa.gov/programs/tcp/sites/wolfe_and_parks/Draft_RI/MortonRI_figure_02.pdf

Figure 18. Morton's Historic Train Depot

Source: WA DOE. 2006. Wolfe & Parks (aka Chevron Bulk Plant, Morton) Environmental Cleanup Information. Sept. 2006. Accessed at author website:
http://www.ecy.wa.gov/programs/tcp/sites/wolfe_and_parks/Draft_RI/MortonRI_figure_02.pdf

5.8.3 Contamination Description

The contamination on the one acre site is concentrated in the south-central portion. Remedial investigation activities were carried out on the soil from May 2004 to August 2004 by Science Applications International Corporation (SAIC). Originally, 39 soil borings[93] and 12 monitoring wells[94] were sampled throughout the site to determine the extent of soil and groundwater contamination. Based on the results of the original 39 boring samples collected, an additional 16 borings were sampled, for a total of 55 to better identify the levels of contamination (SAIC 2006a, b).

According to the soil samples, the most widespread contaminant is gasoline-range organics (GRO), occurring in concentrations 10 times the Method A cleanup standards; concentrations were exceeding 300 mg/kg (SAIC 2006b). High concentrations of GRO were located around the former AST area, along a cut of land between the AST area and the railway tracks, underneath the northern portion and along the south and southeast of the warehouse, as well as along the west portion and

[93] 'borings were advanced to depths of 12 to 16 feet, well beyond the limits of detectable contamination in most locations' (SAIC 2006a, p. 2).

[94] 'Wells were completed at a depth of 20 feet and were screened from 5 to 20 feet (SAIC 2006a).

south side of the present-day thrift store (SAIC 200b). The soil contamination described around the warehouse is consistent with the spilling and leaking of petroleum products historically used during terminal operations (SAIC 2006a). The source of the contamination around the present-day thrift store, while located outside the area of the historic operations of the terminal, is unclear (SAIC 2006a). As previously stated, the structure was used as a feed store which sold and dispensed gasoline and/or diesel from an outside storage tank located on the southern edge of the building, where high concentrations of contaminations were detected. Diesel-range organics (DRO) and benzene were found around the former AST area and between the AST area and the railway track; a 'disconnected area' of DRO contamination was also located in the vicinity of the thrift shop (SAIC 2006b). The contaminants identified as posing the greatest concern were GRO, DRO, ORO and BTEX (benzene, toluene, ethylbenzene and xylenes). Based on the original 39 boring samples additional contaminants identified were heavy-oil organics (ORO), toluene, ethylbenzene and xylenes, ethylene dibromides (EDB), ethylene dichloride (EDC), metyl tertiary-butyl ether (MTBE) and lead. In addition, those samples which represented the highest concentration of contamination (20% of the total borings) were analyzed for additional threats: PCBs, cPAHs, Napthalenes, n-hexane, VOCs, VPH, and EPH (SAIC 2006a). For a complete log of boring sample results, please refer to SAIC, Draft Feasibility Study March 2006.

Benzene and GRO were identified as the most significant contaminants in the groundwater. The extent of groundwater contamination is in large part restricted to the area of soil contamination and has not migrated off site to the south or east (SAIC 2006a). The following contaminants were identified from the analysis of the groundwater samples collected in the monitoring wells: GRO, DRO, ORO, BTEX, EDB, EDC, MBTE, cPAHs, Napthalenes, n-hexane, dissolved lead and PCBs (SAIC 2006a). The identified concentrations of benzene, GRO and DRO exceeded MTCA Method A cleanup standards. Samples were collected during four monitoring rounds; for a complete listing of sample results, please refer to SAIC, Draft Feasibility Study March 2006.

5.8.4. Cleanup Description

In 2003, an initial investigation of the site was performed by the Lewis County Health Department and Ecology after a caller reported the presence of a strong smell of fuel during excavation 20 years prior (SAIC 2006a,b; WSDE 2004). After the initial call, which began Ecology's formal cleanup process, Ecology performed an initial investigation. The 2003 investigation revealed petroleum-contaminated soil. In summer of 2003, Chevron, Dana and Diane Wolfe and Janet Parks were alerted of and all accepted their status as Potential Liability Persons

(PLP) for the site (WSDE 2004). Based on these findings, on January 20, 2004, Ecology issued an Enforcement Order (DE 03TCPSR-5715) to Chevron Texaco Corporation (CTC), the former owners and operators of the bulk terminal, Dana and Diane Wolfe, the owners of the eastern portion of the site and Janet Parks, the owner of the western portion of the site and operator of Jan's Lost and Found Thrift Shop. In 2005, CRVHS acquired the eastern portion of the site from the Wolfes and were added as PLPs on the Enforcement Order; the Wolfes remained as PLP because they were the former owners of the site. The Enforcement Order required all parties to investigate the levels of contamination by performing a remedial investigation of the petroleum contamination and conduct a feasibility study identifying cleanup alternatives.

As previously mentioned, the 5,000 square foot building which housed the feed store and eventually the thrift shop is located outside of the area historically associated with the operations of the fueling depot. The distinction between the location and uses of these structures is critical to the assessment of the sources of historic contamination and therefore establishing responsibility for the contamination. As a result, the Chevron Texaco Corporation does not believe it is responsible for the investigation of and the development of a feasibility study for contaminations associated with the former feed store operations. It is unclear how cleanup of the area around the thrift shop will be addressed and how this will affect the redevelopment of the site as a tourist destination.

Following the results from the remedial investigation for petroleum contamination, which began in May 2004, cleanup actions were developed for removal of contaminated soil. The scheduled relocation of a 2-storey historic rail depot onto the eastern portion of the site by CRVHS required that an interim remediation action be performed in October 2005; this would cleanup the area where the depot was to be placed (SAIC 2005). A total of 860 cubic yards of petroleum contaminated soil was removed from the south-central portion of the eastern parcel, an excavated area that went just beyond the eventual footprint of the rail depot (SAIC 2006a). The contaminated soil was trucked to Waste Management Roosevelt Landfill in eastern Washington (WSDE 2005). During the process of removing the contaminated soil, groundwater that was collected in the excavated site was pumped into temporary storage tanks and sparged with air (SAIC 2006a) The water was tested for contaminants; once contamination levels of DRO, GRO and BTEX were identified as below MTCA Method B levels, the water was discharged to the Morton wastewater treatment facility using an onsite manhole (SAIC 2006a). 'A total of 8,000 gallons of groundwater were discharged' (SAIC 2006a, p. 8). The excavated area was backfilled to CRVHS specifications, to within '2 to 5 feet of the surrounding land surface' in order to facilitate the relocation of the historic rail depot (SAIC 2006a, p. 9). At the time of the relocation, the historic rail depot rested on

a temporary cribbing which CRVHS eventually replaced with a permanent concrete foundation (WSDOT 2008).

The Chevron Texaco Corporation is the primary funder of the site's cleanup activities. Table 25 summarizes the expenditures of the cleanup process for the eastern parcel, which total approximately $1.26 million:

Table 25. Cleanup Activities and Costs

Activities	Approx. Costs
Consulting	$500,000
Soil Waste Disposal	$500,000
Additional Monitoring Wells	$70,000
Lab tests and analysis	$60,000
Ongoing Operation and Maintenance	$50,000
Miscellaneous: Design, CAP, budget, permits	$80,000

Once the interim action was completed, efforts were made to carry out the cleanup action plan (CAP). The CAP called for the removal of 600 cubic yards of petroleum contaminated soil (in addition to the 860 cubic yards already excavated under the interim action) to be back filled with clean soil (WSDE 2006). The contaminated soil was trucked to and treated by thermal desorption or permanently disposed of by Rinker Materials Northwest in Everett, Washington (SAIC 2006a,WSDE 2006). Less contaminated soils remaining on the site, approximately 9,700 square feet, were covered by several feet of clean soil and paved or covered with cobbles to allow for future redevelopment and landscaping of the site as well as protect those who might access the site (WSDE 2006). All remaining ASTs and other industrial debris stemming from the historic use of the terminal were removed from the site. Any groundwater encountered during the excavation process was treated by the addition of Oxygen Releasing Compound (ORC) which "accelerates the natural biodegradation process by increasing oxygen levels in the groundwater" (WADE 2006, p.2) A long term monitoring schedule and a soil management plan is in place to reduce exposure of residual contamination during the redevelopment and future uses of the site (WSDE 2006).

5.8.5 Development Description and Stakeholders

Following the interim cleanup action, the historic rail depot was relocated to the site of the former Chevron Bulk Terminal. The 2-storey wood-frame structure was originally built in 1910 and is one of the few remaining structures of this type of the Chicago-Milwaukee and St. Paul Railroad Company stations (Morton Depot 2008a). CRVHS was the key initiator for the redevelopment of the

site along with a significant number of public entities. Table 26 lists all the stakeholders involved in the redevelopment:

Table 26. Redevelopment Stakeholders

Stakeholder	Role and/or Contribution
Cowlitz River Valley Historic Society	Primary stakeholder; helped raise $800,000
Local Government(s) & Agencies	
City of Morton	*Refer to Local Stakeholders below*
City of Tacoma	
County Government(s) & Agencies	
Lewis County (including PUD)	Contributed funding
State Government & Agencies	
WA State Department of Ecology	Coordinated cleanup and enforcement
WA State Department of Transportation	Contributed funding through *WADOT Transportation Enhancement Program* for sidewalks, benches, landscaping, signage
WA State Community Trade & Economic Development	
WA State Department of Archeology and Historic Preservation	
WA State Historic Society	
Federal Government & Agencies	
USDA Forest Service	$31,000 Contributed funding from *the Rural Community Assistance Program* and *Old Growth Diversification Funds*
US Federal Rail Administration	Contributed funding; Approximately $200,000
Other Entities	
Chevron Texaco Corporation	Paid for cleanup; Approximately $1.26 million
Mike's TV	Local Business
Western Forest Industries Museum	
Lewis County Historical Museum	Local, non-profit
The History Channel	Featured the relocation of the depot in a TV program

CRVHS, a local non-profit organization, did not have previous experience with toxic cleanup and had limited financial resources to support the relocation and restoration of the historic rail depot. The organization bore the risk of redeveloping the formally contaminated site. However, the group should be recognized for its considerable efforts in driving Morton's economic revitalization goals by its promoting of a historically significant transportation corridor and preserving an architectural style that is significant to the identity of Morton and East Lewis County. The organization has worked on the relocation and restoration of the station for nearly 20 years. CRVHS plans to redevelop the property as a tourist destination; the restored historic rail station is the principal attraction but future plans call for a museum, a parking area and restrooms to accommodate visitors. Crucial to the success of this project, was the hiring by CRVHS of a project coordinator to assist the

Society to secure funds, and coordinate the cleanup and redevelopment process on its behalf. To date, the organization has raised over $800,000 to assist with its development plans (Morton Depot 2008b).

In 2002, the President of CVRHS, Robert Worsham, who is also the Mayor of Morton, applied for a $30,000 grant from the USDA Forest Service using $8,776 as leveraged funds. The moneys would finance the preparation of design documents to enable the relocation and restoration of the depot as part of the City of Morton's downtown revitalization efforts (USDA FS 2004). The relocation of the depot onto the property was filmed for the History Channel's Mega Movers series which provided a national audience and recognition for the organization's initial plans for the site. The exterior restoration work is being completed by Cascadia Woodwork LLC and includes the painting of the wood frame structure to look as it was in 1910 (Morton Depot 2008a). Interior renovations will soon be underway to restore the interior spaces to their original 1910-1920's status. CRVHS is also running a fundraising campaign to raise $50,000 needed to replace the depot's roof; historically accurate shingles, # 2 red cedar shakes, will be used (Morton Depot 2008b). According to the organization, the structure is eligible for listing on the National Registry of Historic Places, which could be an economically significant recognition for Morton. It should be noted however, that to date CRVHS has not developed or submitted any official master plans or fundraising schedule in support of their larger vision for a tourist destination beyond the work that has been accomplished with relocation and restoration of the historic rail station.

5.8.6 Key Arrangements and Economic Development

The key arrangements supporting the successful redevelopment of the former Chevron Terminal were Morton's economic revitalization and transportation improvements plans, especially the plans and efforts of CRVHS. The interest and support of local businesses were also instrumental in sustaining the momentum for redeveloping the former bulk terminal.

Ecology

Since the site was cleaned up under the formal process, an Ecology site manager was assigned to the project. This ensured continuity and consistency of advice throughout the process.

Local Stakeholders

CRVHS was a key stakeholder, as already discussed above. In this respect, the role that the professional project manager hired by CRVHS played in this case is worth highlighting. The

project manager coordinated grant management, visioning, design, permitting, construction management for the project development and relocation of the depot at a crucial time for the project, from July 2004 until July 2006. He coordinated these activities with city, county, state agencies and the federal government, and worked closely with Ecology to coordinate overall project development for the interim cleanup action at the new site (Parks/Wolfe). He also played a key role in the History Channel filming of the depot relocation (Mega Movers). In short, the CRVHS project manager provided the staff support for the complex project that a small town needs and typically lacks.

With economic revitalization as key to the redevelopment project, interactions between stakeholders are critical. At times, these relationships were strained by differing objectives and opinions about the redevelopment goals. One such example is the relationship between the City Council and the Mayor of Morton. The City of Morton, the Morton Chamber of Commerce and CRVHS entered into an inter-local agreement regarding the relocation of the historic rail station. In the agreement, which was to expire in June 2003, the City would act as fiscal agent for the project (WSAO 2006). In August 2004, the Mayor of Morton, entered into a grant contract with CTED; CTED was to contribute $75,000 to the project and the City was to provide a match for the grant. The grant contract was signed by the Mayor on August 23, 2004 without approval from City Council and while the Mayor occupied the position of President of CRVHS, the project's main developer (WSAO 2006). According to a report filed by the Washington State Auditor's Office, Morton's Mayor had staff members from his private business handle the grant contract. The audit report continues by stating that the Mayor "exceeded his authority" by engaging in a contractual agreement with CTED for which the City is now liable for the $75,000 match, an amount not budgeted or planned for in the City's annual operating or capital budgets(WSAO 2006). This notable conflict of interest could have significantly jeopardized plans for the successful redevelopment of the site.

Revitalization and Improvement Plans

Though the contamination resulting from the historic uses of the terminal remained onsite for decades, cleanup and redevelopment were initiated once Ecology issued the Enforcement Order. Key to the implementation of these efforts was the support of existing revitalization and management plans which called for developing tourism destinations in the region and improvements to rail infrastructure to support the local economy.

The Morton Community Revitalization Plan is the result of collaborative efforts with the Lewis County Economic Development Council which began in 1992. In 2001, the Morton Chamber of Commerce, having leveraged $5,184, was awarded a $20,000 Planning and Technical Assistance

Grant from the USDA Forest Service to build upon the initiatives established in the Morton Community Revitalization Plan (USDA-FS 2001). A series of meetings were held in 2002 to develop a vision statement, goals and policies for future development in Morton. Key initiatives focused on supporting the forest and health industries, developing tourism opportunities, supporting activities which are mutually beneficial to the community's young people and visitors, and empowering local organizations. Following a public review of the revised Morton Community Revitalization Plan in July 2002, the Morton Chamber of Commerce voted for the adoption of the plan which was officially approved by City Council in September 2002.

In addition to supporting tourism efforts, the economic revitalization plans for Morton called for increasing the output capacity of the local Weyerhaeuser timber mill. The historic rail station was located adjacent to the mill and therefore impeded its expansion. The preservation of the station by relocating it to the site of the former Chevron terminal provided the mill with the space necessary for expansion. The expansion of the mill created 50 new jobs in Morton and is directly linked to the cleanup and redevelopment of the site.

The restoration of the historic rail depot accompanies efforts made by the Washington State Department of Transportation (WSDOT) to rehabilitate the 132 mile Tacoma Rail line (News Tribune 2006; WSDOT 2008a). WSDOT's *Tacoma RMDRR Morton Line Repair –Phase Two*, included the replacement of "thousands of ties and tons of ballots to stabilize the aging track bed" (WSDOT 2008a) in preparation for freight and eventually passenger car operations, which had ceased in 1980 (News Tribune 2006). The project was appropriated $3.18 million in funds from a 2003 legislative transportation package and was completed in June 2005 (WSDOT 2008a). Unfortunately, portions of the Tacoma Rail line, including the Nisqually River Bridge were damaged or washed out during heavy storms in November 2006. In response to the damage created by the storm, WSDOT implemented the *Morton Business Redevelopment Project*; the project was awarded $1.181 million in Federal funds (WSDOT 2008). It is unclear at this time how many new jobs these rail-related efforts will create for the residents of Morton and the surrounding region, nonetheless, economic benefits can be expected.

The White Pass Scenic Byway, also known as Highway 12 is a scenic corridor through south central Washington which starts at Exit 68 of Interstate 5 and runs to Yakima, WA (Whitepassbyway 2008). The corridor project started as a grassroots efforts coordinated by members of the communities along the route. From 2003 to 2007, the group's steering committee worked on the White Pass Scenic Byway Corridor Management Plan and a 16 people board of directors was appointed in 2007; the Mayor of Morton sits on the board of directors (Whitepassbyway 2008). Key

goals identified in the management plan are to improve visitors' experiences along the byway by improving the tourism economy of the byway communities, develop resources, facilities and organizations to sustain the byway.

Local Efforts and Outcomes

There is interest among Morton's merchants to develop commercial affiliations with the proposed tourist rail plans. For example, two local business people opened the Morton Beverage and Tobacco Company in September 2007 and are interested in creating plans for a dinner train and wine tour (Westrick 2007). In addition, the opportunity to have the historic rail depot listed on the National Registry of Historic Places is significant to the revitalization efforts underway in Morton.

There have been no economic studies conducted to date to assess the impact of the relocation on downtown property values or the generation of new tourism dollars.

5.8.7 Effectiveness—what worked, and did not?

The cleanup of the former Chevron terminal was not challenged by a complicated geography or significantly hazardous combination of contaminants. The relatively streamlined approach to cleaning-up the site was well aided by compliant PLPs, the support of existing plans, the drive of organizations to support and sustain the redevelopment of the site and the coordination and cooperation of different local, county and state agencies. However, conflicts of interests, the limitations of having cleanup moneys from only one source and the uncertainty of contamination and remediation of the adjacent parcel housing the thrift store will challenge the long-term successful reuse of the site.

What Worked

The value of having revitalization and management plans in place to support the cleaning and redevelopment of a contaminated site was critical to the reuse of this rural site. These plans supported the economic revitalization of downtown Morton and the development of tourism resources to inject the local economy with new opportunities. Organizations supporting and implementing these plans were able to leverage grant moneys from small initial investments. Some of these funds enabled the Historic Society to hire a professional project manager who provided able overall project coordination. The cooperation and coordination between PLPs and Ecology appears to have been very efficient in comparison to some of the other cases.

What Did Not Work

The tension between the Mayor of Morton and City Council is indicative of what can happen in small communities when people vested with certain powers occupy multiple positions which can merge during redevelopment efforts. Such conflicts can be difficult to avoid in communities when activism is mobilized by the same pool of individuals.

As the Chevron Texaco Corporation was the principal funder of the cleanup efforts, all contamination not associated with the company's historical uses of the terminal were not included in the investigation and feasibility studies. As a result, the possible presence of additional contamination on the adjacent parcel housing the thrift shop is unknown and remediation efforts are unclear at this time. The lack of integral funding supporting a comprehensive cleanup effort is a barrier to the overall planning for the redevelopment of the site. In addition, the CRVHS has not submitted any master plans and fundraising schedules to support future redevelopment efforts which include a museum.

5.8.8 Issues Raised/Lessons Learned from the Cases

- *Community planning and visioning* that supported the cleanup of the site were essential to the success of the brownfields redevelopment at the Morton site. Together with the type of community involvement which took place in Morton, it indicates the importance of linking cleanup efforts with participatory community planning efforts.
- *Identifying Brownfields*. The twenty year gap between Chevron's ending its operation on the site, and the report of a release to Ecology points to the need for the State to identify brownfields when industrial firms that release hazardous substances cease their operations or transfer ownership, as is required by New Jersey's program.
- *Brownfields management assistance for small towns*. The Historic Society's hiring of a project coordinator was vital to the successful cleanup and redevelopment of one of the parcels. Small towns, such as Morton, typically lack the staff resources to negotiate a complex brownfields redevelopment process. The ability to hire a professional to navigate the complex process and to obtain the resources needed to complete the project on behalf of the town was key to a successful outcome.
- Finally, an area-wide, multiple sites approach would have been helpful in dealing with the two-parcel site, as well as other brownfields in this small town. Morton was able to accomplish much without such a program because of the multiple plans it was pursuing, and because of the Historic Society's project manager who provided needed coordination

assistance. On this last point, an area-wide multiple sites approach, such as NJ Brownfields Area-wide Initiative, can provide grant funds to ensure that small towns can hire professional coordinators to bring these complex cases to successful ends.

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5.9 Findings

A. Summary of Cases

Chevron Bulk Terminal, Morton. The Chevron Bulk Terminal site is a one-acre site divided into two parcels with different owners in the small rural town of Morton. Chevron maintained a bulk facility with rail and then truck distribution facilities from 1929 to 1982. Twenty years after Chevron ceased operations on the site, in 2003, a citizen call alerted Ecology to potential pollution on the site. Once Ecology conducted an initial investigation, it took about three and a half years to cleanup one of the parcels on the site for which Chevron assumed liability under an enforcement order. The other parcel, with unknown and deceased PLPs, is also contaminated, but has not been cleaned up. At the time of discovery, the city had various community plans for economic revitalization, including the attraction of tourists. Two of the town's economic development goals were to restore a historic train depot as part of its tourism strategy (a project of the Cowlitz River Valley Historic Society (CRVHS)), and to expand rail service through the area. The location of the historic train depot, however, stood in the way of train service expansion, and the CRVHS seized the opportunity to relocate the train depot to one of the parcels, the one undergoing cleanup. CRVHS bought the parcel in 2005. The Morton site was processed through the formal pathway, and facilitated on the town's side by a project coordinator hired by the Historic Society, who coordinated the process with Ecology and the town's multiple agency partners, as well as secured funding for the project.

Jimmycomelately Creek, Jamestown S'Klellam Tribe. The Jimmycomelately Creek cleanup and restoration was part of a larger restoration project of wildlife habitats in Sequim Bay, off Washington's Olympic Peninsula. From 1892-2001, the mouth of the JCL Creek was used for storage and shipping of logs. Logs were tied to pilings and pilings (about 100), were treated with creosote, which is composed primarily of PAHs. This area comprised 7.6 aquatic acres out of the 15.4 square miles of the total JCL watershed. In the late 1990s, the Tribe, with the assistance of Washington's Department of Fish and Wildlife, and of Transportation began to acquire land and

easements with the purpose of restoring the Creek. The cleanup phase of the project took about 2 years to complete (2003-2005). The site was cleaned up under Tribal jurisdiction with US EPA and other federal agencies' oversight. This is a case illustrating the restoration of a rural industrial site to improve the aquatic environment for endangered salmon, and other species. It involved the Tribe's collaboration with multiple state and federal agencies in a multi-phased area-wide planning financing process. The case also indicated the lack of State water quality standards for total PAH contamination levels—the project used NOAA standards, and the lack of information on the horizontal distribution of contamination in aquatic sites.

Kendall Yards, Spokane. Operated as a Union Pacific locomotive repair and servicing complex from 1914 to 1955, the 78 acre Kendall Yards site was primarily contaminated by leaks and spills of Bunker C oil. The site was also contaminated with metals such as arsenic, cadmium, and lead. After Union Pacific ceased operations, the rail corridors were abandoned over a period of time through the 1980s. The 14-parcel property then came under the ownership of Metropolitan Mortgage and Securities Company. Planning for a mixed development on the site, Metropolitan without oversight from Ecology conducted a Phase I and II ESA for parcels 1-2 in 1990-91, and in 1992, conducted additional sampling for most of the 14 parcels. Metropolitan developed a Cleanup Action Plan in 1993-94 for the site, and some remedial activities took place at the time. In 2004, Metropolitan declared bankruptcy and the site was auctioned off in bankruptcy court to Marshall Chesrown of River Front Properties. Chesrown planned to reuse the site as a mixed use development, very much in line with Metropolitan's plans for the site, and began to plan the cleanup for unrestricted uses on the site right away. In May of 2005, the site began the cleanup process by entering the VCP pathway. The developer obtained a $2.4 M loan from CTED's Revolving Loan Fund, and the planning of the cleanup was completed within 6 months. Cleanup began on September 2005, and was completed in January 2006. 22,000 tons of contaminated soil were removed from the site. The site was removed from the State's Hazardous Sites list in May of 2006. At the time, the developer planned 2,600 units and one million square feet of retail and commercial space. The cleanup and redevelopment of the site is an excellent example of collaboration between a private sector developer and state and local agencies, and EPA in 2006, gave the project a national award for outstanding remediation activities. The positive relations with the City, and other city and civic entities led the City to approve in 2007 a tax increment district to finance part of the cost of the development's infrastructure. The softening of the real estate market in the past year or so, however, has delayed the start of construction of the project to at least 2009, and forced the cutting back of phase I. Site

preparation and construction of infrastructure, including streets is proceeding through the end of 2008.

Asarco, Everett. In this complicated and litigious case, the American Smelting and Refining Company (ASARCO) Incorporated, the responsible party in the case, acquired an existing smelter on a 44-acre site in 1903, ceased operations in 1912, and dismantled the smelter by 1915. Around this time, ASARCO began to sell off the property in several parcels to several buyers without informing them of the former use of the site. Over time, a neighborhood with residential and other uses developed on the former smelter site and its surroundings. In 1990, Weyerhaeuser, the owner of one of the parcels on the former smelter site discovered some suspicious slag and informed Ecology. Upon conducting an initial investigation, Ecology found that a total of 684 acres showed some contamination, with the heaviest around the historic site of the smelter. In 1992, Ecology issued the first of six enforcement orders to ASARCO, as the responsible party, requesting that the company conduct a full RI/FS. At about the same time, ASARCO begins to buy back residences in the historic smelter tract, tears down the houses, and fences the area (the Fenced Area). In September 1995, ASARCO delivers the RI/FS which confirms the presence of arsenic, cadmium and lead in the soil, and arsenic and lead in groundwater and surface water above standards, and continues to buy out residences. In 1996, ASARCO presents a phased framework for conducting cleanup on the site, Ecology agreed with much of the plan which called for removal of the most contaminated soil, but not with the phasing. This is followed by more enforcement orders, mediation, litigation, finally a court injunction for ASARCO to begin cleanup of the most contaminated soil by June, 2004 and to complete it by August of 2004.

ASARCO, at the time was a besieged company, facing 25 lawsuits in 12 states. As a result of a federal EPA suit against the company, which had been bought in 1999 by Grupo Mexico(headquartered in Mexico City), ASARCO/Grupo Mexico had to pay $100 million into an Environmental Trust Fund with proceeds from Grupo Mexico/ASARCO to pay for ASARCO's liability claims in the U.S. At the same time ASARCO was dealing with the Everett case, it was also embroiled in the much larger and complex Superfund case in Ruston, WA, where it had formerly operated another polluting smelter. The Superfund case was led by EPA. The Everett smelter case became entangled with the Ruston case in at least two ways: first, ASARCO proposed to dispose of the excavated soil from the Everett case by disposing it in the Ruston site, after it disposed of the contaminated soil from the Ruston site (this disposal plan, according to ASARCO would save it $3 million), but the Everett disposal plan required EPA approval; second, ASARCO was counting on at

least $1million to be released from its Environmental Trust Fund to conduct the cleanup at the Everett site, but EPA had to approve ASARCO's disposal plan for Ruston, and then its plan for Everett before it approved disbursal from the Environmental Trust Fund. Consequently, even though the Everett Asarco case was not a Superfund site with EPA oversight, it depended on EPA decisions in order for the responsible party to move forward with the cleanup.

ASARCO through the legal suits it brought against the State (which limited its liability to its historic smelter property), and finally by declaring bankruptcy (which prohibits expending cleanup funds on property the bankrupt company does not own) was able to avoid responsibility at the time for cleanup of the larger contaminated site. The company, did, however, finally cleanup the most contaminated soils in its former historic property through the propitious intervention of the Everett Housing Authority (EHA). In December of 2003, EHA agreed to buy for $3.3 million the land inside the fence and homes outside the fence that ASARCO had acquired, ASARCO agreed to remove the most contaminated land in the site, and EHA agreed to contribute to ASARCO's cleanup costs and to assume the remaining costs of the cleanup of the historic smelter area (not the greater site) after ASARCO's removal of the most contaminated soil. Ecology issued two prospective purchaser agreements with EHA providing it with liability protections in April 2004. The prospective purchaser agreements resulted in the release to ASARCO of $1M from the Trust Fund, and EHA contributed another $1million obtained as a match from Ecology to ASARCO's cleanup expenses. This infusion of funds helped ASARCO meet the deadlines in the injunction to begin cleanup in June 2004, and complete it by end of October 2004. None too soon, since ASARCO filed for bankruptcy protection less than a year later in August of 2005. The same month, the City approved EHA's sale of a seven-acre parcel of the land it bought from ASARCO to a developer for $3.2 million. In order for the developer to proceed with the medium density residential development he had proposed for the site, EHA had to complete the cleanup of the site. This cost an additional $900K to which the City of Everett and EHA contributed $450K and Ecology contributed $450K in matching grant funds. The sale went through in January of 2006, and the city approved the developer's plans. The developer subsequently sold the site to Bonterra homes, which developed the property as planned into a total of 90 units in 2-, 3-, and 4-unit townhouses. As to the larger, less contaminated site, much of it still remains contaminated. Ecology has proceeded to clean up this area at a manageable pace, since the State has had to assume the costs of cleanup.

Washington State has filed a total claim of $600 million against ASARCO, more than half of it associated with the Ruston Superfund Site. In the meanwhile, ASARCO's bankruptcy case has been wending its way through federal bankruptcy court and some relief may be in sight. In August

of 2008, ASARCO agreed, pending federal bankruptcy court approval, to pay $200 million to Washington State to clean up the toxic contamination around the Ruston site, and six other sites in Washington State, including the Everett site.

Broadway Crossing, Seattle. This small urban infill site (less than 1/3 of an acre), former gasoline station and convenience store on the corner of the main street in Seattle's Capitol Hill neighborhood was cleaned up and redeveloped into a mixed used project, with a new Walgreens on the ground level and 44 low-income rental units above. The soil on the site had been contaminated by leaking petroleum tanks, and the cleanup, which occurred in two phases after the gasoline station ceased operations, was straight-forward since the level of contamination was low, and there was no groundwater involvement. The success of project involved a unique private and non-profit partnership, Walgreens, who originally bought the site from the gas station owner, and intended the site for a new store; its local developer, Grainger, who understood Walgreens needs and the local planning and community development environment; and, CHH, a local community development corporation with solid experience in developing and managing affordable housing. Although Walgreens, at first, just wanted to develop the site as its typical one-story footprint, community opposition to this plan led to the project's revision. The local developer brought in CHH, which was able to put together a financing package which included low-income tax credits for the housing part of the project. The cleanup was handled through the VCP process in two phases. Chevron excavated and disposed of much of the contaminated soil in 2003, after it ceased operations, and was granted a Partial Sufficiency with a Further Action letter. The local developer for Walgreens, Grainger, assumed responsibility for the final cleanup at the time of construction for the new development in 2005. The major glitch in the process was the discovery of more contaminated soil on the site, as the project site was being excavated for a two-story underground garage. This tripled Grainger's estimated cleanup costs. But the ability to excavate the contaminated soil in tandem with the excavation for the garage (a 'two-fer') and the strong market conditions, enabled the developer to complete the cleanup successfully. The public benefit, 44 low-income rental units, achieved by the redevelopment was to a large extent the outcome of Seattle's strong neighborhood planning and participation tradition. This tradition brought home to the developers through the local design review board convinced the local developer and Walgreens that, in order to win City approval for its new store, it needed to meet the neighborhood's planning objectives for denser, mixed use development, especially its need for low-income rental units.

Custom Plywood, Anacortes. This waterfront site on the western shores of Fidalgo Bay in Anacortes has had multiple waterfront industrial uses since 1900, from sawmill, box factory, to its last use as a plywood mill, which ceased operations in 1992. Soon after the site was devastated by a fire. The contaminated site is composed of 8 parcels and is estimated to be 6 acres of upland, and 28 acres of aquatics. Pollution from industrial operations include oil and gasoline, arsenic, cadmium, lead, chromium, and PCBs. Several scientific samples from 1993-2000 have revealed levels of these toxics above MTCA standards. Since 2002, there have been several attempts to cleanup the site without success thus far. In 2002, the City of Anacortes organized itself to develop a plan for cleanup and redevelopment of the site by establishing a public development authority for this purpose. The city devised a phased approach to the cleanup, partnering with the new development authority and the landowners to cleanup first the upland area, sell the land after cleanup, and then use the City's portion of the land sale to clean up the aquatic part of the site. In order to do this, the City needed Ecology to provide liability protection through a consent decree, but Ecology did not agree, and the City also failed to come to an agreement with the landowners. Subsequently, a new owner, Concorde, was willing to cleanup the site through a consent decree, but needed financial help. Lacking funds, at first, Ecology steered him to the VCP pathway, but within a year decided that the site was too complex to handle through the VCP. Confusion over eligibility for grant and loan funds from CTED under the two administrative pathways also played a part in delaying the process. Finally, in late 2007, Ecology negotiated an Agreed Order with Concorde that he would conduct an RI/FS and draft a CAP. But by December of 2007, another company acquired the site, and this new company is currently negotiating an Agreed Order with Ecology.

J.H. Baxter Site, Renton. Industrial lumber uses contaminated the 20 acre J.H. Baxter site which is located on the eastern shores of Lake Washington in Renton. The site is the northernmost portion of a larger 60 acre site, called Port Quendell, which was divided into three main parcels sharing a common pollution history, and two owners during the 1990s. The cleanup and redevelopment of the J.H. Baxter site was likely delayed by the prospects of assembling and cleaning up the three sites making up Port Quendell to make way for a mega-project mixing residential and commercial uses on the lakefront. Serious plans for such a mega-project were developed in the early 1980s, but contamination discovered on the site put the project on hold, while EPA considered whether to declare the site a Superfund site. When EPA in 1986 decided against Superfund designation for Port Quendell, Ecology took jurisdiction and tried to enforce the owners to undertake remedial investigations and cleanup the sites. In the late 1990s, Vulcan, Inc., a real estate development

company owned by Paul Allen, revived the mega-project plans, and began to negotiate the acquisition of the 3 parcels. Vulcan established a subsidiary, the Port Quendall Company (PQC) to develop the project. But a mega-development on Renton's waterfront would have required addressing lack of highway interchange capacity and a railroad right of way slicing the eastern edge of all three properties. Enlisting Vulcan's help, the City of Renton went to work on this problem, conducting transportation studies and lobbying the state. It also devised a plan to buy the middle, most polluted parcel in Port Quendall for $0 in exchange for cleanup of the site, to ensure the assembly of the land for the project, and to reduce the cleanup burden of the developers. But it was not to be. Negotiations between PQC and the owner of the southernmost parcel broke down. However, PQC went forward with its interest in the Baxter property, entered into a prospective purchaser agreement with Ecology, and bought the J.H. Baxter site in 2000. PQC agreed to assume responsibility for cleaning up the site. The Baxter family had carried out remedial investigations on the site, and PQC was able to develop a CAP based on this earlier work. The site most likely would have been developed as a smaller-scale mixed used project, but then in 2001, the market suffered a recession, and it was no longer clear what would be feasible for the site. PQC, however, carried out the cleanup without a definite redevelopment plan, until another of Paul Allen's companies, the Seahawks, came up with the idea of a practice facility and headquarters for the property. In 2006, PQC announced plans, and the Seahawks moved in for spring training in 2008. Around this time, the owner of the southernmost parcel cleaned up his land and sold it to a residential developer, who redeveloped the site as luxury waterfront homes, while the most polluted middle parcel has been declared a Superfund site. The JH Baxter case illustrates the challenges local governments face in ensuring integrated redevelopment when facing large-scale, multi-property, multi-site brownfields. It also offers insights on the influence of market conditions, type of developer, and local strategies on brownfields redevelopment.

Wyckoff Site, Bainbridge Island. This 50 acre upland property, including its aquifer, is part of a 500 acre Eagle Harbor/Wyckoff Superfund site designated by EPA in 1987 in the City of Bainbridge Island. The rest of the Superfund site is aquatic, including the East and West sides of Eagle Harbor. Lumber and shipbuilding activities using creosote from 1904 to 1988 contaminated the Wyckoff property, and the Harbor, primarily with PAHs. The Superfund site is a complex site in that it involves land, aquifers, marine sediments and aquatic areas. EPA held the Wyckoff Company, which had operated a wood treatment facility on the property from the mid-1960s to its closure in 1988, liable for the contamination. After the Wyckoff Company settled its liability with EPA by

transferring all its assets, including the land, into an environmental cleanup trust, the trust auctioned off the land to partly pay for the site's cleanup. This settlement left EPA responsible for the cleanup of the Superfund site, and the City of Bainbridge Island began a phased purchase of the Wyckoff property in 2001 after EPA had conducted a certain amount of cleanup. The City, which undertook a strong participatory visioning and planning process for the property, was successful in finding partners and funding for the purchase of the property and the redevelopment of the property into parkland, including a memorial park recognizing the internment of Japanese Americans during WWII. The City obtained prospective purchaser agreements from EPA and Ecology to protect its future liability. In this Superfund case, the City's redevelopment of this complex site has relied on EPA to carry out the remedial investigations and cleanup of the Wyckoff property. The cleanup is now complete, except for the final cleanup of the most polluted parcel, Bill Point. The City and Ecology on the one side and EPA on the other have disagreed over the final cleanup of this parcel. EPA, having spent over $125 million on the cleanup of the overall Superfund site, has selected a containment method for cleaning up the remainder of the Wyckoff property that will require maintenance and operations for decades and cost in the tens of millions. Maintenance and operations cost would be the responsibility of Ecology and the City. Ecology and the City have argued for more complete cleanup methods with fewer requirements for ongoing maintenance and operations. Although the City has purchased environmental insurance, insurance has a time limit, and depending on the final cleanup strategy, the City may be faced with additional costs for cleanup 20 or more years in the future. As a Superfund case with EPA managing the cleanup and a local government the redevelopment, this case illustrates the different and potentially conflicting interests of federal and state and local governments. As importantly, the case demonstrates the benefits of a strong participatory community planning process in the cleanup and redevelopment of a contaminated site. The City led and conducted an extensive citizen participation and visioning process, which led to successful negotiations with EPA on the purchase of the property, and in its ability to enter into useful partnerships, to raise funds, and obtain federal and state grants.

B. Length of Cleanup Process

The administrative characteristics of the cases are summarized in Table 27 below. The cases varied in length from initiation to completed cleanup, with two of them taking about 3 years, Broadway Crossing, Seattle, a VCP case, and the Chevron, Morton case, a formal case. The Asarco, Everett case, from the first enforcement order in 1992 to the completed cleanup of the most polluted area of the site took 12 years, but most of the site is still polluted, and Ecology is still cleaning up the

larger site. Scientific samples showing contamination above standards began to be drawn at the Custom Plywood site from 1993, but it was first listed on the State's Hazardous Sites List in 2001. Thus, depending on when initiation is perceived to begin, the site has been in process 15 or 7 years. The Wyckoff site was listed as a Superfund site in 1987, and cleanup continues as of 2008; the site has been in process 21 years and counting. The results of scientific samples drawn at the larger Port Quendall site in 1983, of which the JH Baxter property was part, indicated severe pollution. This prompted EPA to consider listing the site as a Superfund site. In 1992, Ecology decreed formal orders on the Baxter property, and the property was cleaned up by a new owner by 2005. Depending on when initiation is perceived, the site was in process either 22 years, or 13 years. Quendall Terminals, the most polluted property in the site, now a Superfund site is still not cleaned up, and thus it has been in process for 25 years and counting. Kendall Yards, under a new owner, entered the VCP process in 2005, and completed cleanup in 2006, record time. But the previous owner of the Kendall Yards site had begun the formal process in 1990, and conducted considerable cleanup; thus, the site had been in process for 16 years until the cleanup was completed in 2006.

Table 27. Comparison of Cases by Length of Process and Administrative Pathway

	Administrative Pathway	Initiation	RI/FS & Legal Negotiations	CAP	Cleanup	Current Status
Asarco, Everett	Formal/enforcement orders (6) against PRP	Property owner called Ecology when it excavated slag 1990-91	Ecol issued first enforcement order in 1992, RI/FS completed 9/1995; legal negotiations until 2004	1996 a framework, but not approved by Ecology as such	Cleanup of most contaminated soils (20-44 acres) completed by ASARCO on 10/2004; EHA completed the cleanup by end of 2006	20-44 acres cleaned up; new housing development on 7 acres; rest of 686 less contaminated acres still to be cleaned up
Broadway Crossing, Seattle	VCP	Leaking tank in the 1990s; sale of property 10/2001	Chevron conducted RI/FS in 2003; Owner/developer entered VCP in 2005, and completed Chevron's cleanup process	Chevron completed CAP in 2003	Chevron completed most cleanup by 2003—granted Partial Sufficiency with Further Action; Final cleanup during construction, fall 2005; approved UST removal and excavation report 1/2006; NFA issued 4/06.	Redevelopment completed: Walgreens opened 3/2007; and 44 affordable housing rental units opened 2008
Custom Plywood, Anacortes	Formal/enforcement orders Listed in State's Hazardous Sites List in 2001, rank of '1'	1993-2003 scientific samples showed contamination exceeding standards	Agreed order with owner in fall, 2007 to conduct RI/FS and CAP		Interim Action conducted in July 2007 to remove contaminated soils on the northern part of uplands site.	New owner 12/2007; Ecology negotiating a new Agreed Order in mid 2008
Wyckoff/ Eagle Harbor, Bainbridge Isl.	Superfund Site listed 1987; Prospective purchaser agreement with City	1984 studies		East Side of Wyckoff	Completed, except for Bill Point	Partly redeveloped as park as of 2008
JH Baxter, Renton	Formal/ Prospective Purchaser Agreement (2000) with prospective owner	1983 investigation prior to sale which led EPA to consider placing site on NPL	1992 RI conducted by Baxter Co. (previous owner); northern portion of Baxter site received NFA; 1993 Agreed Order with Baxter to complete RI/FS	PQC completed CAP in 2002	Cleanup conducted by PQC between 2002-05; NFA obtained in 2005	Redevelopment completed as Seahawks practice facility (2008)

			for southern portion			
Jimmycome-lately Creek, Sequim Bay	Tribal Process	Endangered chum salmon native to Creek leads Tribe to develop plans to restore Creek in mid-1997—conceptual plan completed in 2000	RI/FS completed in ?		Cleanup initiated in FY 2003 and completed in early 2006, including monitoring	Restoration almost complete
Kendall Yards, Spokane	VCP entered in May, 2005	Site listed in State's HSL. Earlier work in mid-1990s under previous owner	Previous owner conducted RI/FS 1990-92; Chesrown (new owner) conducted further assessments May 2005	Previous owner developed CAP in 1993-04; Chesrown completed CAP in Sept. 2005	Previous owner conducted remedial cleanup in mid-1990s; Chesrown cleanup began 9/2005 and completed 1/2006. Site removed from HSL on 5/2006	Infrastructure under construction; market conditions have delayed construction of mixed use project
Chevron, Morton	Formal Process: Enforcement Order 1/2004	Citizen call to Ecology; Ecology conducts initial investigation in 2003	RI 5/2004-8/2004		Ecology orders Interim Action 10/2005; cleanup on parcel completed 2006	One parcel cleaned up and reused by a historic train depot as part of a larger tourist attraction as of 2008

C. Issues Raised by Cases

1. *Community Planning and Stakeholder Involvement.* Community planning and stakeholder involvement, in various forms, were part of most of the successful cases studied. In the Broadway Crossing case, community-wide planning had taken place sometime before the case, but a community group, a local design review board brought the plan to bear on the developer's project, and successfully changed the project to provide a substantial public benefit. Community planning and stakeholder involvement was extensive in the Wyckoff, Jimmycomelately Creek, Kendall Yards, and Chevron cases. Community planning and stakeholder involvement was not as significant in the ASARCO, Everett case, the Custom Plywood case and the JH Baxter case, although the developer in the JH Baxter case conducted its own community involvement process.
2. *Applicability of Area-wide, Multiple Site Approach.* Several of the cases would have benefitted from an area-wide approach, with public incentives led by the city involved, e.g., JH Baxter; Custom Plywood, Anacortes; Chevron, Morton; Kendall Yards; and Wyckoff site. In effect, many of the cities involved in these cases developed their own area-wide processes, with uneven success, to deal with these sites.
3. *Public-private Partnerships.* Most of the cases involved beneficial public-private partnerships. In the ASARCO, Everett case, the Everett Housing Authority and the City of Everett negotiated a purchase deal with ASARCO that resulted in the cleanup of the most polluted area of the site. In the Broadway Crossing case, a national retailer, a local private developer, and a local community development corporation entered into a partnership resulting in the cleaning up of the site, and a successful redevelopment. In the Kendall Yards site, the partnership between the private developer and the City of Spokane led to the forming of a tax increment finance district to finance the infrastructure for the site. In the Morton case, the City and a non-profit, a local historical society entered into a successful partnership that managed the cleanup and redevelopment of part of the contaminated site.

4. *Use of Financial Tools.* Several cases illustrated the use or need of financial tools. A TIF used by Kendall Yards to partially finance the infrastructure needed for its redevelopment is a tool that could be used by other projects during strong market conditions. EHA obtained a remedial action grant from Ecology for $1.45 million to purchase the ASARCO property. Kendall Yards obtained a $2.4 million RLF loan from CTED, the largest EPA brownfields loan at the time. But this also indicates the lack of sufficient RLF capacity to help finance large-scale projects, for example, EHA's purchase of the ASARCO site. Instead, EHA obtained a line of credit for over $5 million from a private bank.

5. *Market Conditions.* Market conditions played an important role in several projects. Strong market conditions led EHA to purchase the ASARCO property, and enabled it to turn around and sell part of it to a private developer; the same strong conditions led the Kendall Yards developer to purchase the property and clean it up with his own funds and Vulcan to pursue a mega-project in the 1990s in Port Quendall. Downturns in the market led to the abandonment of the mega-project at Port Quendall, and currently, are delaying or stopping the redevelopments at Kendall Yards and at the Everett site.

6. *VCP versus Formal Process.* Broadway Crossing benefited from the VCP process, it was a small site, with only soil contamination, and was able to complete the process in three years. The Morton site, although a small site benefited from the formal process. How so? The new owner of the Kendall Yards project was able to complete the process in record time, but the site had already undergone independent assessment and much cleanup in the 1990s. Thus, it is not clear whether a large site without such previous work could undergo the VCP process in such record time.

7. *Issues of Coordination.* Ecology led the ASARCO, Everett case, while EPA led the ASARCO, Ruston case. The two cases were intertwined, and it is not clear the extent of coordination between Ecology and EPA. In the Wyckoff case, there have been disagreements between Ecology and EPA on the final remedy for the most polluted parcel. In the Custom Plywood case, there was a lack of coordination between Ecology and CTED on which administrative pathway would be best for the owner to follow.

8. *Infrastructure Limiting Redevelopment Options.* In several of the case studied, infrastructure capacity set limits to redevelopment options. In the JH Baxter case, transportation infrastructure problems were main obstacles to the mega-project concept. In Kendall Yards, infrastructure deficits would have been a problem, but the developer and the City agreed to designate the area a tax increment finance district to partly pay for the infrastructure required. The Wyckoff site lacked adequate infrastructure capacity for significant residential or commercial development.

9. *Containment Strategies and O & M Costs and Risk.* The Wyckoff site makes clear that containment strategies can have considerable operations and maintenance costs for owners for long periods of time, and face considerable risk of reopeners and natural resource damages. This is of particular concern to local governments that assume ownership of a site after cleanup.

10. *From Brownfields to Greenfields or Bluewaters.* Two of the cases, the Wyckoff property and the Jimmycomelately Creek site are good examples of contaminated areas returned to parklands or clean shorelines.

11. *Lack of Power to Force Cleanup before Property Transfers.* All the cases studied demonstrate the lack of statutory power to force the cleanup of, or at least to identify, brownfields before property is transferred. And yet all of the cases studied had historical industrial uses that release toxic pollutants. This lack of statutory power makes it more difficult to identify responsible parties early on, as well as allows the pollution to threaten public health and the environment for long periods of time.

12. *Large Complex Sites with High Cleanup Costs.* Large, complex sites with high cleanup costs are often beyond the ability of responsible parties, EPA and Ecology to cleanup. The Eagle Harbor/ Wyckoff site has cost EPA over $125 million so far, and the operations and maintenance costs for Ecology and the City are projected to be in the tens of millions. Some delays, as in the Eagle Harbor case, can also be due to lack of effective technical cleanup solutions. Quendall Terminals, another heavily contaminated shoreline site may be very costly to cleanup. At the time of the mega-project concept, the cleanup was estimated to be more costly than the price of the land.

Chapter 6. Recommendations

Drawn from the findings on Washington State's program, the other state programs studied, and the Washington State case studies, the recommendations presented here aim to shift Washington State's Toxics Cleanup Program from a first generation program with several second generation features, such as the VCP, to a third generation program. We characterize a third generation by a strategic approach to brownfields at the state level, an integrated state program that addresses cleanup, reuse and sustainable development, and a set of programs that enable local communities to deal comprehensively with the brownfields in their midst, and that facilitate cleanup and redevelopment by the private sector. The recommendations respond to the challenges to the current TCP program in the state, in particular to the lack of integration between cleanup and redevelopment leading to ineffective partnerships, as well as the length of the cleanup process. The matrix depicted in Table 28 identifies the specific challenges that each recommendation is meant to address. In addition, the discussion section under each recommendation identifies options as appropriate, and the rationale for the recommendation. We present several sets of recommendations, statutory, administrative and state level policy, although many of these are interlinked.

6.1 A New State Brownfields Act

MTCA was established as a first generation program, focused on cleaning up the most contaminated land in the State with a command and control approach. It was developed at a time when the larger problem and dual nature of brownfields was not recognized. Although revisions to MTCA have acknowledged some aspects of brownfields, the Act remains primarily a cleanup statute. Our study of the Washington Program had two major findings: the length of time it takes to process sites through both the formal and the VCP pathways, and the lack of integration between cleanup and redevelopment. The length of the cleanup process discourages redevelopment. The lack of integration between cleanup and redevelopment hinders the types of partnerships that are associated with successful brownfields redevelopment, partnerships among state agencies (Ecology and CTED), with local governments, and with the private sector. The integration of cleanup and redevelopment aspects of brownfields should be reflected in the State

Table 28. Challenges to the Brownfields Program Addressed by the Recommendations

Recommendations	**Challenges to the Washington Program**								
	Lack of Integration between Cleanup and Redevelopment (Findings Chapt.2.11.19.e)	Length of Process (Findings Chapt.2.11.19.a)	Lack of Brownfields Staff (Findings Chapt.2.11.19.d)	Lack of Connection to Sustainability Agenda (Findings Chapt.2.11.19.f)	Legal Liability Protection (Findings Chapt.2.11.19.b; Chapt.3.3.7-13)	Lack of Community-wide, planning oriented, multiple site focus (Findings Chapt.2.11.19.g; Chapt.5.9.C.1-2)	More Financial Resources and Improve Access to existing ones (Findings Chapt.3.3.6)	Inadequate Outreach and support to Rural and small communities (Findings Chapt.2.11.19.h)	Other
New Brownfields Act	X	X	X	X	X	X	X	X	
1. Brownfields Definition	X			X			X		
2. Recognition of dual nature of brownfields throughout Act	X								
3. Changes to Independent remedial action	X								

4. Closure and Transfer				Internalize externalities by providing an economic signal; links to sustainable industries policy (Findings Chapt.5.9.C.11)					Facilitate identification of PRPs
5. Connection to growth management				Furthers an integrated sustainable development agenda					
6. Community-wide, multiple-site approach, including new RAG	X	X				X			
7. Extension of liability protection						For innocent redevelopment agencies, and partners			
8.State licensing of environmental site									Improve the quality of site

professionals									professionals (Findings Chapt.4.8.B.3)
9. Authorize site professionals to cleanup and certify simple brownfield sites		Most sites are small, lightly contaminated.	X						
10.One-stop Brownfields Shop, increase Brownfields Staff	X	X	X						
11. Cross-training of staff	X								
12. Meetings among staff in different agencies, and programs	X (Findings Chapt.5.9.C.7)		X	X				X	
13. Outreach services								X	
14. Increase capital of RLF							X		
15. Funding for small towns and							X	X	

rural communities									
16. TIFs for brownfields cleanup						TIFs require a planning, area-wide approach	X		
17.State Brownfield Strategy	X	X	X	X	X	X	X	X	To focus public, legislative and executive interest on brownfields and shape policy
18.National or State Brownfields Reclamation Corps		X					X		To increase the resources to cleanup complex sites and link this purpose to other national priorities (Findings Chapt.5.9.C.12)

statutes on contaminated land. Such integration would be a first step in addressing the backlog and length of the cleanup process.

Overall Recommendation. *The State should develop and enact a new statute, a Brownfields Revitalization Act, with features detailed in the specific recommendations below.*

Discussion:

This overall recommendation would accomplish the recognition of the larger brownfields problem and its dual nature, cleanup and reuse, and incorporate various measures to quicken their cleanup and reuse in the State. Most other states have enacted new legislation in the past ten years to recognize the brownfields problem and to supplement their original State Superfund laws. MTCA has made a number of incremental changes moving the State in this direction, but still remains fundamentally a cleanup law for dealing with worst sites. The other option we considered was a revision of MTCA to incorporate many of the changes detailed in the specific recommendations below. We recommend a new law, since a new Act focused on brownfields revitalization would keep in place the MTCA sections dealing with the worst contaminated sites and State standards, while the new legislation would target brownfields as the larger, and less contaminated part of the universe of toxic sites. Most states have followed this path (Cf. Chapter 4.8.4)

Recommendation 1*. A definition of brownfields, following EPA's most recent definition, which acknowledges that any type of property can be a brownfield, not just industrial or commercial, but also recognizes the environmental, economic and social effects of brownfields, i.e., A brownfield is real property where environmental, economic, and social reuse objectives are hindered by real or perceived environmental contamination.*[95]

Discussion:

The brownfields problem is not just centered on contamination, there are also economic and social consequences incurred when property remains idle, vacant, abandoned, or

[95] This definition of brownfields was suggested by John Means, the Brownfields Coordinator for the State program. It is novel in recognizing social, as well as environmental and economic public objectives in addressing the brownfields problem.

underutilized. MTCA does not address these aspects of brownfields, nor does any other state law, such as GMA. The public interest in brownfields is not just limited to cleaning up contamination and resolving environmental liability. Owners and developers undertake brownfields cleanup for their reuse potential. This process of cleanup and redevelopment involves multiple stakeholders. The new Act, thus, must be focused on reuse potential and forging partnerships as well as cleanup. Furthermore, a brownfields definition will enable TCP to provide staffing and direct funds for brownfields cleanup and redevelopment from the Toxics Accounts.

Recommendation 2. *In general, the new Act should recognize the dual nature of the brownfields challenge, and the clear purpose of the statute should be to ensure the cleanup and reuse of brownfields.*

Discussion:

In addition to providing a definition, it is important to provide a clear and consistent message throughout the new legislation that the brownfields problem is a dual problem of cleanup and redevelopment, with economic and social dimensions.

Recommendation 3. *The independent remedial action clause should be incorporated into the new Act and revised to include staff advice and assistance on redevelopment.*

Discussion:

In recognition of the brownfields problem, states around the country established voluntary cleanup programs to facilitate the cleanup of less contaminated sites and authorized independent cleanups. But VCPs do not necessarily address the redevelopment aspect of brownfields. The new Act should incorporate the land recycling or redevelopment aspect of brownfields in the independent remedial action pathway. This would provide redevelopment advice to owners or purchasers who would like to pursue independent remedial action, whether pursuing the VCP or the truly independent option.

Such a revision would, in effect, establish the VCP as a brownfields program, expanding the brownfields effort in the State. This recommendation is directly linked to the recommendation on increasing staff for brownfields (No. 10), as well as the

recommendation on licensing site professionals (No.8), which aims to improve the quality of independent remedial actions.

Recommendation 4. *Transfer Clause. This clause should require that prior to sale of property, an owner with property used for industrial or commercial activities likely to release hazardous substances (a list of such activities should be pre-specified by the State) should notify Ecology of their intent to sell, of the contamination status of their property certified by an environmental professional (see Recommendation 7), and of the plans for cleanup of the property. Ecology could impose a penalty for noncompliance. More ambitiously, the new Act could require that property owners with contaminated properties cleanup such properties at the close of operations or before transfer, or certify that the buyer would cleanup such properties.*

Discussion:

We considered leaving the situation as it is. The State currently requires that businesses that use hazardous chemicals report to Ecology's Hazardous Waste and Toxics Reduction (HWTR) Program the amount and type of hazardous materials stored on site and released to the environment. This information is available to the public via the Toxics Release Inventory Data System (TRIDS) for Community Right to Know laws. HWTR also provides assistance to businesses who would like to replace their use of toxic materials with more sustainable materials. But there is a backlog of properties from previous industrial uses that continue to be transferred without Ecology being notified, and continue to pose a threat to public health. We are also aware that sales of residential property require the disclosure of hazardous substances (RCW §64.06.020) to the buyer. The disclosure requirement is only for residential types of property, leaving out other uses, and the disclosure is to the buyer. There is no provision in the Code for notifying Ecology of hazardous substances disclosures. We also considered weak and stronger versions of this recommendation. A weaker version of this recommendation would require disclosure of hazardous substances and notification to Ecology at the point of sale for all uses, not only residential, and establish penalties for lack of compliance. A stronger version would additionally require a Phase I investigation. The strongest version would require Phase I and II, as well as cleanup by the owner or prospective purchaser.

The motivation for this recommendation emerged from the Washington State case studies. All of the Washington cases studied had historical industrial uses that release toxic pollutants. Yet, in most of these cases, owners ceased operations and properties were transferred several times without cleanup occurring. In some cases, after such industrial operations ceased, decades elapsed before Ecology was alerted to the contamination. It is true that the original pollution in these cases by and large predated federal and state laws enacted in the 1970s and 1980s to regulate hazardous substances use and releases. These cases highlight the backlog of historical industrial and other uses that continue to threaten public health in the State. Currently, there are no effective ways to identify such cases for Ecology. In addition, this recommendation would dovetail with the sustainable materials policies that HWTR promotes. Even the weaker versions of the recommendation would provide an economic signal to potentially liable parties that they are responsible for contamination due to activities releasing toxics. In sum, this measure would notify Ecology of hazardous materials disclosures at the time of transfer, enabling the State to address the toxic legacy of the past, and providing the State with a more realistic estimate of the universe of brownfield properties, information needed to develop a realistic State-wide Strategy to cleanup and reuse toxic sites in the State and to shift to a more sustainable use of materials.

As in New Jersey's Industrial Site Recovery Act, this recommendation would provide Ecology with a tool for identifying the universe of brownfields in the State, heighten public awareness of the problem, and at a minimum, enable the identification of potentially liable parties earlier on in the history of a brownfield.

Recommendation 5. *The proposed Brownfields Act should make a strong statement in its objectives and throughout the Act of the connection between the cleaning up and reuse of brownfields and the goals of growth management, as well as the brownfield connection with sustainable development. GMA should also be revised to acknowledge the problem of brownfields.*

Discussion:

MTCA currently includes a growth management argument as one of four purposes for the statute. Washington State is a leader in state-wide urban growth management in the

country. Brownfields redevelopment addresses all the substantive goals of GMA, and yet the State's Growth Management Act does not recognize the problem of brownfields. In addition, brownfields are often clustered, due to zoning, and thus lend themselves to multi-site, community planning efforts. Furthermore, community planning efforts aim to incorporate physical, social and environmental factors in the process, and thus are capable of addressing the multi-faceted nature of brownfields discussed above. This recommendation would ensure the linkage between growth management and brownfields cleanup and redevelopment, and require State guidance in GMA to prepare brownfields elements of local comprehensive plans.

Recommendation 6. *The proposed Act should include a clause establishing a community-wide process for local governments that face multiple brownfields and providing public incentives for this purpose, in particular, a new category of Remedial Action Grants. This community-wide program should be accompanied by a revision to GMA to include an optional brownfields reuse plan element for local comprehensive plans. (RCW36.70A.80)*

Discussion:

The State already recognizes through a dedicated Remedial Action Grant the need to respond in an integrated way to multiple sites where there is water contamination. This recommendation would go further and establish a process for community planning to respond to multiple contaminated sites, irrespective of type of contamination. As the findings on the Washington State cases examined show, community planning and stakeholder involvement are key to successful cleanup and redevelopment efforts of brownfields, in particular of large or multiple sites. A community planning process, moreover, can address social and economic issues beyond cleanup, and by engaging the broader community, it can garner support and funding for its efforts. New Jersey's Brownfield Development Area Initiative provides a model for such an approach. A community-wide, multi-site focus can take advantage of economies of scale, foster community involvement and achieve community-wide benefits beyond economic and tax benefits.

Recommendation 7. *The proposed Act could include liability relief as broad as protection for innocent brownfield redevelopers within areas designated by community brownfields plans, as well as to innocent redevelopment agencies, public authorities, and community development corporations. In the alternative, more particular forms of liability relief could be fashioned to address situations considered appropriate after careful study.*

Discussion:

Concerns for potential liability have played an important role in delaying the cleanup and redevelopment of brownfields. The State already provides innocent purchaser agreements but the process is often lengthy. As recent research on the TCP program indicates, the legal negotiations of the RI/FS and Legal Negotiations phase of the cleanup process is the lengthiest part of the process. National research indicates that developers when considering developing brownfields value legal liability protection more than any other public incentive. Liability protection can also be provided by environmental insurance. Such insurance, however, can be costly, and difficult to obtain for small sites. Although the Washington program can now subsidize environmental insurance for local governments, under Washington State's Constitution, the State cannot provide subsidies for environmental insurance to private parties, unlike the Massachusetts program which provides public subsidies for environmental insurance premiums to both public and private parties. The recommendation calls for consideration of measures that would quicken the process for providing liability protection for innocent parties, especially innocent local governments, their public redevelopment agencies or public authorities and their innocent private partners, who undertake a community planning approach to multiple sites. This provision would thus offer a most valuable public incentive for local governments to pursue an integrated, sustainable process to cleanup and redevelop their brownfields. It is likely to increase the number of sites cleaned, and to reduce the time it takes to process such sites. Several state programs provide liability relief to municipalities and their partners. California, for example, provides liability relief for redevelopment agencies under the Polanco Act.

Recommendation 8. *The State should establish a state licensing program for environmental site professionals and require that all investigations and cleanups in the State be conducted by such*

licensed professionals. This will ensure the quality of site professionals through testing and continuing education and respond to EPA's new AAI Rule.

Discussion:

We also considered the option of the State establishing a registry of pre-qualified professionals, as in New Jersey's current All Stars program, and certification programs. The State could begin, like NJ, with a registry of pre-qualified professionals, but this would not provide the State with authority to ensure the education of such professionals. Certification programs are developed and operated by professional associations, and such programs are not regulated by the State. Typically such programs are nationwide, and the State would not be able to set standards for experience and education in such certification programs.

A State licensing program could improve the quality of the work of site professionals, by establishing state standards for education, especially, continuing education, and by ensuring that investigations and remediation are conducted by professionals with adequate experience. In addition, to ensure the quality of All Appropriate Inquiries (AAI), EPA's 2006 AAI Rule requires that environmental professionals who perform all appropriate inquires have a state or tribal issued certification or license, and a State licensing program could establish adequate standards for such licenses. Ensuring the qualifications of site professionals would be particularly important for owners or developers who wish to pursue the independent remedial pathway options, especially the non-VCP, truly independent option. This truly independent pathway to cleanup does not include any guidance on the part of TCP staff on the conduct of appropriate investigations or cleanup, and the quality of such cleanups are likely to be improved by requiring that licensed professionals perform such work. See Appendix B for information on the experience of Massachusetts' licensing program for site professionals.

Recommendation 9. *Beyond the licensing of professionals, the State should consider devolving the power to investigate, cleanup and certify simple cases of soil contamination that meet the standards of Method A for unrestricted uses, with the State retaining auditing authority.*

Discussion:

The length of the cleanup process, especially through the formal pathway is a major concern of the program. In addition, findings from the study of the Massachusetts and New Jersey state programs indicate that remedial investigation and cleanup of lightly contaminated simple sites can be accomplished by licensed site professionals. We considered the options of recommending that licensed site professionals be authorized to investigate and cleanup all sites, as in the Massachusetts program, or only a defined portion of the sites, as in the New Jersey program. We recommend that the State begin by authorizing licensed site professionals to conduct investigations and cleanup of simple sites, thus freeing staff to devote more time to complex sites. Such a program could accelerate the cleanup of both simple and complex sites. After experience with the licensing program, the State could then consider authorizing licensed site professionals to cleanup, remediate and closeout other types of sites, as the New Jersey program is now undertaking.

6.2 Recommendations on Administrative Changes

From our study of state programs, several models emerge for shifting the TCP program towards a more integrated brownfields approach, from the Wisconsin model that adopted a fully integrated program with two major departments involved, Natural Resources and Commerce, including several innovative features to ensure coordination, communications and outreach, to models where the state environmental agency retains its cleanup orientation, and the economic development department assumes the redevelopment aspects of brownfields, such as Massachusetts or New Jersey. A more integrated approach, such as Wisconsin's requires cross-training as well as ongoing coordination and communications.

Recommendation 10. *The State should consider establishing a one-stop shop for brownfields incorporating VCP technical staff from TCP, the current brownfields staff and CTED staff (both from the economic development and growth management divisions), to provide assistance with both cleanup and redevelopment aspects of the process, including permitting assistance.*

Discussion:

As we noted in Chapter 2, currently, the brownfields staff for the State, the CLEAR team is very small. If the proposed Brownfields Act is enacted, a one-stop shop to provide information and advice on both cleanup and redevelopment for brownfield owners or prospective purchasers who pursue voluntary remedial action can be established for the State. Increased brownfields staff can provide information to interested localities and individuals about the process of cleaning up and redeveloping sites, and the resources available. This can increase the number of sites cleaned up and reused. The recommendation calls for the brownfields program to incorporate VCP technical staff, brownfields staff, and CTED staff to establish a one-stop shop for brownfields in the State. This recommendation is the administrative counterpart of Recommendation 3, aimed at reshaping the independent remedial action into a brownfields program. This recommendation is also linked to the proposed LSP program. If the LSP program is authorized, then the State brownfields program's role would shift for the simpler sites handled by LSPs from advice on cleanup to advice on redevelopment or reuse. The expanded Brownfields office would also serve as a one-stop information and advice shop for more complex sites, those outside the authority of the LSPs.

Recommendation 11. *To accomplish such an end, TCP should provide training on brownfields reuse and redevelopment, including on financial issues, to the more technically oriented site managers in the VCP and throughout TCP.*

Discussion*:*

This recommendation is a key way to bring about the integration needed for the one-stop shop recommendation made above (Rec. 10), and, in general, for the integration of the program. Without cross-training, that is, training technical staff on subjects such as financing of development projects, banking and insurance requirements, and economic development staff on cleanup standards, etc., an integrated brownfields program that provides consistent messages to the public, local communities and interested individuals will not be achieved. Case study findings support the need for cross-training. In several case studies, e.g., Kendall Yards, Port Quendall, ASARCO-Everett, market conditions had direct impacts on the cleanup and not only on the redevelopment of contaminated

sites. Site managers in charge of cleanups of formal as well as VCP sites should understand the dynamics of market conditions and how they impact the viability of cleanup and redevelopment for private and public parties.

Recommendation 12. *TCP should establish regular monthly meetings between brownfields staff in both Ecology and CTED, other relevant CTED staff and site managers to discuss status of cases and issues raised by the cases. Brownfields staff should also coordinate and lead multi-agency meetings with local governments undertaking brownfields projects, as appropriate.*

Discussion:

Several case studies indicated the need for better coordination between Ecology and CTED, and EPA and Ecology. In particular, TCP should clarify and provide consistent information on the appropriateness of VCP vs. formal process for incoming cases. In addition to cross-training of an expanded brownfields staff, brownfields staff should meet regularly with other TCP staff dealing with the formal pathway to cleanup, as well as CTED, and other appropriate agencies.

Recommendation 13. *TCP should consider establishing a partnership with a non-profit, such as ECOSS, to provide brownfields outreach services throughout the State for both public and private parties.*

Discussion:

Both the study of the Washington program and other state programs indicate that outreach to raise awareness of the financial and technical resources available in the states is a widespread challenge. This outreach can be conducted in-house, and the one-stop brownfields shop recommended above (Rec.10), can provide part of this outreach. However, an effective state-wide outreach effort for small towns and rural areas of the State, where such outreach is needed most, requires staff to travel to such areas. Alternatively, brownfields outreach to more rural areas in the State could be modeled on the national Cooperative Agriculture Extension approach to providing technical advice and assistance to farmers through land grant universities. The State could partner with several public universities to provide outreach services to small towns and rural communities on brownfields. Colorado's solution to this problem, contracting outreach

to a non-profit, the Colorado Brownfields Foundation, can be a useful model for Washington State. The Environmental Coalition of South Seattle (ECOSS) is a parallel organization within Washington State, already playing an important role in the Brownfields Coalition that manages CTED's RLF, whose role could be expanded to provide outreach state-wide. We recommended the Colorado approach to outreach, instead of the University extension model, due to Colorado's proven success in this field, and because a contract with one organization would simplify oversight of the program for Ecology.

6.3 Recommendations on Financing

The study findings support several recommendations on the public financing of brownfields. We have already included in the community-wide, multi-site approach recommended above a new category of Remediation Action Grants. In this section we include several other recommendations calling for an increase in the Revolving Loan Fund, targeted rural and small town remedial action grants, and the use of tax increment financing to cleanup sites.

Recommendation 14. *CTED and Ecology should seek to substantially increase the capitalization of the State's Revolving Loan Fund.*

Discussion:

Our examination of large or complicated sites, such as the ASARCO, Everett case indicate that currently, CTED's RLF has insufficient capitalization to provide crucial assistance in such cases. With its current capitalization, the RLF can only provide one large $2-3 million loan at any one time. Since the RLF is one of the few public financial mechanisms for the transaction part of the brownfields cleanup and redevelopment process, as well as one of the few financial tools available to private parties, its capitalization should be increased.

Recommendation 15.*The State should consider targeting a certain percentage of remedial action grants for small towns and rural communities.*

Discussion:

Our study findings on Washington's program and other state programs indicate that rural communities, who suffer disproportionate disruption to their quality of life and economies from brownfields, may need targeted grants to ensure that they obtain a fair share of brownfield remediation grants.

Recommendation 16. *The State should consider establishing a new brownfields reclamation purpose for tax increment financing districts. This can be accomplished by including the cleanup of contaminated land as a public improvement eligible for financing (RCW 39.89.02). Such an inclusion will enable the proposed Brownfields Act to incorporate TIFs as another financing tool for cleaning up brownfields.*

Discussion:

Tax increment finance districts have traditionally been used for site preparation and infrastructure provision, as the Kendall Yards case illustrated. Wisconsin's innovative Environmental Remediation TIFs, however, demonstrates that the mechanism of a TIF can also be used to provide funds to cleanup a large contaminated site or multiple sites in an area or neighborhood. The use of TIFs for brownfields reclamation could provide an additional source of funds (bonds backed by property tax revenues) for local communities aiming to clean up contaminated sites. The use of this financial tool for brownfields cleanup could be fruitfully used in conjunction with the brownfields community planning process advocated in Recommendation 6 to deal with multiple-sites in a community.

6.4 Recommendations for a State Brownfields Strategy

Recommendation 17. *The proposed Brownfields Act should require the preparation of a State Brownfields Strategy to identify and cleanup and redevelop or return to their natural state the backlog of brownfields in the State. The Plan should set a timeline, increase funding, and financial tools to accomplish this.*

Discussion:

Brownfields, to a large extent, the result of the stage of an industrial economy where the environmental consequences of the use of toxic materials were largely unrecognized and unregulated, should not be with us forever. Just as the Governor and the Legislature have set 2020 as deadline for cleaning up all currently known contaminated sites in the Puget

Sound, the State should set a timeline for cleaning up the brownfields backlog throughout the State, develop a strategic plan to accomplish this, increasing funding and financial instruments for this purpose, and establish an agenda for achieving a sustainable materials use policy for the State that will significantly reduce, substitute or eliminate the use of toxics for industrial or other purposes. The 1761 amendments to MTCA requiring a 10-year financial plan is a step in the right direction, but falls short of calling for a strategic plan. Dealing with the backlog of sites is a necessary step in achieving a healthful environment for all the citizens in the State. The Brownfields Strategy could be developed and updated by a blue ribbon committee or commission, as in the State of Wisconsin, that could ensure ongoing public, legislative, and executive attention to brownfields issues in the State.

6.5 National Initiative

Recommendation 18. *The State should propose and lobby for a Brownfields Reclamation Corps as part of a national works program. The mission of the Corps would be to cleanup large, complex sites on the NPL list or which rank 1 and 2 in states' hazardous sites list.*

Discussion:

The cleanup and redevelopment of brownfields is a national problem, neither the federal EPA, nor State programs, such as Washington's Toxics Cleanup Program receive sufficient funds to cleanup the backlog of brownfields, especially when confronting the cost and lengthy cleanup process for complex sites, such as Wyckoff, Custom Plywood, or the Quendall Terminals sites. Brownfields require a more vigorous national approach. In this current recession, the likelihood of an increase in funds for existing programs at either the national or state level is not great. But the recession will also likely require jobs programs. For example, many policy experts are calling for a National Infrastructure Bank which could provide needed jobs by investing in our infrastructure systems. (Ehrlich and Rohatyn 2008) And land is the ultimate, or rather the primary infrastructure. Brownfields cleanup and reclamation is vital to the public's health and the environment, the fiscal well-being of local communities, and promotes sustainable development, efficient metropolitan growth and environmental justice. Brownfields reclamation can become a national priority in a national works program, including

AmeriCorps. Alternatively, the cleanup of costly, complex sites in the State, where the PRPs cannot be found, could also be accomplished by the training and deployment of the State's National Guard. In the same way that WANG trains and deploys guard in disaster management for the State, units of WANG could be trained to assess, cleanup, and possibly restore complex sites. But, while the country is at war, it will be difficult to dedicate any personnel for this purpose.

6.6 Conclusion

The strategies included in the recommendations are meant to reduce the backlog of brownfields in the State (so that the State program can keep up with new sites entering the system), by requiring owners as they sell properties that contain or release hazardous substances to report and cleanup their sites, by licensing and authorizing site professionals to investigate and cleanup simple, lightly contaminated sites, by providing a process and public incentives for local governments to deal with multiple sites through a community planning process, by increasing staff focused on both cleanup and redevelopment, and by advocating the establishment of a National Brownfields Reclamation Corps to clean up large, complex sites. The State itself can coordinate and prioritize its own resources to confront the brownfields challenge by developing a state-wide strategy incorporating many of the recommendations proposed above. We see the reduction of the backlog, much of it the toxic legacy of past industrial and commercial uses, of utmost importance to prepare for climate change, which is likely to increase the risks from contaminated sites, and to prepare for a more sustainable future where use and release of hazardous substances is minimized, and addressed as they occur.

References

Ehrlich, Everett and Felix Rohatyn. 2008, 9 October. A New Bank to Save Our Infrastructure. *The New York Review of Books.* 55(15)

APPENDIX A: PROFILES OF FINANCIAL ASSISTANCE AND INCENTIVES FOR BROWNFIELD CLEANUP AND REDEVELOPMENT

This appendix presents a summary profile of the primary forms of financial assistance available in the State of Washington for brownfields assessment, cleanup, and redevelopment. These are organized into four main headings based on the source of funds.

A.1 Federal Financial Assistance

The first section of this chapter will summarize federal financial assistance related to the state of Washington's brownfield cleanup and redevelopment efforts. An effort will be made to not only describe these instruments but to also explain how the State of Washington utilizes them through its own regulatory system.

The EPA has three main areas of financial assistance directly associated with brownfields. These include: Assessment Grants, Cleanup Grants, and the EPA Revolving Loan Fund. Brownfields, for the purposes of these grants are defined as sites that are "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant," as defined in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 §101(39), as amended (CERCLA). The EPA also defines brownfield sites as sites containing petroleum and "mine scarred" lands. The Brownfields Law of 1994 sets up the spirit of these incentives. The federal government wishes to encourage local government entities and non-profits to form public private partnerships for community-based remediation of contaminated sites.

The EPA anticipates available funds to be around $72 million in 2007, which will include at least 200 cooperative agreements with various entities around the country. Eligible institutions include government entities and non-profits regarding cleanup grants and entities must own sites they wish to remediate for both Cleanup and RFL grant funds. The EPA also accepts coalitions of two or more entities that wish to apply for RLF funds with one member of the coalition being responsible to the EPA for administering funds for the coalition.

Type of Applicant	Assessment	RLF	Cleanup
General Purpose Unit of Local Government	X	X	X
Land Clearance Authority or other quasi-governmental entity that operates under the supervision and\ control of or as an agent of, a general purpose unit of local government	X	X	X
Government Entity Created by State Legislature	X	X	X
Regional Council or group of General Purpose Units of Local Government	X	X	X
State	X	X	X
Indian Tribe other than in Alaska	X	X	X
Alaska Native Regional Cooperation, Alaska Native Village Corporation, and Metlakatla Indian Community	X	X	X
Nonprofit organizations		X	X

Table A1: List of Eligible Entities under EPA Funding Regulations (EPA 2007)

Site Eligibility:

Brownfields sites are defined broadly by the federal government but do consider certain sites to be ineligible for funding. Some of the sites included as ineligible for EPA grants can be made eligible by EPA site-specific designation. Sites that are ineligible for EPA funds and are also ineligible for site-specific determinations are: sites that are listed, or are proposed for listing, on the National Priorities List, facilities subject to unilateral administrative orders, court orders, administrative orders on consent or judicial consent decrees issued under the Comprehensive Environmental Response Compensation and Liability Act CERCLA; and facilities that are subject to the jurisdiction, custody or control, of the United States government. In other words, as long as there is no national control or previous plan under another agency, the sight may be designated as a brownfield either by general or site-specific determination. Other primarily

ineligible sites are those falling under RCRA control or otherwise eligible for LUST trust fund status (EPA 2007).

A.1.1 EPA Direct Assessment Grants

Assessment Grants can be applied for on a community wide or site specific basis but a community may only make two applications to the EPA, one for hazardous material and the other for petroleum. After receipt of the grant there is a 3-year performance piece to be monitored by the EPA. The purpose of the grant is to help in funding the assessment of, and planning cleanup for, brownfields in communities across the country. Community Wide requests and Site Specific requests cannot be applied for at the same time for the same material. A community can make a single type of site request for both hazardous materials and petroleum making the possible number of applications a total of two.

A.1.1a Community Wide Assessment

Community Wide Assessment Grants may be one of two applications a community can make under the EPA's Assessment Grant. This proposal can request money to assess a number of sites in a single community. Acceptance of this assessment type does not represent the EPA's acceptance of any or all of the sites being assessed as brownfields. The total amount of this award is up to $200,000.00. (EPA 2007)

A.1.1b Site Specific Assessment

Site Specific Assessment grants can be $200,000.00 or with a waiver of this limit, they can be up to $350,000.00. If the Site Specific grant is a follow up to a previous Community Wide Assessment, the award and letter and description of the previous grant must be submitted with the application of the Site Specific request.

A.1.2 EPA Direct Cleanup Grants

Cleanup Grants are issued at a maximum of $200,000.00 per site and can be granted for clean up of sites containing hazardous material and/or petroleum. An eligible entity may also apply for grants at a maximum of three separate sites. Entities requesting cleanup grants must accept a cost share of 20% of the grant amount. Cost share can be contributed in capital,

materials, services or labor. Cleanup recipients may not use funds or contribute cost share based on administrative costs and recipients can request a cost share waiver based on hardship. Cleanup grant recipients must be the sole owner (fee simple title holder) to the land before the grant can be issued and must not be liable for remediation of the site. The performance period for a cleanup grant is 3 years. (EPA 2007)

Results are measured in outcomes and outputs. Outcome results must be quantitative in nature and include outcomes which are environmental, behavioral, programmatic, and health related. The primary outcomes listed by the EPA are jobs, green space and economically viable and reusable land. Another consideration for outcomes from the grants will be the leverage of funds to achieve results that could otherwise not have been gained without EPA assistance.

A.1.3 EPA Job Training Grants

This grant is intended to provide job training for brownfields redevelopment, assessment and cleanup. Job Training Grants are to be used by entities that are utilizing EPA revolving loan funds, assessments grants and cleanup grants. These grants are intended to train and recruit residents of areas containing contaminated sites in remediation processes, site management and cleanup techniques. Grants can also be used to procure contractors willing to provide training and/or who are willing to work with training programs to facilitate job training in regard to brownfields remediation. (EPA 2006)

Eligibility:

Eligible entities include local government and state entities as defined under CERCLA 104(k)(1) as well as qualifying public and private non-profits and tribal entities. For profit entities, even job training and work force for profits, are ineligible for EPA Job Training Grants.

Cost Sharing:

Cost sharing is not a requirement under the terms of EPA Job Training Grants but scoring criteria of the competitive application process gives priority to entities willing to contribute funds to any program instituted by the entity.

Practical Application:

While EPA Job Training Grants provide money to train employees in the implementation of brownfields remediation they do not provide money for costs associated with redevelopment, cleanup or assessment of toxic sites. Because of the nature of private development, an EPA Job Training Grant can affect an efficient process for remediation by placing a burden on the developer to seek out contractors who are willing to participate in the program. According to grant guidelines, job training grants do not provide capital incentives to developers who choose to participate in training programs and as a result, participation can cause real or perceived delays in the development process due to extra regulatory requirements associated with training requirements of EPA Job Training Grants.

A.2 EPA-sourced assistance administered by the State of Washington

In addition to financial assistance that is directly administered by the agency, the EPA is also the source of funds for brownfields in Washington that are actually administered by the Washington State Department of Community Trade and Economic Development (CTED) and the Department of Ecology. The RLF is funneled through the Brownfields Coalition which consists of various governing bodies and is eventually managed by CTED. CTED is the banking arm of the state and administers the RLF and its sub-grants. The fund is capitalized at around $5 million and is used to make loans to various entities including for-profit developers. Often times, applicants who wish to receive cleanup grants are encouraged to apply for a grant through CTED rather than directly through EPA to expedite the process as well as to help CTED partner loan fund with grant recipients. Direct Assessment and Cleanup grants are administered on a competitive basis and are issued to various organizations directly through the EPA. The STRP (State and Tribal Response Program) is administered by the department of Ecology and covers behind the scenes labor and data gathering and is also used to fund Phase I and II assessments by site managers from the DOE. Excess funds from the RLF and STRP are combined in the supplemental fund and can be used to fund cleanup grants outside of the traditional flow of funds. The following chart outlines the flow of funds to the state of Washington:

A.2.1 Revolving Loan Fund (RLF) Capital Grants

The RLF Grant is awarded to entities at a maximum of $1 million per award and is used to set up Revolving Loan Funds. The loans can be made at low or no interest to governments,

non-profit and for-profit entities. Coalitions of entities may combine their awards to be managed by a single entity. Each grantee must use at least 60% of its grant award to capitalize a loan fund. The other 40% of the grant may be used for sub-grants to eligible entities. Sub-grant awards may not be awarded at more than $200,000.00 for cleanup costs to any individual entity. Sub-grants can also be awarded to members of the coalition. Both RLF loans and grants may not be used to fund potentially liable parties for remediation of brownfields contamination. RLF funds, unless specifically exempted by the EPA, require a 20% cost share from the entity which receives the RLF. Cost share can be accounted for by capital, materials, labor and services. The performance period for RLF grants is five years. (EPA 2007)

A.2.2 EPA Tax Incentives

With the help of CTED, developers in the state of Washington may apply for a deduction of cleanup costs associated with brownfields directly from their before tax gross income. This deduction may be taken at one time at the end of the year in which the cleanup occurred and may not be capitalized over a period of tax years. The tax incentive is a tax deduction rather than a tax credit and cannot be used to finance a project. It is a deduction from gross income and must be taken by an eligible party. In most instances eligible parties are parties who retain ownership of the land. These parties must receive a letter from a designated state agency, verifying the release of toxic substance or the presence of hazardous materials from/on the site. CTED is the designated entity in the state of Washington and provides letters for tax payers who wish to utilize the tax incentive.

Eligible costs include: site assessment and investigation, site monitoring, cleanup costs, operation and maintenance costs, oversight fees and removal of debris. Eligible entities must be the outright owner of the property and in some cases may be considered eligible in the case of a long term lease. The entity must hold the property for business or income purposes and not for personal purposes. This means that the entity may not be a developer who takes on liability with the property but does not own the property outright or intends to use the property for purposes other than business or income. (EPA 2007)

Drawbacks

One of the primary drawbacks to the tax incentives program is the requirement of the owner to take one time deductions on the property. If the owner of the property is an LLC, which makes sense for liability purposes in the case of brownfields development, the potential tax advantages might be worth nothing to the owner, especially in the first year of ownership or in the year in which the cleanup takes place. If an LLC is the sole owner, then the LLC may have been created specifically to redevelop the property. In this case, the gross income for the LLC will be tied directly to the property and potential tax savings might be low or non-existent if the property does not immediately provide cash flow or if the LLC does not have substantial taxable income from other sources, projects or businesses. The tax incentive model seems to be a good incentive for small, individual owners, but not for companies setting up joint ventures or LLCs in order to develop a parcel.

A.3 Other (outside of EPA) Forms of Federal Assistance

A.3.1 Department of Commerce, Economic Development Administration (EDA) Grants

The Economic Development Administration works with the EPA to promote brownfields redevelopment through its Economic Development Assistance Programs. The program offers grants that contribute to brownfields redevelopment in many ways. Each grant provided by EDA can serve as part of the implementation of a brownfields cleanup and redevelopment. EDA focuses more heavily on the redevelopment and reuse side of the process whereas the EPA focuses more on the assessment and remediation of these sites. The EDA's primary mission is revitalization of distressed areas where job creation and economic growth are lagging. EDA's goal is to provide incentives for private investment by funding projects that may be made more attractive by EDA's involvement.

A.3.1a Public Works and Economic Development Program

This grant's primary objective is to improve public works and infrastructure to spur job growth and provide services leading to economic development. The grant can be used to attract private sector investment to accomplish these goals. Where public infrastructure is lacking,

EDA can step in and provide funds necessary for transportation connections, redeveloping public facilities and most importantly redeveloping brownfields sites.

Eligible Entities

States, local government, non-profits, tribes and consortiums of governments are all eligible to receive the grants. Private sector entities may be involved in the projects but may not be eligible for grant funds.

Matching Criteria:

Projects may only be funded at 50% of the total project costs unless unemployment and income levels are deemed severe enough to warrant an 80% match from EDA. In certain instances, tribal institutions and non-profits may be eligible for 100% assistance if they are unable to leverage other funds.

A.3.1b Economic Adjustment Grants

Strategy investments of up to $4 million to help organize and carry out a planning process in order to develop a Comprehensive Economic Development Strategy (CEDS) tailored to the community's specific economic problems. Implementation investments support one or more activities identified in an EDA-approved CEDS. Awards may be used for activities such as developing and updating a CEDS and for implementing the CEDS by carrying out projects for site acquisition and preparation, construction, rehabilitation, and equipping facilities, technical assistance, market or industry research and analysis.

Eligible Entities

Same as Public Works and Economic Development Program;

Matching Criteria:

Same as Public Works and Economic Development Program;

A.3.1c Research and Technical Assistance Grants

EDA oversees three technical assistance grants of up to 400,000 dollars that promote economic development and alleviate unemployment, underemployment, and migration from distressed regions. The EDA invests in universities to establish and operate University Centers to provide technical assistance to public and private sector organizations with the goal of enhancing local economic development; EDA supports innovative approaches to stimulate economic development in distressed regions and attempts to disseminate information and studies of economic development issues of national significance. EDA also finances feasibility studies and other projects leading to local economic development. These programs aid the long-range economic development of regions with severe unemployment and low per capita income.

Eligible Entities:

Same as Public Works and Economic Development Program;

Matching Criteria:

Same as Public Works and Economic Development Program;

A.3.1d Grants for Planning and Administrative Expenses:

The grants help government entities and tribes, and local governments strengthen economic development planning capacity and formulate and establish comprehensive economic development strategies designed to reduce unemployment and increase incomes. Current investment priorities include proposals that assist local leaders embrace the principles of entrepreneurship and technological innovation, and enhance regional clusters. (EDA 2007)

Eligible Entities

Same as Public Works and Economic Development Program;

Matching Criteria

Same as Public Works and Economic Development Program;

These EDA programs are all useful for brownfield redevelopment and the EDA provides the following chart to show the percentage of funds used in each program in comparison with total funds used in conjunction with brownfield development.

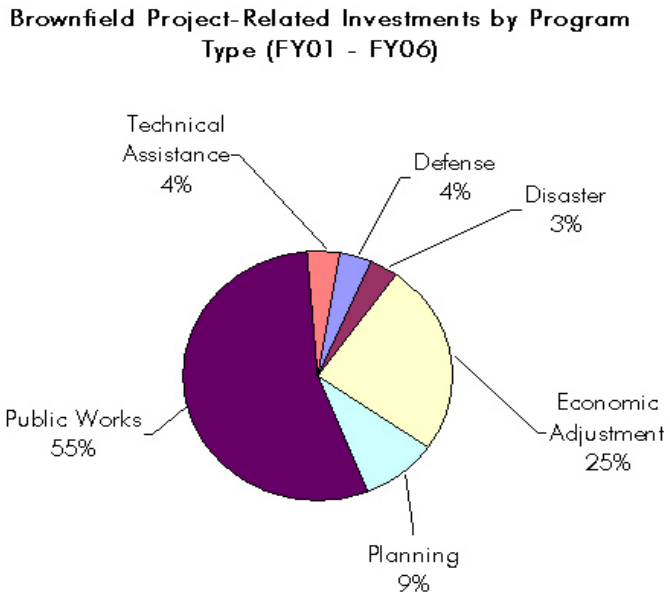


Figure A1. EDA Investments by Program (EDA 2002)

A.3.2 Department of Commerce, National Oceanic and Atmosphere Administration (NOAA) Coastal Zone RLF

CTED manages the Coastal RLF and provides funds to counties in coastal areas in the state of Washington in the form of direct loans to local government entities, private developers, owners and quasi-government entities. The loan program provides financing for business expansion in areas affected by the decline in the fishing and timber industries. These loans are generally used to provide financing of working capital, fixed assets and equipment. Working capital provides funding for services such as architects, engineers and other professionals associated with pre-development strategies for potential redevelopment at sites in coastal counties. The maximum amount of public financing available under this program is 33% of total project costs with a maximum dollar amount of $150 thousand. The terms of the loan are 15 years for loans on real estate assets and three to five years for working capital. Typically, these

loans represent ten to twenty percent of total equity contributions related to the projects which they serve. Proposals for these loans must show potential job creation associated with the project with one job created per $10 thousand in funds contributed. (EDA 2002)

A.3.3 United States Small Business Administration (SBA) Loans

One of the misconceptions regarding SBA Pollution Control Loans is that they are loans directly related to brownfields. These loans are not related to cleanup or assessment of brownfields sites; rather they are loans to businesses whose purpose is to provide environmental services to their communities. The SBA 7(a) loans could be used for brownfields development under the right eligibility circumstances.

SBA loans are used to offset risk from lending institutions who are considering financing of businesses in need of capital for a variety of uses. One of these uses is development of facilities associated with the operations of the business. This could include the construction of improvements on a site where assessment and cleanup has already occurred. The main hurdle to incorporating SBA loans is potential liability as it relates to eligibility requirements under Standard Operating Procedures document 5010(4)-e of the Small Business Administration. The eligibility requirements for the SBA are listed in a document that is eight hundred and fifty pages long and reflect the difficulty for determining loan eligibility under a highly regulated organization. To apply these loans to brownfields would probably require some special concessions at the federal level. Even with a strict regulatory environment, SBA loans could be a desirable addition for mitigating a lender's risk regarding a highly leveraged brownfields project. (SBA 2007)

Loan Terms:

Loan terms are set at prime plus an SBA guarantee fee. The guarantee fee is a graduated fee based on the size of the loan. The bank can lend under the SBA program with a default guarantee of up to 85% of the loan amount by SBA. This guarantee is purchased for a fee of around two and one half percent of the loan amount and is paid at closing to SBA.

An attractive feature of including these loans in a brownfields development is that they can be sold on the secondary market and the guarantee still applies to the loan even when it is sold. The problem of liability is the strongest obstacle in applying these loans to brownfields. If

liability can be transferred to anyone who has an ownership interest in the property, some guarantees would have to be included in SBA loans to limit the exposure of an entity that purchases a loan tied to a brownfield redevelopment project.

A.3.4 Department of Housing and Urban Development (HUD) – Brownfield Economic Development Initiative (BEDI)

Brownfield Economic Development Initiative (BEDI) funds are a grant used as equity to fund section 108 loan guarantees under Community Development Block Grant funds. BEDI funds can be used as equity for brownfield development projects but must be matched with section 108 funds. Section 108 funds are loan guarantees used to collateralize loans made for projects which promote economic development in distressed or low income areas. Section 108 funds must be used as collateral in conjunction with projects assets, usually land or improvements, which can be combined with the funds to collateralize a loan. Section 108 funds come from a pool of CDBG money and can be reused by the managing entity for other CDBG projects at the same time they are used as collateral for loans made under the program.

Amount of Funds:

BEDI grants can be used at a maximum of $1 million for an individual project. BEDI funds must be matched at least dollar for dollar by section 108 funds. The equity represented by BEDI funds must be paired with section 108 collateral in order to eliminate risk on the part of the managing entity of CDBG funds. Because the funds are reusable, they are not obligated to be held in escrow for loan repayment unless they are so ordered by contract for a specific project. Both Section 108 and BEDI are part of CDBG funds in the amount of 3.7 billion dollars which are available to eligible communities under the federal CDBG program.

Eligible Entities:

All BEDI and Section 108 loan guarantees are available to be used in communities which are eligible for CDBG funds. These communities are designated by the federal government as areas in need of economic development due to distress caused by disinvestment. Entities which may receive CDBG are government and non-profit organizations. However, CDBG, BEDI and

Section 108 funds which are used to develop housing must be a CDBO or non-profit community development entities.

One of the advantages to the CDBG program is that the managing entities may reallocate the funds to private parties as long as the guidelines of the funds are followed as well as the economic development goals set out by CDBG. This transference to private parties includes both BEDI and section 108 funds. Entities which utilize other governmental funds such as EPA grants and loans are encouraged to utilize CDBG funds to help boost the feasibility of projects in target areas. The guidelines for these funds can be found in the CDBG program as described in 24 CFR570.208.

One area of liability associated with the funds is a small provision contained within the CDBG guidelines which states that if HUD makes a determination that the funds allocated to specific projects are greater than is necessary to fund the project, HUD can reduce or eliminate funds arbitrarily. One of the possible ramifications for a clause such as this is that a bank which is financing a brownfield project may be surprised at a loss of collateral if HUD determines that the funds are not necessary to create project feasibility. If BEDI or section 108 funds are pulled out of a deal, a bank may not wish to provide financing where CDBG funds are being used as a result of previous experience with a withdrawal of collateral.

A.3.5 Department of Defense, Army Corp of Engineers

The US Army Corp of Engineers is another stakeholder in the redevelopment of previously contaminated sites. The Corp's main affiliation with brownfields redevelopment is somewhat programmatic, allowing the Corp to provide assistance to other governing bodies and entities with remediation and cleanup of specific types of contaminated sites. The Corp's involvement is tied to the former use of specific sites. Most of these sites must be previously controlled by government entities, which limit the Corp's involvement in privately held sites.

FUSRAP

The Formerly Utilized Sites Remedial Action Program is an example of the Corp's involvement in Brownfields redevelopment. The trigger for Corp involvement in these sites is through the Atomic Energy Commission and allows the Corp to control the cleanup and assessment of sites, which were formerly used in early atomic energy programs. These sites

usually have radioactive waste or atomic energy cleanup considerations and trigger the Corp's control over cleanup and assessment.

According to CTED most of the Corp's involvement in Brownfield remediation, aside from programs such as FUSRAP where the Corp is federally mandated to control assessment and cleanup, is in the form of technical assistance. The Corp of Engineers' involvement in Brownfields redevelopment is problematic in that it adds another layer of bureaucracy to the process. The Corp has its own set of internal controls and regulations regarding project implementation and can actually diminish value by adding another element of time to associated projects. In situations where private control of the site is the end goal, time is a factor for any private developer and site control can be delayed by extra regulations resulting in technical assistance from the Corp. (United States Corp of Engineers 2007)

A.4 Washington State Financial Assistance

The State of Washington has a number of financial assistance programs that are mostly managed by the department of Ecology. These instruments are generated mostly from tax revenues as well as a few which are tailored specifically for the state of Washington from federal funds. These funds are represented by grants, loans and matching funds and are distributed primarily to local governments and other public entities.

A.4.1 Department of Ecology Remedial Action Grants and Loans

Remedial Action Grants are managed by Washington State's Department of Ecology (Ecology) and are used by local governments to assist in the assessment and cleanup of contaminated sites. Funds for this grant come from a tax on first possession of hazardous substances and are deposited in a Local Toxic Control Account. Between 2003 and 2005 Ecology allocated $25 million from the Local Toxic Control Account for Remedial Action Grants. Types of Remedial Action Grants:

A.4.1a Oversight Remedial Action Grant

These grants help local governments study and clean up sites where the government entity is a potentially liable party (PLP) or at sites where the government owns a site and is or is

not a PLP. The local governmental body may also apply for a Site Study and Remediation Grant if it is planning on conducting an area wide ground water cleanup.

Eligibility

To be eligible to receive the grant the local government must fall under one of three standards. The first of these standards is *remedial action accompanied by forms*. Under this standard the local government must have completed some type of remedial action and be issued a letter or form from Ecology before the grant can be implemented. In some instances a grant may be issued without prior remedial action but the government entity will be eligible for the grant only if remedial action has been ordered by Ecology. The forms associated with this standard are: consent decrees; NFA letters; enforcement or agreed orders dated before March 1, 1989; an enforcement order, consent order, or consent decree under the Water Pollution Control Act; an underground storage tank (UST) compliance order. Essentially, if the Department of Ecology hasn't ordered a remedial action on a site, the eligible entity must have some form which says the remedial actions previously taken are acceptable to Ecology.

The second standard which allows for grant eligibility is the designation of a local government as a Potentially Responsible Party (PRP). If the local government is a PRP under the Comprehensive Environmental Responsibility, Compensation and Liability Act (CERCLA) then the governing body will automatically be placed under the supervision of the US EPA in the form of a decree for remediation at a hazardous waste site. Ecology will certify this decree and as a result the local government will be eligible to receive a site study and remediation grant.

The third standard determining eligibility for a Site Study and Remediation Grant is an agreement between a local government entity and Ecology designating a third party as a PRP responsible for remedial action on the site. The potentially responsible party must have secured one of the forms listed in the first standard of ***remedial action covered by forms.*** The local government entity must also have entered into an agreement with the third party to reimburse expenses related to remedial action associated with the site.

Eligible Activities

- Remedial investigations
- Feasibility studies

• Remedial designs
• Pilot studies
• Interim actions
• Cleanup Action Plans
• Other remedial action included in the order or decree, including landfill closure activities as required by chapters 173-304, 173-350 and 173-351 WAC beyond the requirements of the minimum functional standards, or included as part of the independent remedial action for which a no further (NFA) determination is issued
• Capital costs of long-term monitoring systems
• Operating costs and maintenance costs incurred during the first year of cleanup after the facilities and equipment have been installed or constructed. (For grant funding costs already incurred prior to the date of a grant agreement (retroactive costs)

Matching Requirements

Ecology will usually provide a fifty percent match for any eligible costs under the Site Study and Remediation Grants. In some instances, government entities will be allowed a twenty five percent bonus based on financial hardship. If the county in which the site is located is on Ecology's list of economically disadvantaged counties, the bonus will be assessed by Ecology. In the case of site study and remediation costs over $200 thousand, an additional 15 percent bonus will be added to eligible costs for treatment, disposal or recycling as part or all of the remedial action. Preference will be given to innovative technologies utilized by the grant recipient.

A.4.1b Site Hazard Assessment Grants

Ecology maintains a listing of potentially contaminated sites through the process of initial investigation. To determine ranking for contaminated sites (1 being the most contaminated and 5 being the least) as well as potentially expediting cleanup processes, Ecology issues Site Hazard Assessment Grants to local health departments to conduct assessments of sites known to be contaminated. The sites cannot have been investigated by either Ecology or US EPA prior to grant application and Ecology recommends that local health departments apply for the grant in

relation to multiple sites. Ecology will have final approval for the sites to be assessed by the local health department under the terms of the grant.

Eligible Activities

- Identifying the hazardous substances, including what was released or is threatened to be released, and/or (if known) what products of decomposition, recombination, or chemical reaction are currently present on site and estimating their quantities and concentrations
- Gathering evidence confirming a release or threatened release of hazardous substances
- Describing the facilities containing the releases and their condition
- Identifying the location of all areas where a hazardous substance is known or suspected
- Considering surface water run-on and run-off and the hazardous substances leaching potential
- Making preliminary characterizations of the subsurface and ground water actually affected or potentially affected by the release
- Identifying the preliminary evaluation of receptors at the site, including distances to these receptors
- Acknowledging any other physical factors that may be significant in estimating the potential or current exposure to sensitive biology

All Site Hazard Assessment Grants are eligible for up to 100 percent funding and are monitored by Ecology throughout the process. Ecology must approve a work plan from the health department which is eligible to receive the grant and Ecology will work with the local jurisdiction to create an acceptable plan. Ecology will also help to create and approve a budget for the assessment activities.

A.4.1c Integrated Planning Grant

A new program for the 2007-2009 biennium budget; the Integrated Planning grant provides opportunities for local governments to develop integrated project plans for the cleanup and reuse of contaminated sites. The grants provide funding to conduct necessary studies for acquiring and redeveloping vacant, orphaned, or abandoned property. The grants also provide funding for new substantial economic development, public recreation, or habitat restoration

opportunities that would not otherwise occur. Eligible entities are local governments only. Priority and preference will be given to local governments that have not received an earlier remedial action grant or that meets Ecology's defined 'disadvantaged community' criteria. Integrated planning grants may pay eligible costs up to $200,000 at 100 percent funding.

A.4.1d Safe Drinking Water Action Grant

The Washington State Department of Health and the Department of Ecology have oversight on the Safe Drinking Water Action Grant. The Department of Health (Health) provides oversight to ensure that human health is protected and that safe drinking water standards are met under guidelines from the US EPA as administered by the department. Eligible entities for receipt of the grant are local government entities which own and operate public drinking water systems or local governments who represent entities which own and operate public drinking water systems.

A determination must be made that the contaminants related to the drinking water system come from a hazardous site in order for the cleanup to be eligible for the grant. An order or decree must be issued identifying a PLP and the cleanup of drinking water supplies must part of the remedial action stated in the decree. Ecology may waive this rule if public health is at risk.

Eligible Costs

- Treatment equipment and facilities, including air stripping towers, package treatment plants, point-of-use treatment systems, and similar approaches
- Costs identified by Ecology as necessary to protect a public water system from contamination from a hazardous waste site or to determine the source of such contamination
- Water supply source development and replacement, including pumping and storage facilities, source meters, and reasonable accessories
- Transmission lines between major system components, including inter-connections with other water systems
- Distribution lines from major system components to system customers or service connections

• Fire hydrants
• Service meters
• Project inspection, engineering, and administration
• Other costs identified by the Department of Health as necessary to provide a system that operates in compliance with federal and state standards, or by the coordinated water system plan as necessary to meet required standards
• Individual service connections, including any fees and charges, provided that property owners substantially participate in financing the cost of such connections
• Drinking water well abandonment for wells identified by Ecology as an environmental safety or health hazard according to the Minimum Standards for Construction or Maintenance of Wells (WAC 17A-160-415)
• Interim financing where necessary as a prerequisite to local government issuance of revenue bonds

A.4.1e Area Wide Groundwater Remediation

In the case of area wide groundwater remediation, Ecology has a slightly different set of regulatory measures relating to these cleanup activities. Under the Site Study and Remediation Grants, loans can be issued for area wide groundwater cleanup. These cleanup activities can cover an area wide cleanup activity rather than a site specific activity and loans will be considered in regard to projects which need additional funds for remedial action. In addition to potential loans, Ecology can require repayment of grants for activities which use funds to clean up areas where adjacent property owners benefit from remedial action. The local government will be responsible for negotiating repayment from benefiting third parties.

A.4.1f Independent Remedial Action Grant

These grants help to offset some of the expense involved in an independent cleanup when a local government enters into agency's Voluntary Cleanup Program. Grant applicants must be units of local government who own, or are potentially liable parties to, a contaminated site. The grant applicant must have entered into Ecology's Voluntary Cleanup Program and be issued a No Further Action Letter by Ecology before the grant can be awarded. The Voluntary Cleanup Grant is a reimbursement to local governments for the costs of remedial actions after the

NFA letter is issued. Supporting documentation must be provided by the local government specifying actual costs associated with cleanup.

Eligible Costs

- Remedial investigations/site characterization
- Sampling/analysis
- Assessment report
- Permitting and public notification
- Cleanup action plan
- Contamination removal and disposal
- Reasonable site restoration
- Contractor cost
- Contract management
- Closure report

Funding for the VCP grant allows for a fifty percent match for eligible costs up to $200 thousand with a twenty five percent additional match for economically disadvantaged areas. As a result of the matching requirement, the maximum award is capped at $100 thousand for the grant recipient and $150 thousand for a recipient in an economically disadvantaged area.

A.4.1g Methamphetamine Lab Site Assessment and Cleanup Grants

The specific purpose of this grant is to "assist local government in the assessment and cleanup of sites of methamphetamine [meth] production activities, but not to be used for the initial containment of such sites" (RCW 70.105D.070). Methamphetamine lab grants may be used to investigate meth production sites, with a priority given to publicly owned sites. Ecology will consider funding up to 100% of costs for meth lab assessment activities. Cleanup activities at sites will be considered for funding at up to 50 percent of eligible costs.

A.4.1h Derelict Vessel Remedial Action Grants

Removal of underground storage tanks is a separate grant with more lenient standards than other programs under the Remedial Action Grant Program. Underground storage tank removal grants covers costs associated with removal and disposal of decommissioned storage

tanks. To be eligible for the grant, local government entities must send Ecology a notice to ecology 30 days prior to decommissioning the tank. To finalize qualification, applicants must complete a tank closure packet and follow a compliance schedule with Ecology or apply for Grant Qualification Letter. If contamination is found at the site, the applicant must enter into the Voluntary Cleanup Program through ecology but the removal of the tank itself does not have to be associated with a Consent Decree or No Further Action Letter through Ecology or US EPA.

Eligible Activities

- Site characterization/assessment
- Sampling/analysis
- Permit fees
- Tank excavation and disposal
- Soil removal, treatment, and/or disposal
- Reasonable site restoration
- Contractor fees
- Contract management/administration
- Site Assessment Report

A.4.1i Loans

At this time, Ecology does not have a loan program under the Remedial Action Grant program but will consider loans on a case by case basis. Ecology will issue loans under the same standards as Site Study and Remediation Grants. Ecology will issue loans to government entities that have received a thorough third party financial review process and are able to prove their ability to repay the loan as well as to repay the loan in a timely manner. Interest rates and terms will be negotiated by Ecology to ensure the fastest repayment schedule possible for the local government. Most loans are issued by Ecology to cover matching requirements for other grants under the Remedial Action Grant program. (Ecology 2003)

A.4.2 Aquatic Lands Enhancement Account (ALEA)

The Aquatic Lands Enhancement Account provides grants for the purchase, improvement or protection for public purpose projects relating to aquatic lands in the state of

Washington and for providing improved or sustained public access to such lands. The ALEA grant is funded by resources generated through the Washington State Department of Natural Resources and is appropriated by the Office of the Governor. All projects must be in accordance with local shoreline master plans and are subject to review by local authorities under this guideline. Any project utilizing ALEA grant funds must be located on a "navigable" waterway and the Department of Natural Resources can provide maps for applicants to determine parcel eligibility.

Eligible Entities

Local and state governmental entities are eligible for the grant and for-profit, non-profit and federal agencies are encouraged to partner with these entities in order to receive assistance under ALEA. The Interagency Committee for Outdoor Recreation manages the grants, determines eligibility and selects projects on a competitive basis. (Department of Natural Resources 2006)

A.4.3 CTED Rural Washington Loan Fund

The Rural Washington Loan Fund is administered by CTED and is used as gap financing for businesses that will create new jobs or maintain existing jobs. Gap refers to the difference in total project costs and available financing and the Rural Loan Fund is set up to make up the difference in the two. Loan amounts are up to $700 thousand and are capped at one third of the applicant's total project costs. Funds can be used for acquisition, engineering, construction, maintenance, rehabilitation and improvement of any property suitable for economic enterprise. These loans can be used as gap financing for activities related to brownfield redevelopment as long as that development serves an economic enterprise relating to job creation or retention.

Location is a limiting factor in the use of funds for brownfields. The Rural Loan Fund is set up to fund projects not in urban areas and as a result, many brownfields would be ineligible. Figure A2 displays eligible areas for Rural Loans.

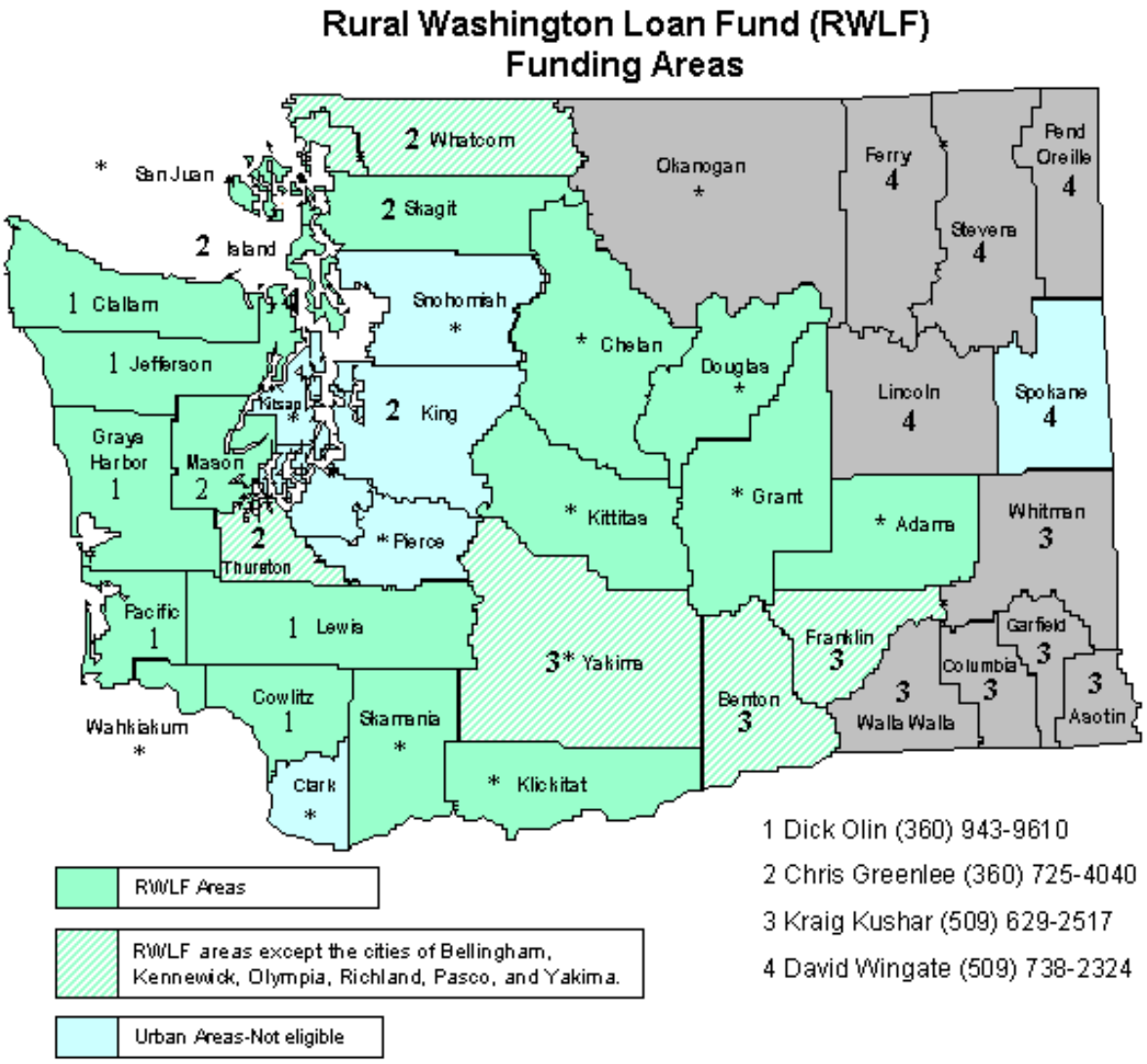


Figure A2: Map of Rural Washington Loan Fund Counties (Ecology 2007)

A.4.4 Washington Public Works Board Loans

Public Works Board loans are provided by the Washington Public Works Board for local governments, special purpose districts and private water systems. These loans are low interest loans and are related specifically to public infrastructure such as sewer lines, pump stations, roads and other necessities for public works. These loans are related to brownfields only if public infrastructure is part of a redevelopment plan. The loans would be attractive incentives to developers who are working with a local government at a site where improvement

in streets and utilities might be beneficial to the profitability of the redeveloped parcel(s). (Department of Housing and Urban Development 2006)

A.4.5 WSDOT Transportation Enhancement Grants

The Transportation Enhancement program was initiated by the Federal Intermodal Surface Transportation Efficiency Act and is managed by the state department of transportation WSDOT. The grant distributes around $10 million per year for projects that enhance surface transportation in the state of Washington. The grants are used for non-traditional type projects including historic preservation transportation facilities and museums, landscaping and beautification, scenic highways, bike and pedestrian facilities and education, rail corridors preservation, and outdoor advertising control. Funds are managed by Regional Transportation Planning Organizations that develop lists of prioritized projects in order to more efficiently distribute funds. The general categories for funding relating most directly to brownfield redevelopment are street improvements and mitigation of pollution from transportation related causes. Scenic beautification is another possible criterion for larger projects which may provide landscape enhancements along transportation corridors. Projects are initiated by government entities and are not tied directly to brownfield development. Grants could be used in conjunction with development projects, with the city or other entity requesting funds during the development phase of the project.

A.4.5 Private firms specializing in brownfield redevelopment

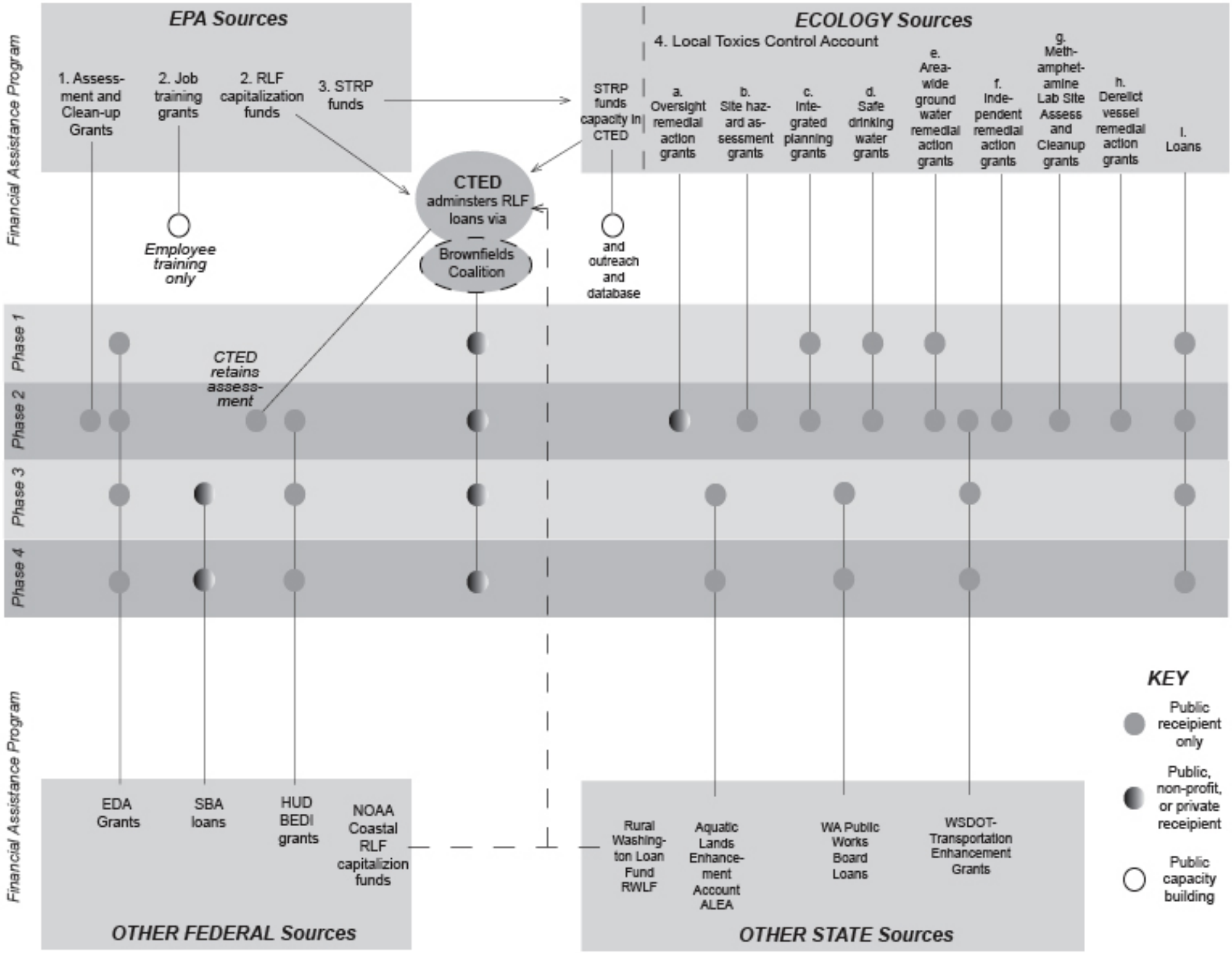
Private firms that specialize in the redevelopment of contaminated properties are growing and play an important role in brownfield cleanup and reuse. Companies such as Cherokee Investment and Land Bank invest in contaminated properties with high earnings potential due to prime location and attractive reuse possibilities. If profit potential at a site is high, limitations to redevelopment are primarily manifested in the form of liability. Under CERCLA and, in the state of Washington, Model Toxics Control Act (MTCA), strict, joint and several liability dictate that any party who holds an ownership in a contaminated property is potentially liable for any remedial action deemed necessary by the overseeing government entity; either the EPA or Ecology in the state of Washington.

As a result of potential liability, Brownfields Capital (BC) was created to serve as a special services bank to provide financing for projects involving contaminated or environmentally compromised sites. Brownfields Capital has created a special instrument called a Brownfields Value Contract (BVC), which serves to bring together stakeholders, including investors, land owners, and other parties who have an interest in Brownfields Redevelopment. The BC also creates a Special Purpose Vehicle (SVC), which is funded via the BVC in order to shield investors and other parties from the liability associated with brownfield development. The SVC takes control of the title to the land as well as the responsibility for redevelopment and remediation. The SVC acts like a JV and is incorporated under the BVC. The SVC distributes tax consequences and cash flow according to the BVC, which acts like a JV agreement. The SVC entity acts as a liability shield and under Generally Accepted Accounting Principles (GAAP) any party involved in a brownfields redevelopment project may remove any liabilities associated with the SVC and the site from its balance sheet. The SVC is an unconsolidated entity, which means that it is legitimately off of any partner's balance sheet. The SVC can also book the discounted present value of the redeveloped site as an asset to be used as collateral for loan to value terms typically associated with real estate loans. The BC is funded by investors and makes loans the SVCs in need of capital to complete redevelopment projects. Under the capitalized SVC, the developer conducts market analysis, feasibility and site analysis before excessive capital contributions have been made. The SVC then funds both remedial actions as well as development costs and can fund both of these simultaneously, expediting the process for redevelopment.

Because the SVC is off the balance sheet for both public and private entities involved in the development process, the participating entities can be assured of a liability shield from joint, several and strict liability under CERCLA. This way any assets held on balance sheets by participating entities are not exposed to potential enforcement actions by regulatory agencies. Because an SVC is funded by the BC there are two possible avenues for profit, one being participation by investors in the actual Brownfields Capital institution which generates returns from loan repayments from SVCs which it funds. The second manner in which private investors, pension funds, REITS and other institutional investors can earn returns from brownfields projects is invest directly in a project through participation in an SVC.

The BC model can open up sites that would otherwise be held by companies that don't want the liability exposure that contaminated real estate assets represent for corporate balance sheets. The owner of a contaminated property can contribute the land to an SVC and effectively remove a liability from their balance sheet or budget in the case of a publicly owned site.

In Washington, the formation of a BC could help to take some of the burden off of Ecology and the state for the expenditure of valuable state resources on remediation and redevelopment of brownfields sites. Because an SVC is privately capitalized and operated, it would still have to meet MTCA and CERCLA standards, but the SVC would not have to obtain a Consent Decree or NFA in order to obtain financing for its project(s). (Mueller 2005)


EPA Sources
1. Assess-ment and Clean-up Grants
2. Job training grants
2. RLF capitalization funds
3. STRP funds
Employee training only
ECOLOGY Sources
4. Local Toxics Control Account
STRP funds capacity in CTED
a. Oversight remedial action grants
b. Site haz-ard as-sessment grants
c. Inte-grated planning grants
d. Safe drinking water grants
e. Area-wide ground water remedial action grants
f. Inde-pendent remedial action grants
g. Meth-amphet-amine Lab Site Assess and Cleanup grants
h. Derelict vessel remedial action grants
I. Loans
CTED adminsters RLF loans via
Brownfields Coalition
and outreach and database
CTED retains assess-ment
Financial Assistance Program
Phase 1
Phase 2
Phase 3
Phase 4
Financial Assistance Program
EDA Grants
SBA loans
HUD BEDI grants
NOAA Coastal RLF capitalizion funds
OTHER FEDERAL Sources
Rural Washing-ton Loan Fund RWLF
Aquatic Lands Enhance-ment Account ALEA
WA Public Works Board Loans
WSDOT-Transportation Enhancement Grants
OTHER STATE Sources
KEY
Public receipient only
Public, non-profit, or private receipient
Public capacity building

APPENDIX B. TESTIMONY ON MASSACHUSETTS LSP PROGRAM

Summary of Assistant Commissioner Janine Commerford's , Bureau of Waste Site Cleanup, Massachusetts Department of Environmental Protection, and Chair of the State Licensing Board for Licensed Site Professionals, testimony to NJ Legislative Subcommittee considering an LSP for the State of New Jersey, May 2008.[96]

The Massachusetts LSP program is 15 years old, dating back to the early 1990s. At that time, the State had a backlog of 9,000 sites. The new regulations came into effect in 1993. Through the LSP program, over 30,000 sites have been cleanup up in Massachusetts, in comparison to the 500 cleaned up under the previous command and control program. The program is not voluntary, as soon as a PRP has knowledge that there is contamination on a site, they are required to notify the agency and hire an LSP. There are standards for notification and for determining when a site is clear. The standards are performance based. The LSP conducts the assessment and selects the cleanup methods, but the standards must be met.

There are five parties involved in the cleanup of toxic sites in the Mass. program: a) DEP, which regulates the cleanup; b) the LSPs, who conducts the assessment and the cleanup and closes off the site; c) The Licensing Board, an independent body, which educates, disciplines, and grants licenses; d) the PRPs, who pay for the cleanups; e) Public, who are notified at the time of specific actions, extent of site, field work, permits issued.

There are 5,000-6000 sites active at any one time, 1800 coming into the system and 1,800 closed out annually—all kinds of sites, RCRA, gas spills, USTs, big, small, etc.
Out of the total 30,000 sites that DEP has processed since the LSP program was established, 200 have been "high risk sites". DEP supervises closely these sites. In addition, upon notification, DEP identifies high risk situations, situations where there is risk of an explosion, or effect on drinking water—there are about 1800 of these sites. Of these 1800 sites, 900 have submitted plans to DEP,

[96] New Jersey Legislature. Testimony of Massachusetts Department of Environmental Protection Assistant Commissioner Janine Commerford to the NJ Senate Environment Committee Meeting on NJ SB 1897 A Bill to establish a Licensed Site Professionals program, held on May 19, 2008. Accessed at NJ Legislature webpage: http://www.njleg.state.nj.us/MEDIA/OLS_MEDIA_PLAYER.HTM?wma=!{A}http://rmserver.njleg.state.nj.us/internet/2008/SEN/0519-0100PM-1.wma!

which typically approves such plans for remediation within 21 days. However, once the plan is approved, the LSPs take over, without direct oversight from DEP of the cleanup or close-up of the site.

DEP is required to audit 20% of sites annually, and 100% of sites with land use controls. Of the 30,000 sites, 30% have been cleaned up to background levels; 60% have been cleaned up for unrestricted uses; 2% for restricted uses, and the remainder, they are temporary closures, with no risk to human health, but they go back and check every five years and see whether the sites can be cleaned up more. Average time to cleanup is one year; 75% of the sites under a year. The quality of the work is very acceptable. About the number of audits that fail, it follows a bell curve: 5% of the LSP work is truly superb, 80-90 % overall very acceptable, and 5% deserves to be sanctioned. A lot of the DEP's program work is to catch these latter, and have the work done again, and/or sanction the LSP.

More on audits, since the program doesn't grade or distinguish according to the severity of the violations, i.e., they could be minor violations; you can't look at the statistics and say that a percentage of sites failed. What you need to look at is the number of sites where there is an invalidation of the closeout as a result of an audit by DEP, and these numbers are very, very small, a fraction of a percentage point. In 2007, the staff conducted 3,000 audits, most of these are screening audits, that typically take about 3 hours, and they reviewed about 74% of the closeout statements last year. The results of the audits were pretty good for most of them. They rely on screening audits to determine which sites should be looked at more comprehensively, and based on the results, they zero in on those, and do more comprehensive audits. Last year, they invalidated 10 closeout statements out of 1600, so .6% of the cases.

How large a staff does the program have? If you take out Superfund staff, then about 150 total staff, including auditors, response, IT, etc; among these about 20 FTE auditors, and about 80 plan approval staff.

How do they distinguish between high risk and lower risk sites? They have a tier classification, a checklist to determine how much oversight the site will require—if for example, a tanker flipped over, the LSP needs to submit a plan immediately, and DEP approves the plan quickly. It is up to the LSP to select the method for cleanup.

More on failure rates, last year conducted 3,000 audits, many screening; 1200 of these were closeout statements of sites, and 162 more comprehensive audits (152 of these were identified through initial screenings), and 10 percent of these were invalidated. Many of these sites, about ½ required better explanation or field work, for example, to put in another well to show that the plume really isn't there.

Commerford is the Chair of the Licensing Board. How often does the Board sanction? In 15 years, they have had about 130 referrals, ½ from DEP, and the other from the public. Right now, they have about 160 licensed LSPs (but the total figure is much greater over the past 15 years). Over the past 15 years, they have pulled the license of 26 LSPs. The Board can revoke a license for up to 5 years, and the LSP. They can also publicly censure an LSP. Also they can levy fines, but have done this only once, at $1,000 per violation.

On the initial setup of the Licensing Board, first, they had an open application process, where if you met the initial requirements, 8 years experience with a science degree, and 5 years of project management experience on site remediation type of projects, you could obtain a temporary license. Once the exam was developed, which took a couple of years, and was really hard, you had to pass the exam to retain your license. Commerford told the NJ Legislative Committee that she was willing to share the exam with NJ DEP.

On being asked whether there were some things that they would have done differently in hindsight:

a) They learned that it was important that DEP staff and the LSPs needed to interact in a non-adversarial way to smooth the process. They were able to achieve this by requiring continuing education for both, and qualifying some staff as LSPs (she, herself has an LSP license). This fostered better working relations.
b) At the beginning they went easy on enforcement, and when they became stricter, there was pushback from LSPs.
c) Use public censure to encourage LSP compliance, now when they pull someone's license, DEP puts out a press release, and announce it on their website.

What was the opposition like? At the beginning, everyone had concerns, bankers, PRPs were concerned about liability protection. The DEP staff was not thrilled about becoming auditors. DEP feared loss of jobs. None of these three concerns were realized. Banks were concerned about certainty regarding liability. LSPs issued the Response Action Outcome (RAO), which stated that the site was no longer a risk. At first, banks still wanted assurance from DEP, but DEP stood firm

on this, and banks had to accept the opinion of LSPs as the final word. This is so for all sites, outside of the couple of hundred which are the high risk sites. If the LSP issued RAO is invalidated, it opens up the PRP to liability claims. Just as any engineering problem in construction, the PRP and the LSP face potential litigation if there is a failure. Out of the 30,000 RAOs, 300-400 have been invalidated. This doesn't necessarily mean that the site has to go back to square one, it often means that further work needs to be done.

What happened to State workers, fifteen years later? Not much correlation between the LSP program and staff numbers. In the early 1990s, total staff was 200-300, and the estimates were that DEP needed 400-600 staff if it continued to administer sites in the command and control mode. But staff increased until the late 1990s, and privatization did not have a clear relation to staffing levels.