

# 10 SERVICE REPORT

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## WATERFRONT REDEVELOPMENT

**W**aterfront redevelopment provides an integral means for local governments to rehabilitate underused yet valuable land and infrastructure while preserving beautiful and historic community resources. Although marked by intricate multijurisdictional environmental and governmental relationships, the waterfront redevelopment process can function as a model for many emerging community revitalization strategies. By incorporating the interests and strengths of multiple stakeholders and synthesizing social, political, cultural, economic, and environmental interests, local governments can use waterfront redevelopment to improve the overall quality of life among citizens through heightened economic prosperity, increased employment opportunities, preserved cultural and aesthetic diversity, and restored environmental integrity.

This report examines the economic and noneconomic benefits of waterfront redevelopment, the roles that local governments must play in that process, the advantages of establishing partnerships among various stakeholders, and the particular characteristics of major waterfront landforms. These topics are illustrated by numerous case studies of successful projects, strategies, and innovative tools.

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#### **Author Contact Information:**

Thomas Groeneveld  
Research Assistant  
Economic Development  
International City/County Management Association  
777 North Capitol Street, NE, Suite 500  
Washington, DC 20002-4201  
Phone: 202/962-3688; Fax: 202/962-3605  
E-mail: [tgroeneveld@icma.org](mailto:tgroeneveld@icma.org)

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# Waterfront Redevelopment

*This report was written by Thomas Groeneveld, research assistant with ICMA's Superfund/Brownfields Research Institute. Mr. Groeneveld works with local government economic development issues relating to brownfields redevelopment and environmental management.*

*Contributions to this report include portions written by fellow ICMA staff members Seth Schofield, Tools of the Mediator: Alternative Dispute Resolution; Molly Singer, Putting It All Together—Waterfront Industrial Reuse Effort, Portland, Oregon; and Elizabeth Stasiak, Drafting the “Master Plan”—Glen Cove, New York.*

Surface waterways were central to the development of the United States as an industrial world power in the nineteenth and twentieth centuries. Unfortunately, as industrialization and urbanization flourished in the nation, little thought was given to aquatic ecosystems, and many waterfronts and interconnected waterways became contaminated with industrial pollution. Then, as the era of regional waterborne shipping drew to a close after World War II, many port facilities became obsolete and were abandoned.

Waterfronts have also been recreational playgrounds, inviting extensive residential and commercial development. But throughout the twentieth century,

unabashed waterfront development has contributed to point- and non-point-source runoff, additional dumping into rivers and harbors, and the destruction of habitats through wetlands infill and subsequent construction projects. Moreover, as economic trends shifted and tourism industries migrated to warmer and sunnier climates in southern and western coastal regions, traditional resort communities in the northern and eastern regions, such as Atlantic City, New Jersey, languished.

Today, waterfront properties are highly attractive to redevelop for both their economic and noneconomic resources. In economic terms, waterfronts are typically among the most valuable properties in a community,

## Understanding water pollution

The adverse effects of water pollution typically occur as point-source pollution, non-point-source pollution, bio-accumulation, and habitat destruction.

**Point-source** pollution occurs when contaminants are deposited directly from a known source into a surface or groundwater reserve, typically at a controlled level—for example, discharges from industrial manufacturers or wastewater treatment facilities. Throughout the early years of the Industrial Revolution, toxic substances from manufacturing and industry were pumped, dumped, or rinsed into waterways, where they inundated and contaminated watersheds. The consequences of such actions were often immediate, and many species of aquatic wildlife were harmed.

**Non-point-source** pollution occurs when topographic, hydrologic, and geologic processes indirectly contaminate water resources—for example, overland runoff from tainted agricultural soils or the condensation, precipitation, and deposition of atmospheric insults in surface waters. At coastal waterfronts, where water tables are often as shallow as four feet below the land surface, any contaminants in the soil horizon can easily infiltrate the water table, be distributed throughout groundwater resources in the area, and harm drinking water reserves. Thus, the processes of point- and non-point-source pollution can eventually overlap through cycles of dispersion, deposition, evaporation, and precipitation.

**Bio-accumulation** occurs when water resources become polluted with toxins, aquatic wildlife absorb or ingest those materials, and animals feed on contaminated plants, absorbing the toxins through digestion. Exposure to those contaminants may not be lethal but can nevertheless cause systemic damage that often takes months or years to develop.

**Habitat destruction** occurs when waterborne toxins are dispersed and eventually deposited, disrupting land habitats and making nesting and reproduction difficult or impossible for affected wildlife. It also occurs when contaminants settle on the bottom of a body of water. The precipitation and accumulation of heavy metals is potentially hazardous to bottom-dwelling aquatic species. Ironically, removing sediment from the bottom of a body of water requires dredging, which can be more disruptive to habitats and species than not disturbing the sediment.

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generating revenues through development and tourism industries, property and operational taxes, and the creation of jobs. Moreover, waterfront facilities—particularly those with industrial legacies—are often equipped with existing transportation and water-related infrastructure. In those cases, remediating contaminated properties and retrofitting booms, piers, and bulkheads can decrease redevelopment expenses, provide new opportunities to meet local transportation and shipping needs, and expand economic opportunities in waterfront communities.

Waterfronts also represent noneconomic community resources, such as scenic vistas. Where waterfronts once served as the industrial heart of a city, they are often laden with rich historic and cultural significance that make them worthy of preservation. And waterfront recreational facilities, including restored open spaces and protected wildlife preserves, can improve the overall quality of life in a waterfront community.

Yet waterfront redevelopment requires local governments to address some thorny issues, such as

- The complex regional hydrologic factors among all surface and groundwater resources, which transcend political boundaries
- The presence or perception of contamination in proximity to sensitive ecosystems
- The vastly different agendas among community stakeholders involved in multijurisdictional projects
- The challenges in coordinating a broad and diverse cast of public and private community members.

At the same time, the type of waterfront—coastal, lakefront, or riverfront—is an equally important characteristic to consider, given that the beaches, banks, corridors, and wetlands of each type offer unique, sometimes delicate, and highly sought-after areas for recreational and educational purposes.

As the benefits of waterfront revitalization continue to be recognized, there is a growing call for reinvestment in established properties as opposed to development of pristine areas. For many communities, the reclamation of waterfront properties is becoming as integral a component of local economic redevelopment strategies as it is of nationwide sustainable development goals.

### WHY REDEVELOP THE WATERFRONT?

As noted, redeveloping waterfront properties and facilities can bring numerous benefits for local communities. The following factors are integral economic and non-economic aspects of waterfront redevelopment strategies.

#### Real Estate Value

Waterfront property is highly attractive to developers because ready access to waterfront scenery, recreation, and transportation translates into high real estate val-

ues. Whether the nature of the site caters to residential, commercial, or industrial purposes, waterfront access can also translate into increased property and business tax revenues—as well as monies from public transit and parking operations.

#### Tourism

Vacationers are often drawn to waterfront communities and may enhance or redefine a local economy. In 1999, some 50 million persons traveled to waterfront destinations throughout June, July, and August.<sup>1</sup> Attractions such as historic and cultural sites, as well as the waterfront itself, may be rehabilitated and preserved to provide tourists with access to educational and leisure pastimes; in turn, the local community benefits from the influx of additional monies that are “imported” with travelers.

#### Intermodal Transportation

Waterfront facilities are often equipped with landings, piers, and marinas designed to service waterborne vessels. Harbors, in particular, represent the intersection of waterborne with terrestrial transportation infrastructure hubs, such as railroad and trucking terminals. In those cases, existing infrastructure, including loading docks and service roads, may be refurbished or retrofitted to accommodate new uses directly related to waterborne operations or the road and rail vehicles that will move goods overland. At the same time, other facilities may be modified and marketed to industries that bring visitors to and from attractions along the waterfront, such as ferries and water taxis.

#### Job Creation

Redevelopment projects create local employment opportunities—short term to carry out site cleanup, preparation, and construction; and long term to operate the residential, commercial, and industrial establishments along the waterfront. These opportunities, which present as both new jobs and enhanced career potential, mean increased municipal income tax revenues, which thereby benefit both community residents and the local government.

#### Historic Preservation

Many waterfront ports and landings were the initial site of settlement for a community; sometimes, waterfront industries forged the economic and cultural heritage of a community. In both cases, local history and culture are protected as unique old structures, buildings, and districts are rehabilitated and preserved to educate future generations of residents and visitors.

#### Open Space Conservation

Restoring and conserving open and “green” spaces improve community appearance, protect biodiversity,

add new recreational opportunities, and reduce stormwater runoff.

### Recreation

Waterfront redevelopment initiatives may also include strategies to establish greenways, parks, and other facilities for recreation and health and fitness activities. Waterfront communities can offer activities on the water or on shore that landlocked communities cannot offer. Thus, recreational areas and institutions can benefit waterfront communities in an intangible, aesthetic way while offering a means of generating revenues through organized water sports and activities.

## MANAGEMENT CONSIDERATIONS

Waterfront redevelopment, like other land use decisions, must be considered carefully. Uncontrolled, short-sighted development can lead to the destruction of those same resources that attracted people and businesses to waterfront communities in the first place.

Moreover, like many water resource management projects, waterfront development projects incorporate a particularly complex set of issues, including environmental, political, social, economic, and cultural community standards. For example, water carries contaminants far from the source, dispersing and compounding their harmful effects without respect to political juris-

### Stakeholders in waterfront redevelopment

Inclusive stakeholder involvement in the redevelopment planning process leads to community satisfaction, promotes private sector investment, provides for the most thorough examination of ideas, and prevents omission of the interests of a particular community member or organization. In addition, multiple opinions and wide-ranging expertise contributed during the process help to ensure a comprehensive method of operation. Stakeholder involvement, therefore, must be intragovernmental, intergovernmental, and interdisciplinary, and must include private sector representatives, special-interest groups, and members of the general public.

**Intragovernmental** involvement ensures that local government resources are being used to the fullest extent possible. It enables local governments to draw upon the expertise and manpower of numerous departments that can contribute to redevelopment—for example, parks and recreation, civil works, the water authority, the chamber of commerce, and the mayor's office. Sometimes a local government might consider creating a department to oversee projects related to economic development and land use planning. Intragovernmental membership and coordination act not only to engage the appropriate municipal authorities, but also to demonstrate to all community stakeholders that there is unified support for the project within the local government.

**Intergovernmental** involvement is necessary when the area affected by a remediation project crosses numerous local political boundaries or when certain aspects of the project require the attention of different levels of government agencies. By respecting established administrative hierarchies and selecting the best-fit agencies for various tasks in the redevelopment process, a project can be assured of effective direction from local government.

**Interdisciplinary** involvement ensures not only a range of technical information to bolster a project in the early stages of development, but also a survey of varying opinions among experts in scientific, business, and policy-oriented fields, such as universities, consulting firms, and nonprofit organizations. Because such objective and tangible knowledge is often regarded as independent and unbiased, it can be very persuasive.

**Private sector** involvement comes from the corporations and institutions that will be carrying out much of the physical redevelopment process. Those entities are a source not only of capital but also of highly educated professionals with great experience in the fields of fiduciary and construction management. Because private sector stakeholders are wary of potential liabilities incurred by developing on contaminated property as well as of the loss of potential profits if a project is delayed or abandoned, they are often skeptical about project initiatives and may disagree with certain conservatory plans in favor of facilities that are sure to generate economic returns. Nonetheless, the private sector will largely pay for and operate the facilities—shops, restaurants, and arenas—that can revitalize a local economy, and so their interests must be included in the planning process.

**Special-interest groups** often are composed of various community members who are connected by a single interest or set of principles. Although they tend to be volunteer organizations and may not contribute large sums of money to redevelopment initiatives, they are capable of influencing and uniting large portions of the general public. Thus, it is important to address the concerns of special-interest groups so that projects are not delayed by organized protests or crippled by a loss of support among significant portions of the community.

Finally, the **general public** must also be included in the redevelopment planning process. Although it is logistically impossible to hear the opinions of every citizen, local governments can and must make every effort to share information and receive opinions from the community at large. Where public interest groups represent a considerable portion of the community, their leaders can serve as delegates to the planning committee. Local governments can also use public meetings and community surveys to gather important information regarding public opinion about redevelopment initiatives.

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dictions and boundaries. A waterfront project can rarely be reduced to a specific area, such as a tract of coastal, lakefront, or riverfront property. Thus, to examine the feasibility of a beachfront park, one must consider the entire watershed, including ponds, lakes, rivers, and other connected waterways. Various people—ranging from government authorities representing local, state, regional, and federal agencies to community groups, including private sector developers and lending corporations, special-interest groups, and the general public—must be included in the process.

Yet with their diverse agendas and ideologies, all of those stakeholders have vested—and often conflicting—interests in the environmental and economic integrity of their community. To succeed, then, waterfront redevelopment planning efforts must attempt to infuse the interests of all contributing stakeholders or, at least, derive the most representative course of action possible. Overlooking a potential stakeholder can lead to bad feelings among community members, inadvertently

jeopardizing future opportunities for collaboration among organizations in the redevelopment process and beyond. Moreover, stakeholders contribute expertise on past land use practices and current needs that is necessary for an effective strategy. In other words, no matter how diverse, the more insights and opinions that are invested in the development planning process, the greater the potential for widespread community support. The compromises made through stakeholder negotiations will ultimately provide the strategy for satisfying the desires of the community as a whole.

Going hand in hand with stakeholder involvement is the underlying challenge of coordinating efforts among this broad and diverse set of players. Thus, the foundation of waterfront redevelopment projects, as with any planning and management projects, must include effective coordination of stakeholder agendas and partnerships; community outreach and educational programming; technical assistance, funding, and land

### Establishing a decision-making process

Among a large, diverse, and potentially adversarial cast of stakeholders, it is crucial that a process for decision making be devised and implemented that sets common objectives and resolves the inevitable disputes.

The decision-making process should be simple, just, and binding, yet amendable to change should unforeseen factors arise at any stage of the project. In effect, stakeholders must design a planning process that will best suit their specific needs. While this task may generate countless scenarios, it is crucial that the agreed-upon process be arrived at through consensus, based on negotiation and compromise.<sup>1</sup> Moreover, the voting system must reflect the flexibility and sensitivity needed to accommodate a range of opinions that can often become volatile.

The development of a common set of goals is very similar to the creation of the decision-making process. The objectives of a project not only must represent the interests of all stakeholders but also should be derived diplomatically to accommodate the needs of all parties.

Underlying both the decision-making process and the establishment of a set of goals is the method used to resolve disputes throughout the planning process. The practice of dispute resolution among stakeholders must address three areas of concern: need, values, and interests.<sup>2</sup> *Needs* encompass the economic and noneconomic goals of the redevelopment strategy—essentially, the financial nuts and bolts, as well as the infrastructure that will be rehabilitated, demolished, or constructed and the geographic areas that will be restored or preserved during the project. Not surprisingly, the needs of a project, while relating directly to the values and interests of redevelopment, may be highly contested among stakeholders. *Values* among affected parties are ideological in nature and may dictate many limitations at the outset of the project. For example, a conservation group might be strongly opposed to allowing a revitalization project to include new mixed-use development without a compensatory area of open space. The project will therefore be postponed until a compromise can be reached regarding the future goals of redevelopment. *Interests*, on the other hand, commonly relate to fiscal issues surrounding a project, such as funding and reimbursement potential. Those interests tend to affect cooperation among stakeholders and can create an air of suspicion among opposing parties. Some participants may wonder what they have to gain from the process and may question the motives of other participants. Thus, it is critical that the dispute-resolution process convincingly assuages the concerns of all stakeholders.

Although decision making can be fraught with conflict among stakeholders at nearly every stage of the planning process, it should not be seen as a hindrance to redevelopment. Rather, it is only through such disputes that all voices in a community are heard, and it is only through their successful negotiation and resolution that a sound and comprehensive plan can be devised.

<sup>1</sup> Kai N. Lee, *Compass and Gyroscope: Integrating Science and Politics for the Environment* (Washington, D.C.: Island Press, 1993), 104.

<sup>2</sup> Susan Hill MacKenzie, *Integrated Resource Planning and Management: The Ecosystem Approach in the Great Lakes Basin* (Washington, D.C.: Island Press, 1996), 27–28.

use planning initiatives; and intra- and intergovernmental collaboration.

## THE ROLES OF LOCAL GOVERNMENT IN WATERFRONT REDEVELOPMENT

Local governments represent the keystone of the waterfront redevelopment process. Not only are they most familiar with the targeted properties and neighboring constituents, but they also possess the linkages necessary to secure the aid of state and federal governmental agencies and programming.

Most commonly, local governments face the challenges of addressing the concerns of various groups of stakeholders in the community, creating a neutral setting for the exchange of information and the mediation of disputes among stakeholders, formulating established goals into a comprehensive and systematic redevelopment strategy, and overseeing the implementation and management of the redevelopment program. All the while, local officials are responsible for maintaining support for redevelopment initiatives among community stakeholders and within their own departments and agencies. And when funding or technical expertise are needed, local governments must be able to tap into external resources, including state and federal government assistance and the services of professional management associations. Thus, local

governments must fulfill several different roles—often simultaneously—to ensure the success of a waterfront redevelopment program. Those roles may be broadly defined as coordinator, mediator, educator, steward, and partner.

### Local Government as Coordinator

A local government can play a critical role by simply organizing and coordinating the agendas and negotiating the goals of the multiple stakeholders. In cases where projects are implemented on a watershed basis (i.e., across local, state, and even national jurisdictions), coordination may be facilitated through the creation of a forum in which all involved stakeholders are represented. The creation of such a forum may be assigned to a committee or a single staff member; it is essential, however, that a formalized protocol be reached that is acceptable to all stakeholders, and that each representative enjoys equal stature *vis-à-vis* membership and voting rights. As the project continues, this committee can be instrumental in identifying and procuring funding sources, as well as in establishing intergovernmental partnerships.

### Local Government as Mediator

Adjacent and nearby residents and business owners may oppose waterfront redevelopment for various

### Tools of the coordinator: Remedial action plans

Remedial action plans (RAPs) are incremental strategies that synthesize the negotiated goals of stakeholders in an effort to clean up the ecosystems that are threatened or damaged by contamination. The end result of a thorough process of environmental assessment, stakeholder convocation, negotiation, dispute resolution, and cost-benefit and logistic analysis, RAPs are essentially a mechanism that allows a large and diverse cast of stakeholders to convene as a forum and formalize a comprehensive plan to address multijurisdictional ecological problems.

The appeal of RAPs is that they represent a locally driven policy that can affect national and international environmental and redevelopment guidelines.<sup>1</sup> Even when isolated by geography, local governments are empowered through the stakeholder forum to shape a policy that will benefit all affected communities, thereby decreasing the potential for unforeseen obstacles throughout the study area, or area of concern (AOC).

RAPs are developed in three phases:

**Stage I** consists of preliminary environmental assessments in the AOC, as well as of assessments of all related factors, including geography, site history, topography, demographics, and industrial and commercial pursuits.

**Stage II** builds on the findings of the first stage of analysis; develops remediation strategies and alternatives; and identifies what is necessary for project implementation, such as funding, authority and enforcement, and technological requirements.

**Stage III** seeks to measure the success of Stages I and II by documenting the tangible evidence of ecological restoration: reduced presence of contaminants, increased oxygen levels in water, the return of species to native habitats, and increased numbers of offspring among previously threatened species.

Although difficult to contrive, implement, and measure, RAPs are tools with which local governments can address ecological concerns of immense proportions. More importantly, the negotiation process on which they depend—slow and inherently moderating—acts to ensure the satisfaction of all stakeholder interests within the AOC.

<sup>1</sup> U.S. Environmental Protection Agency, *Great Lakes Areas of Concern: Remedial Action Plans*, July 6, 2000. Available at <http://www.epa.gov/glnpo/aoc/rap.html>.

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reasons, all of which must be considered. Residents and business owners in adjacent and nearby neighborhoods may be reluctant to support projects that will likely mean increased levels of traffic, noise, air pollution, and competition. There are also likely to be concerns about the impact that such projects will have on existing community resources and infrastructure, such as schools, roads, and sewers. Stakeholders may hold conflicting feelings about the mixed-use establishments, such as shopping malls or sports arenas, that will anchor redevelopment projects: some may welcome the potential for great entertainment and service opportunities while others may see those facilities as invasive to traditionally residential areas, bringing traffic congestion, litter, and other negative impacts. This issue is exacerbated when bountiful economic redevelopment in mixed-use districts raises property taxes and other costs of living in surrounding low- to moderate-income neighborhoods—commonly referred to as gentrification. In such cases, a local government can intervene as a neutral mediator to resolve conflicts and keep project deliberations on track.

### Local Government as Educator

Once an appropriate level of stakeholder coordination and organization has been reached, the local government must set about to explain to the general public the interrelated social, political, economic, and environmental factors involved in the waterfront redevelopment project. This is the first step in inspiring the

support for redevelopment that will become crucial as the project unfolds. Moreover, education can encourage citizen involvement as well as solicit funding and services from private and public sector institutions.

One way to achieve educational outreach is by extending open invitations to the general public when stakeholder forums convene. Another way is by organizing city meetings and roundtable discussions and by sponsoring seminars intended for the general public. Finally, local governments can distribute mailings or fliers and, when necessary, go door-to-door throughout the community to raise awareness and garner support for redevelopment goals.

### Local Government as Steward

Occasionally, bureaucratic inconsistencies inadvertently discourage efforts to renovate existing waterfront properties. For example, zoning ordinances, which are applied on a citywide basis, often cannot bend to accommodate individual projects or districts. Moreover, development and infrastructure expenses are typically assessed according to the total area of available land instead of on a plot-by-plot basis. Therefore, unless redevelopment of the entire property is planned, developers might be reluctant to attempt small-scale projects for fear of having to assume all the costs of providing multiserver roads and sewer systems, and they might opt to forgo lengthy and costly negotiations and develop instead on pristine waterfront areas.

### Tools of the mediator: Alternative dispute resolution

Alternative dispute resolution (ADR), as defined by the Environmental Protection Agency, is “a general term that encompasses various negotiating tools that are alternatives to litigation or conventional negotiation.”<sup>1</sup> In general, ADR is characterized by a voluntary, informal, and flexible process that is directed by a neutral party. Among the many negotiating tools that parties can use to resolve their disputes are facilitation, mediation, and arbitration.

**Facilitation** is a voluntary, informal, and flexible process directed by a neutral party to coordinate or improve communication among parties. If or when a dispute arises, the facilitator becomes the mediator.<sup>2</sup>

**Mediation** is a voluntary and informal process in which the disputing parties select a neutral third party to assist them in reaching a negotiated settlement. A mediator has no power to impose a solution on the parties; rather, the mediator assists the parties in shaping solutions to meet their interests and objectives.<sup>3</sup>

**Arbitration** is the most formal of the ADR processes and can take one of several forms, the most common of which are binding and nonbinding. In binding arbitration the neutral person or panel hears the dispute and renders a decision that is enforceable in the courts. Nonbinding arbitration follows the same process except that the neutral’s decision is advisory only.<sup>4</sup>

<sup>1</sup> U.S. Environmental Protection Agency, Region 1, *Alternative Dispute Resolution*, January 12, 1998. Available at <http://www.epa.gov/region01/steward/adr/index.html>.

<sup>2</sup> Sharif Branham, “Using Facilitation and Mediation to Manage a Brownfields Project,” *Brownfields EPA Pilots News 2* (February 1999). Available through the Institute for Responsible Management at <http://www.instrm.org/bfnews/v2i2/6facil.htm>.

<sup>3</sup> CPR Institute for Dispute Resolution, *The ABC’s of ADR: A Dispute Resolution Glossary—Private ADR Processes*, November 1995. Available under definition of *mediation* at <http://www.cpradr.org/adrprivate.htm>.

<sup>4</sup> *Ibid.*

## Preventing gentrification

Gentrification can be the result of short-term, profit-driven redevelopment strategies. Most commonly, neighborhoods that have suffered long-term economic declines are targeted for redevelopment and properties are foreclosed by a bank or purchased by a local government, community development corporation, or developer. Although such transactions may be lucrative for the seller and, eventually, for the developer, they have negative ramifications for the communities themselves. For one thing, while redevelopment may reverse the structural deterioration of buildings and façades, arguably “improving” the neighborhood, real estate values may skyrocket in the vicinity, leaving traditional “mom-and-pop” operations unable to compete with new retail and service industries and forcing them out of business. For another, families may embrace the inflated bids of developers and seize the opportunity to leave the ills of the urban jungle behind. But what is often referred to as an “urban renaissance” results in the displacement of traditional multicultural communities as redeveloped districts are inundated by a new group of buyers instead of by those citizens who had occupied, shaped, and defined those neighborhoods in the first place.<sup>1</sup> Thus, the cultural heritage of entire districts may be lost in the process.

To address concerns about the displacement of long-time residents and disruptions to established social networks, communities are developing long-term planning schemes to balance the benefits of monetary returns with the needs of the community as a whole. In those comprehensive plans, local governments must take steps to incorporate longtime residents and business owners into revitalization efforts through economic incentives, affordable housing options, and other strategies.

<sup>1</sup> Joel Kotkin, *The Future of the Center: The Core City in the New Economy*, Policy Study No. 264, November 1999. Available at <http://www.rppi.org/urban/ps264.html>.

In those cases, local governments must reexamine—or establish—the comprehensive planning strategy to address the current and long-term development goals of a community. For example, existing zoning ordinances may have to be modified with exemptions and variances, such as a conditional use permit, for specific projects. In fact, many states are currently revisiting and modifying zoning codes to alleviate some of the traditional impediments to local redevelopment initiatives. Instead of necessitating the demolition of older facilities that do not meet current building codes, these “Smart Codes” emphasize the reuse of existing structures, overlooking minor specifications in structural design so long as overall safety provisions are not compromised. Smart Codes are typically enacted by a state legislature and allow for local amendments to accommodate specific needs among communities. However, to encourage as little deviation from unified, statewide codes as possible, financial incentives are often offered to communities that do not amend the codified standards.<sup>2</sup>

Local governments may also have to establish land use controls to restrict future development and the use of designated properties, especially when contamination is involved. However, identifying the preliminary land uses and regulatory mechanisms to govern site development is one issue; ensuring the upkeep of such controls over time is another. Depending on the background levels of pollution and the intended future use of a site, remediation requirements may differ according to the potential for human or wildlife exposure to certain contaminants. For example, sites to be reused for industrial pursuits or parking lots may fall under much lower cleanup standards than those slated to be residential neighborhoods or playgrounds. It is essen-

tial, therefore, that local officials and managers understand the relationship between land use controls and cleanup standards. By developing realistic assumptions based on sound information gathered during the preliminary phases of site assessment, prospective developers, lenders, and third-party agencies responsible for site cleanup may come up with remedial alternatives that are consistent with the anticipated future use. All these factors may be addressed by local governments adopting and implementing institutional controls.

### Local Government as Partner

Because many aspects of waterfront redevelopment are technically and politically complicated, legally and financially intimidating, and overlapping by nature, local governments can help private developers by providing or seeking funds to supplement waterfront redevelopment projects or cover limited project expenses; purchasing contaminated properties to ease liability concerns among property owners, purchasers, and developers; offering technical, analytical, and construction services and equipment; and explaining existing public policies and establishing new ones relevant to project initiatives. Local governments can also encourage the success of a project by partnering with community stakeholders, including private industry sponsors, community development corporations (CDCs), and metropolitan planning organizations, as well as state and federal government agencies.

**With owners and developers.** Because financial concerns underlie most of the issues surrounding waterfront redevelopment, local governments can best support redevelopment initiatives through financial incentives.

### Tools of the steward: Institutional controls

Institutional controls (ICs) are legal mechanisms, typically used in tandem with physical or engineering measures, that protect public health and the environment from hazardous toxins on contaminated redevelopment sites. They do so by ensuring that future land uses and on-site activities do not violate physical barriers or bring people, soil, or water into contact with contamination in such a manner that poses a threat to public health. ICs are binding agreements that are stated within a property deed or title intended to stand in perpetuity.

Government ICs impose restrictions on future land uses and subsequent activities through federal and state environmental laws or regulations, or by a local government's zoning and building and land development authority. Private ICs, which are far more common, place legal restrictions or encumbrances on property titles and deeds under traditional property law. Below are some examples of government and private ICs:

**Notices and advisories** inform the public of existing contamination on a site or of the risks of drinking contaminated groundwater. Such legal notices are often implemented with physical controls, such as fences.

**Permits** can be issued by state or local governments to allow certain activities that are otherwise restricted (e.g., building, grading and development). Permits are commonly used at hazardous waste sites to enable construction or location of new wells and soil excavation at sites with contaminated subsoils.

**Planning and zoning ordinances** are usually passed by local governments to regulate the uses of land in certain locations. For example, industrial uses and activities might be barred in residential areas.

**Site restrictions** limit the land use in areas that are prone to natural hazards, such as floodplains and earthquake fault lines.

**Overlay zoning** provides additional limits, such as a contaminated groundwater management zone, drawn over an existing zoning use map to provide extra protection.

Source: Joe Schilling, Christine Gaspar, and Nadejda Mishkovsky, *Beyond Fences: Brownfields and the Challenges of Land Use Controls* (Washington, D.C.: ICMA Superfund/Brownfields Research Institute, 2000).

For example, business owners and local developers often resist waterfront development regimens because any land that was formerly used for industrial purposes is automatically assumed to be contaminated, whether or not it actually is. Moreover, contaminated or idled waterfront properties that are adjacent to or linked through existing infrastructure may involve numerous tracts of land among numerous owners, making redevelopment planning and execution difficult on a parcel-by-parcel basis, especially when such parcels are oddly shaped or severely contaminated. In such a situation, a local government or CDC may intervene, buy out many or all of the lots in question, and redraw or completely dissolve property lines to accommodate differing remediation requirements and create tracts of land that are more attractive to local developers. By purchasing and assembling properties, local governments often share the costs of or directly fund activities to prepare waterfront sites for groundbreaking. In so doing, they shoulder the initial financial and legal responsibilities of site rehabilitation and create the impetus for private sector investment. Some communities have even tried to stimulate redevelopment by selling vacant and contaminated properties at miniscule prices—dollars and cents per acre—in hopes of refurbishing the neighborhood, creating jobs, or bringing services to the community.

Even when developers are interested in redevelopment projects, the intricacies of such projects often extend beyond the practical capabilities of an indi-

vidual firm. Where specialized contractors might be needed to extract, treat, or dispose of pollutants prior to addressing construction initiatives, local governments may offer landowners and developers technical assistance. Initial renovations may include site assessment and identification, infrastructure construction and retrofitting, and assistance with organizational and scheduling protocol. In this way, a local government provides the impetus for redevelopment projects by shouldering a portion or all of the initial aspects of site remediation.

In addition to direct financing measures, local governments must explore state and federal grants, loans, and other financing programs that can be applied to waterfront (and many other) development projects. Moreover, local governments must develop planning initiatives to accommodate as many funding opportunities as possible. Stated simply, the money is often available and local governments must find ways to go out and get it.

For example, Department of Housing and Urban Development (HUD) Community Development Block Grant funding, Section 108 Assured Loans, and Brownfields Economic Development Initiative loans may all be applied to community redevelopment projects located in empowerment zones (EZs) and enterprise communities (ECs). If projects involve brownfields, the Environmental Protection Agency (EPA) funds pilot programs specifically designated for site assessment demonstration and job training and development. Pilot grants provide specific funding for

### Acquiring and assembling properties—West Harbour District, Cobourg, Ontario

Once a booming hub for ore shipping and bulk petroleum storage, Cobourg, Ontario, like many other Great Lakes port cities, saw rail, petroleum, and shipping facilities in its West Harbour District abandoned after World War II, leaving large tracts of blighted and contaminated land. Heavy metals (lead, arsenic, and mercury) contaminated the district's soil and groundwater.

Another obstacle to revitalization was the fact that the district consisted of four adjacent properties owned by four separate entities, each with different agendas and intentions. Preliminary redevelopment plans addressed the lands collectively because the scale of cleanup superseded property lines, and all stakeholders favored revitalization, but it became increasingly difficult to accommodate the individual schedules and interests of the various community members and organizations.

To address those issues, the Cobourg Harbour Development Corporation (CHDC), the agency spearheading revitalization efforts, involved a third-party mediator, the Waterfront Regeneration Trust, and created open forums for local municipal agencies, special-interest organizations, private landowners, and the general public to share ideas and establish goals for waterfront development. Those forums included municipal and county meetings as well as neighborhood gatherings. From such collaborative efforts, the CHDC identified two common goals: (1) to create public green spaces and improve existing infrastructure and (2) to harness private sector investment for commercial and residential development in the district.

To date, the four adjacent brownfields have been decontaminated with \$2.3 million of municipal funding. Initial inertia was overcome with the successful cleanup of the first property in 1993. After tainted soils were removed, upscale condominiums were constructed and achieved full occupancy within one month of completion. Seeing the rapid turnaround accomplished in this revitalization project, adjacent property owners were eager to follow suit. Between 1993 and 1997, two more properties—both petrochemical facilities—were purchased and cleaned up by the town of Cobourg. The CHDC designated a residential project on one site while reserving the second for public waterfront recreational activities. The final brownfield, a tract of municipally owned land tainted by the adjacent three industries, has been decontaminated and sold to the CHDC for future redevelopment purposes.

For an investment of approximately \$2 million, the town of Cobourg and the CHDC have completely renovated four brownfields. In addition, reinvestment in formerly defunct waterfront properties has revived the economic, social, and environmental potential for Cobourg. An estimated \$162 million will be generated by residential construction projects, compounded by \$10 million in taxes and construction fees. In addition, those projects are expected to create up to two hundred new jobs within the town. Finally, a new marina that produces more than \$3 million annually contributes additional revenue to the economy of Cobourg by bolstering a tourism industry founded on lakefront parks and festivals.

Source: *Case Studies: Waterfront Renewal: Regenerating Cobourg Harbour, Cobourg, Ontario*, December 14, 1998. Available at <http://www.glc.org/robin/cases/waterfront.html>.

site assessment and job development programs. In addition, EPA's cleanup revolving loan fund programs offer low-interest loans to local governments that recycle principal and interest payments into a pool of money that can be used for further project financing.

Beyond start-up financing, a number of federal agencies offer funding for economic redevelopment, infrastructure retooling, and efforts to address environmental justice issues. The Economic Development Administration has a number of programs, such as Title IX grants and Public Works Planning, to promote economic redevelopment in distressed urban and rural settings. Similarly, Department of Agriculture programs, including rural utilities loan funding and rural EZ/EC programs, cater to redevelopment in rural and small community settings. Finally, the Department of Justice's Weed and Seed funding aims to improve neighborhood quality by supporting outreach programs that work to replace racial and sexual stereotypes with understanding and communication in ethnically diverse and lower-income communities.

**With community stakeholders.** The project team approach is a popular tool used in many redevelopment strategies to acquire technical assistance, share information, bring diverse groups together, or generate synergy for the project. By establishing a "buy in" to the overall objectives among the stakeholders, local governments can maximize individual stakeholder efforts while creating a sense of solidarity among local government representatives, community groups, local residents, and private sector partners. Local governments that have used the team approach demonstrate that

- Public and private sector involvement, the commitment of human capital, and consensus building can be achieved
- Project or program goals can be attained.

CDCs are nonprofit entities of local governments or communities that function to maintain economic growth and create new opportunities for residents and businesses within specific municipal boundaries. CDCs can represent entire regions, as does the Economic

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Development Council of Seattle and King County, Washington, or smaller areas, as does the Lowerton Redevelopment Corporation, which represents a small neighborhood in St. Paul, Minnesota. According to the 1998 National Congress for Community Economic Development's CDC census, CDCs have produced 550,000 units of affordable housing, 71 million square feet of commercial/industrial space, and 247,000 private sector jobs. Fifty-two percent of CDCs are located in urban areas and another 22 percent serve a combination of urban and rural areas.<sup>3</sup>

CDCs provide services and assistance to help identify prospective development sites and districts and compile demographic data to produce targeted community profiles for potential developers. For example, many CDCs keep databases of available buildings and property and can help match land or buildings to developer requirements. In addition, CDCs provide guidance through the labyrinth of zoning and permit regulations that confront any redevelopment effort. They can also encourage development projects by providing funding through numerous federal and state development grants and loans appropriated for nonprofit entities. CDCs often use local financing measures, such as tax increment financing (TIF) zones, for redevelop-

ment projects. Finally, CDCs are often the best available link to the communities they serve because they facilitate needed community involvement in and support for a development project.

**With state partners.** State governments and agencies can be critical partners with local governments and facilitators that solicit funding and services from federal departments and agencies. For example, Department of Transportation funding cannot be awarded to local jurisdictions but is instead awarded to metropolitan planning organizations and state-level transportation authorities. State legislatures, executive departments, and agencies often reflect the structures of their federal counterparts. This organizational characteristic can be instrumental in obtaining certain federal grants as symmetry among programming and protocol helps when designing projects that will combine the resources of local, state, and federal agencies. Finally, state governments are able to offer additional and unique programming tailored to statewide needs.

Over the past decade, voluntary cleanup programs (VCPs), which are enacted at the state level, have become an increasingly important component in the redevelopment of contaminated sites (see sidebar on page 13).

### Tools of the partner: Financial incentives

Local governments can provide a number of financial incentives for waterfront redevelopment. Those incentives may be delivered in the form of tax abatements, redevelopment grants, and land acquisition and assembly. Several of those innovative programs are described below:

**Tax increment financing (TIF)** allows local governments to realign tax districts that contain a brownfield site and freeze property values, which are usually placed at zero because of contamination. Projected estimates of property tax increases from the enhanced values of redeveloped properties are used to determine matching funding resources. Funding is then provided in the form of bonds for specific redevelopment components. The theory is that a revitalized property will be able to repay the initial loan through increased property values. As properties are revitalized, they are put back into productive use and generate profits without the burden of escalating property taxes. When the bonds mature, revitalized districts are able to readily compensate debts because they have not been subject to property taxes during revitalization.

**Tax abatements** are issued by a municipal authority to reduce or exonerate a property owner from tax liabilities for a specific amount of time. The abatements are intended to stimulate private sector investment into the acquisition of property or the rehabilitation of existing structures where tax liabilities might be prohibitive. Most commonly, tax abatements are issued as relief from property taxes but may be expanded to sales, inventory, and equipment taxes, depending on the nature and progress of a redevelopment project. Although administered by a local authority, tax abatement measures often must be granted by state governments and may be restricted to specified areas, including economically distressed neighborhoods or areas affected by natural disasters.

**Special taxing districts** or "service areas" may be designated or re-aligned by a local or regional authority to adjust taxing mechanisms to best serve community needs. Similar to TIF districts, special taxing districts involve the negotiation of property and collateral values and a system in which tax revenues will be used to reinvest in improvement projects over a specified period. Unlike TIF districts, however, special taxing districts may be expanded to cover several counties and involve the creation of an independent district or service area authority to collect and administer tax revenues.

**General obligation (GO) bonds** are also similar to TIF, but whereas TIF is typically used for specific redevelopment practices, GO bonds may be applied to essentially any project that can be demonstrated to enhance the quality of life in a community. Thus, so long as redevelopment projects add to a community's overall economic stability through job creation and tax revenues, they are eligible for GO bonds. Those bonds are issued for a specific amount of money and time in accordance with the premise that increased tax revenues and profits from productive, rehabilitated properties will repay initial loans.

### Creative financing in Wyandotte, Michigan: TIF and beyond

The growth of Wyandotte, Michigan, was built on heavy industries and convenient access to the Detroit River and Lake Erie. But regional shipping industries deteriorated over the past century, and when the BASF Corporation (BASF) began to downsize its operations in Wyandotte, the city was left with an abandoned waterfront property that was heavily contaminated but had considerable redevelopment potential.

Upon investigation, the Michigan Department of Environmental Quality (MDEQ) found BASF to be responsible for the groundwater contamination—primarily heavy metals, polynuclear aromatics, and chlorinated hydrocarbons—on a neglected eighty-four-acre tract of property, and it ordered the corporation to cap the contaminated area and restrict all access to the property and the waterfront.<sup>1</sup> However, the city of Wyandotte urged MDEQ to allow for remediation processes that would render the grounds useful for future economic pursuits. After a series of extensive site assessments, feasibility studies, and negotiations, MDEQ revised its recommendations and ordered BASF to implement a plan to prevent contaminated groundwater from entering the Detroit River.<sup>2</sup> Because the contaminated soils on the BASF site were not required to be extracted, buried, and capped, the city was able to redevelop on the site under specific land use controls.

Early in the redevelopment process, many stakeholders decided that a waterfront park would best suit the needs of the Wyandotte community without requiring extensive remedial efforts. Project funding was contributed by BASF, the city of Wyandotte, and the state of Michigan, and plans were drawn up for a tax increment financing district for the park. In addition, BASF and the city of Wyandotte struck a deal in which the property was leased to the city for \$1 per year.

The city converted one-third of the property into a riverfront park containing riverwalks, trails, and picnic areas, and turned the remainder into a nine-hole public golf course, funded largely through tax increment bonds. Thus, because of the creativity and cooperation among BASF, MDEQ, and the city of Wyandotte—environmentally and financially—a tract of land once prescribed to be capped and fenced off was redeveloped into an economically viable waterfront property.

<sup>1</sup> U.S. Environmental Protection Agency, Office of Watersheds, Oceans, and Wetlands, *Coastlines: Waterfront Revitalization—Reusing Brownfields*, January 14, 1998. Available at <http://www.epa.gov/owow/estuaries/coastlines/fall97/brown.html>.

<sup>2</sup> Ibid.

Although the environmental risks associated with those sites are typically not serious enough to warrant inclusion on the National Priorities List or comparable state lists of hazardous sites, redevelopment of those sites is still often difficult. Under both federal and state environmental laws, nearly any contaminated site may be subject to liability. Developers are reluctant to purchase those sites, and lenders are unwilling to provide funding for fear that they will be held liable under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for the cleanup costs associated with those sites. VCPs often provide financial incentives and legal indemnities to property or business owners, developers, lending institutions, and other potentially responsible parties affiliated with a contaminated site. Currently, nearly all fifty states have implemented or are developing comprehensive VCPs.

In other situations, states have codified specific programs to address, protect, and redevelop waterfront properties and communities, and many coastal states have coastal management plans (CMPs) in place that have been derived from national legislative initiatives. In Florida, for example, the Waterfronts Florida Partnership combines the resources of the Florida Coastal Management Program and the nonprofit organization,

1000 Friends of Florida, to award competitive grants every two years to three local governments dealing with waterfront redevelopment issues. These grants are intended to support design and implementation efforts, including job training and technical and financial assistance. The underlying goal is to encourage local governments to develop tailored planning regimens—with professional assistance—during the two-year funding and tutelage.<sup>4</sup>

And in 1978 Michigan became one of the first states to approve and implement a comprehensive CMP to protect its vast expanse of waterfront along the shores of Lake Michigan, Lake Huron, Lake St. Clair, and Saginaw Bay—in essence, the longest freshwater coastline in the world. Michigan's CMP is modeled after the federal Coastal Zone Management Act of 1972, which enables coastal states to develop programs aimed at sustainable development and ecosystem protection of coastal lands, and it has recently been updated to reflect coastal provisions of the federal Natural Resource and Environmental Protection Act of 1994.<sup>5</sup>

**With federal partners.** Many federal agencies make funds, technical support, and remediation assistance available for waterfront activities. As previously stated, many grants and programs can be creatively tailored

### Fulfilling multiple roles—Eastern Maine Development Corporation, Lubec, Maine

The Eastern Maine Development Corporation (EMDC) has worked for several years with the town of Lubec and several state agencies to facilitate the assessment, planning, and implementation of a breakwater structure to protect a local pier and marina facility.

In the 1970s, a pier was constructed in the small harbor in Lubec under the supervision of the Economic Development Administration and the Maine Department of Economic and Community Development. Because of frequent northeasterly storms and erratic wave patterns, however, the pier was greatly underused. In the 1990s, town officials became eager to remedy this situation and develop the waterfront district surrounding the pier and the marina. They decided that installing a breakwater could provide the pier and marina with ample protection and lead to an economic windfall in the district.

EMDC provided Lubec with a number of tools for financing initial feasibility studies, as well as for soliciting and coordinating resources from the correct state agencies. Under advisement of EMDC, the town formed a harbor committee to unite local stakeholders and develop a strategy for economic development goals in the waterfront district. At the same time, EMDC engaged the Maine Department of Transportation (MDOT) to conduct feasibility studies related to wave and wind patterns and breakwater engineering in Lubec's harbor. From this joint effort, EMDC and MDOT appropriated \$9,500 for an independent engineering firm to conduct the research.<sup>1</sup>

Future plans for waterfront development entail continued partnerships among the harbor committee, EMDC, and MDOT as well as contributions from the Maine Department of Economic and Community Development and various state and federal legislative officials.

<sup>1</sup> Eastern Maine Development Corporation, *What's New—August 2000: Funding for Lubec Pier Found*. Available at <http://www.emdc.org>.

to waterfront redevelopment projects, particularly when brownfields cleanup or urban renewal is part of the overall revitalization strategy.

Two agencies are distinguishing themselves in waterfront redevelopment: the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Army Corps of Engineers (USACE). NOAA is charged with conserving and managing national coastal and marine resources by providing funds, resources, and technical assistance to local governments. The agency is able to make these provisions for site assessment analyses under the Coastal Zone Management Act. In addition, NOAA offers Coastal Resource Community Coordinator programs to provide technical assistance in communities that face waterfront brownfields contamination, as well as community workshops to provide education on the complex yet delicate nature of waterfront resources.

USACE is charged with providing comprehensive engineering, management, and technical support to the Department of Defense and other federal agencies, as well as to state and local governments. While unable to contribute monies to projects, USACE offers technical assistance, consultation, and service, much of which focus on waterfront and waterway projects commensurate with USACE's history of waterborne navigation works. However, by supporting projects that restore or simulate wetlands and incorporate greenways along waterfront properties, the agency is developing a new emphasis that balances the creation of public works with the maintenance of sustainable urban development.

In addition to NOAA and USACE, two other agencies contribute significantly to waterfront redevelopment

efforts. The U.S. Fish and Wildlife Service (USFWS), which operates within the Department of the Interior, is the principal agency charged with conserving, protecting, and enhancing the quality of aquatic and land ecosystems in the United States. In so doing, it improves the environmental quality of animal and plant wildlife habitats for both the benefit of indigenous species and the enjoyment of the American public. If a waterfront revitalization project can be linked to habitat restoration or the protection and conservation of potentially affected ecosystems, USFWS is likely to get involved. For example, under the Environmental Contaminants Program, USFWS assesses the effects of oil spills, point- and non-point-source pollution, and hazardous waste contamination, and it undertakes remedial efforts to protect living resources in Superfund and brownfields cleanups. If a property hosts a species named on the Endangered Species List, tenets of the Endangered Species Act could be invoked that would put the land under the protection of the Department of the Interior and such agencies as USFWS and the National Park Service. Moreover, the Office of Habitat Conservation within USFWS may be petitioned to provide technical assistance in the planning phases of waterfront development projects, thereby protecting and maintaining the ecological integrity of a waterfront community—or a specific ecological niche.

The U.S. Maritime Administration (MARAD) is the agency within the Transportation Department that oversees the interests of U.S. domestic and international waterborne commerce. Two hallmark missions of MARAD are the maintenance of a safe and environmentally sound maritime transportation system and

the promotion of national security and economic growth through maritime endeavors. MARAD recognizes the importance of shipyard revitalization and upkeep and has devised a number of programs to streamline operations in the shipbuilding industry; while those programs do not address redevelopment in the conventional sense, they do encourage financial stability and bureaucratic efficiency. MARAD is also able to contribute to waterfront redevelopment through economic and technical assistance.

## WATERFRONT REDEVELOPMENT AT WORK

The nature of a waterfront redevelopment project is directly linked to the specific body of water associated with a property—typically, oceans, lakes, and rivers. Among this broad range of waterfront ecosystems and boundaries, the intricate surface and groundwater resources—whether adjacent or linked within a larger hydrologic region—must be considered in the redevelopment planning process.

### Coastal Redevelopment

Coastal waterfronts have traditionally been among the most popular areas for community development, often providing breathtaking aesthetic and recreational resources as well as the setting for valuable real estate properties. Bordering vast bodies of water, such as oceans, gulfs, and seas, it is not surprising that coastal

states—including those on the Great Lakes and the Gulf of Mexico—host approximately 75 percent of the U.S. population and the largest cities in the nation.<sup>6</sup> The Great Lakes are included as coastal bodies because of their vast size, their relevance to shipping and transportation industries, and their hydrologic processes, which are similar to those of oceanic bodies of water (see below).

While most people are drawn to the waterfront for leisure and recreational opportunities, industry giants have been drawn there for convenient access to waterborne transportation. Coastal zones are home to large ports and fishing industries. Maritime commerce accounts for 95 percent of U.S. imports and exports. In 1995, approximately 2 billion tons of cargo, with an estimated value of \$620 billion, were shipped from 196 ports on coastal waters, rivers, and Great Lakes.<sup>7</sup> Coastal development is not without faults, however, and can be extremely hazardous to both natural ecosystems and local human communities through cycle disruptions and point- and non-point-source pollution.

Coastal waterfronts are dynamic ecosystems with numerous climatic, topographic, and hydrologic differences. However, all coastal regions are linked because of interactions that occur where continental and oceanic systems converge. Because both systems are extremely powerful, coastal waterfronts are regions accentuated by dramatic landform changes. For example, the rhythmic erosion and deposition of coastal sediments and nutrients define the natural process of longshore drift, in which sand and other coastal sediments are transported and recycled by wave patterns and tidal episodes under the influence of gravity and the Earth's rotation. Many people have experienced this phenomenon while swimming in the ocean, as natural currents tend to carry objects laterally down the beachfront. Longshore drift contributes to the overall stability of coastal ecosystems but may be affected by natural and human interactions with coastal waterfronts.

Climatic idiosyncrasies often make coastal regions highly susceptible to violent storms and the subsequent tidal surges and flooding that can be destructive. And coastal storms influence inland weather as oceanic weather systems move inland, dissipate, and cause increased rainfall. In addition to non-point-source pollution in overland runoff, the resulting flooding throughout a watershed is ultimately destined for coastal deltas, and flooding episodes in low-lying coastal communities can be exponentially costly in property damage and threat to human lives.

Yet the impetus to develop coastal regions continues to outweigh the risk of hazardous storms and ramifications to natural cycles. So that beachfront real estate can be preserved and waterfront industrial harbors and recreational marinas can be accommodated, structures such as bulkheads and breakwaters have been constructed to create inlets and break up tidal and storm episodes. Those modifications can often backfire, however, by disrupting natural shoreline sediment cycles.

### Taking the initiative—Voluntary cleanup programs

Voluntary cleanup programs (VCPs) allow voluntary parties, such as site owners or developers, to approach state governments and initiate environmental cleanups on their own. Cooperative in nature, the programs rely on incentives rather than enforcement orders to accomplish remediation.

Incentives to participate differ from state to state; however, several features are common among state VCPs. Incentives typically include conditional exemptions from future state liability for a property, streamlined investigation and cleanup procedures, more expedient and economical cleanup alternatives, and more realistic cleanup goals.

The assurances are often issued as a No Further Action certificate acknowledging that contaminated properties have been treated to levels sufficient to VCP standards, which are usually based on the intended future uses of that particular site. In other cases, legal contracts in the forms of Covenants Not to Sue are issued to protect site owners and developers from future liabilities should unanticipated environmental hazards be discovered.

### Putting it all together—Waterfront Industrial Reuse Effort, Portland, Oregon

To address waterfront revitalization efforts, Portland, Oregon, has developed the Waterfront Industrial Reuse Effort (WIRE). This redevelopment effort, whose goal is to revive industrial activities in the harbor area, rests mostly with local industry and business owners, who have formed the Portland Harbor Group. The WIRE district is adjacent to the North/Northeast (N/NE) neighborhood and, if redeveloped, could be a great source of living-wage jobs.

Portland's deepwater harbor is the fifth largest port for transportation in the country. Yet many of the shipping and support industries along the Willamette River—once Portland's industrial core—have stood vacant since the first decade of the twentieth century, the victims of changing local and regional economic trends. Operations that included pesticide manufacturing to the north, warehousing facilities in the center, and a metals recycling plant to the south of the district operated for approximately sixty years before closing in the 1980s.<sup>1</sup>

The most serious contamination concerns focus on stormwater runoff along this six-mile stretch of the riverfront. But because a number of Endangered Species Act issues are associated with the river, state agencies may be unable to plan or conduct a cleanup without extensive consultation with the National Oceanic and Atmospheric Administration or the U.S. Fish and Wildlife Service. The U.S. Army Corp of Engineers (USACE) has been working with the Portland Harbor Group to develop a habitat conservation plan to maximize salmon pass-through during any cleanup or redevelopment activities. However, there is some conflict between USACE and the Oregon Department of Environmental Quality because the groups' environmental and river sediment standards are different; consequently, WIRE cleanup and redevelopment could be lengthy. To expedite the redevelopment process, one of the property owners has enlisted in the state's voluntary cleanup program.

The city of Portland is the sponsor of the N/NE enterprise zone (EZ), which has been authorized by state legislation and is administered by the Portland Development Corporation. Because of the EZ status, property investors may receive a 100 percent tax abatement for five years if they comply with a number of requirements, such as job creation, minority hiring, employee day care, and transportation provisions.

In 1995, the state also established a strategic investment plan (SIP), the impetus for which came from Intel, the microchip processor. Intel had stopped making investments within the state because it found that Oregon's property tax structure was not competitive. The SIP provides a property tax abatement on any assessed valuations above \$100 million. Implemented on a countywide basis, the SIP may or may not be adopted by separate counties, as dictated by local business pursuits and needs. The counties that do adopt an SIP must also enact a policy that sets standards to guide its use. Several local steel mills and semiconductor businesses as well as Intel have taken advantage of the SIP, so the city has retained business, its tax base, and jobs.

Under the collaborative efforts of the city of Portland, the Portland Harbor Group, Schnitzer Investment Corporation, and numerous state and federal agencies, a number of projects in the WIRE district have been launched. Blighted and contaminated sites have been turned into profitable commercial, office, and residential developments, and there are future plans for expanded greenways. The WIRE district also includes Governor Tom McCall Waterfront Park, which provides numerous recreational waterfront options and hosts many activities, such as the Waterfront Blues Festival—a musical charity event that serves as a community food drive.<sup>2</sup> Thus, Portland has been highly successful in involving multiple stakeholders and using existing programs to restore and preserve the economic potential and aesthetic beauty of the city's historic waterfront.

<sup>1</sup> Kenneth M. Novack and William E. Cobb, *Brownfield Cleanups: A Portland, Oregon Perspective*. Available at <http://www.brownfield.org/Local/schnitze.htm>.

<sup>2</sup> *Waterfront Blues Festival, Background*. Available at <http://www.waterfrontbluesfest.com/background.htm>.

A bulkhead that prevents sediment erosion in one area impairs the recycling and deposition patterns down the shoreline and leads to drastic erosion problems. Conversely, a breakwater designed to prohibit wave activity in a harbor or marina prevents erosion of the beachfront and results in "overdeposition" of sediments. The shoreline, therefore, actually migrates toward the breakwater and reduces the area intended for vessel traffic and docking.

Residential communities and industrial facilities also affect coastal ecosystems. Runoff from residential and agricultural regions often contains fertilizers, her-

bicides, and pesticides that eventually reach coastal waters or permeate waterfront properties, causing groundwater contamination. Industrial port facilities often directly and indirectly contribute hazardous contaminants, including petrochemicals, heavy metals, radioactive wastes, and thermal pollution. In addition, the historic practice of dumping of solid waste, sewage, and toxic inorganic chemicals into the ocean has severely contaminated many industrial waterfronts.

Thus, coastal redevelopment plans must consider a breadth of factors, including the natural, chemical, and social processes operating throughout the region.

## Lakefront Redevelopment

Lakes are inland bodies of water that are fed through regional watersheds of surface and groundwater networks. As points of convergence for continental landforms and large bodies of surface water, the shorelines of larger lakes, such as the Great Lakes, undergo natural processes that may be similar to oceanic processes but smaller in magnitude. For the most part, however, lakes are more dramatically affected by seasonal variations in water flow among rivers and groundwater resources within a watershed. In addition, most lakes are freshwater rather than saline, so their native vegetation and animal wildlife are significantly different from oceanic, coastal varieties.

Along with many historic residential and industrial development patterns, lakefront communities also

share the subsequent environmental concerns related to contamination and landform processes. As previously mentioned, the presence of abandoned and contaminated lakefront properties is largely due to the decline in regional shipping industries, as occurred among the Great Lakes. However, communities bordering smaller, inland lakes are also confronted with redevelopment issues—typically, those related to historical infill practices and the pollution that accompanies waste dumping or litter from lakefront recreational activities. And because these communities are usually smaller in population and without extensive industrial economies and infrastructure, local citizens may disagree on the extent to which economic development initiatives are necessary or desirable. In such cases, it is essential that redevelopment planning incorporate

### Drafting the “master plan”—Glen Cove, New York

From the late 1800s to the early 1900s, Glen Cove was part of Long Island’s “Gold Coast.” Steamboat operations between New York City and Glen Cove regularly brought people to Glen Cove’s beautiful waterfront. Many wealthy families built mansions in Glen Cove to enjoy its resort atmosphere, waterfront recreation, and scenic vistas of Hempstead Harbor and Long Island Sound.

Glen Cove was also the Gold Coast’s center of industrial activity. During the 1900s, a number of different industries sprang up along the banks of Glen Cove Creek. But today, although approximately nine of Glen Cove’s ten miles of waterfront are pristine, the remainder contains several brownfields, two federal Superfund sites, and a New York State Inactive Hazardous Waste site.

In 1994, the newly elected mayor made redevelopment of the waterfront into a maritime leisure site and tourist destination a top priority. And because brownfields currently occupy 146 of the 214 acres of the targeted area, brownfields redevelopment is a significant component of Glen Cove’s strategy to reclaim and restore the waterfront’s former glory.

Findings from the New York Department of State (NYDOS) Long Island Sound Coastal Management Program have bolstered plans for the revitalization of Glen Cove’s waterfront. The NYDOS report identifies the city as one of only three areas along Long Island’s 314 miles of coastline where “concentrated waterfront redevelopment” should occur. Glen Cove is also designated as a historic maritime center. On the basis of this designation and the recommendation from the coastal management report, the city has worked with NYDOS to undertake a comprehensive planning process for the revitalization of Glen Cove Creek and the waterfront district.

A grant under the New York State Clean Water/Clean Air Bond Act funded the development of a master plan for the city’s waterfront district. The plan includes retail shops, restaurants, a hotel and conference center, a maritime learning center, and high-speed passenger ferry service to and from Manhattan and Connecticut. Some of the light industry currently in the waterfront district is to be relocated to other sites in the city. Because the plan identifies the program goals, objectives, and action items, it is a useful tool for local government, private sector, and community stakeholders. The local government can use the master plan to guide its efforts and promote its program to agencies that may be able to provide resources, and developers considering an investment or project on the waterfront can use the master plan to see if their development plans for the area are consistent with it.

Because Glen Cove is a coastal community, its brownfields and waterfront redevelopment programs are highly interrelated. And because the city’s vision and waterfront redevelopment strategy have been incorporated into all local government departments, each office has become an indirect stakeholder in the project. Accordingly, interdepartmental support within the local government has contributed to the creative and entrepreneurial approach of Glen Cove’s revitalization plan. The Community Development Agency, the lead agency for the city’s brownfields and waterfront redevelopment efforts, updates citizens and media through various community and task force meetings.

As a small city with fewer than 25,000 residents and limited resources, Glen Cove has had to be innovative in finding strategies for putting its brownfields and waterfront redevelopment plans into action. Collaboration with county, state, and federal agencies has allowed the city to leverage \$18 million in funds and technical assistance. The support of those agencies, in addition to the entrepreneurial spirit of the local government staff, is making Glen Cove’s vision of waterfront restoration a reality.

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the concerns of all local stakeholders. Nonetheless, many communities along inland lakes have benefited from waterfront redevelopment initiatives and their concomitant economic revitalization opportunities, including waterborne recreation, tourism, and employment in support industries.

### Riverfront Redevelopment

Providing transportation waterways that span the nation, hatcheries and habitats for aquatic wildlife, and waterborne recreation, rivers are the third type of waterfront that is seeing extensive redevelopment

throughout the United States. Riverfront development has often proliferated because of links to larger, coastal port facilities or major hubs and intersections, such as the confluence of the Ohio and Mississippi Rivers. But because rivers are also the terminal sinks for enormous regional watersheds, such as the Mississippi and Ohio Valleys, contaminants that accumulate throughout the watersheds flow directly and indirectly into their waters. Therefore, smaller rivers throughout a watershed are often good starting points to address waterfront redevelopment. Today many rivers that have contributed significantly to the growth of U.S. cities are being remediated for industrial, cultural, commercial, and recreational purposes.

### Engaging the Public—Frisco, Colorado

Frisco, Colorado, is a small ski-oriented town that was incorporated as a mining town in the last century. It has a full-time population of approximately fifteen hundred and receives approximately 3 million visitors yearly. In the 1960s the Denver Water Board built a 3,300-acre reservoir two blocks east of the center of the town. The main east-west street through town terminates at the shoreline. The reservoir became a popular fishing spot, and people camped and fished along its banks. But because of its proximity to the town, urban waste—abandoned automobiles, paper and plastics, wood, and other trash—was occasionally discarded along its shores. What might have been a great asset to the town was for many years an unkempt eyesore.

In the 1980s a number of condominiums were built on the private land adjacent to the reservoir, generating a community controversy about the preservation and development of the area along the “lakefront.” Some thought the area was ideal for a municipal golf course; others thought it ideal just the way it was. Candidates for seats on the town council represented those opposing views, and lakefront development became a very divisive issue.

The town manager suggested a community forum to discuss the town’s future. Approximately seventy-five citizens came to the forum. The results were unquestionable. The town was divided over the development of the lakefront, and the lakefront was almost all anyone wanted to talk about. The manager then suggested establishing a citizens’ advisory committee to provide an opportunity to air the issue away from the heat of decision making and to give the issue the time it deserved to be analyzed and proposed for resolution. Consequently, the town council established the Frisco Lakefront and Marina Plan Advisory Committee.

The committee’s meetings were well attended and brought the community’s direct attention to the subject with adequate time for discussion. After the initial meetings, it became apparent that a vast majority of the active citizenry wanted to see the lakefront cleaned up and developed with some provision for conservation.

It took the committee approximately six months to develop a plan. Town staff members assisted in preparing the graphics and text, and several alternatives were analyzed in terms of their impact on local streets, adjacent residences, and so on. The final product provided for a marina, a nature preserve, trails along the waterfront complete with several rest areas for bicycles and pedestrians, and the possibility of a golf course at the southern end of the lakefront area, where the town maintained a Nordic ski (cross-country) center in the winter. The town council adopted the plan in mid-1988, and a permanent commission was established to oversee the development and management of the proposed projects, starting with the marina. Within several years, the marina was in place, as were many of the proposed trails and other improvements. The lakefront has since become a great asset to the citizens of the town as well as to those who come to visit.

The formation of a well-structured citizens’ committee that related directly to the members of the council served as the catalyst for the project. Until the committee was formed, many citizens of the town were uneasy about the future of the lakefront. The committee brought general concerns into focus and made concerted action possible.

The committee was also a catalyst in the formation of another committee, one that would plan and coordinate recreational uses around the entire reservoir. That committee was composed of representatives of Summit County, the towns of Frisco and Dillon, the Denver Water Department, and the U.S. Forest Service. As a result of its efforts, there is today a twenty-six-mile bicycle trail encircling the reservoir and other recreational activities that would not have been possible without coordinated planning.

Source: Carl and Marilyn Stephani, “Establishing Effective Citizens’ Advisory Committees,” *MIS Report* 28 (February 1996): 3–4.

In the most general sense, rivers result from the intersection of landforms and the water table where groundwater discharges establish a base flow within a channel. This base flow is then fed by vast networks of tributaries throughout local and regional watersheds. Within these networks, rivers transport loads of sediments and nutrients through the processes of erosion and deposition. In this way, rivers have literally carved out portions of the American landscape, such as the Grand Canyon, over millions of years.

Like all hydrologic systems, riverine ecosystems operate under a dynamic equilibrium: increased and decreased water flow from seasonal rains or droughts will affect an entire watershed in both surface and groundwater resources. When rain events surpass the absorption potential of saturated soils throughout a watershed, excess water flows down natural gradients as overland runoff. Urbanization has compounded overland runoff problems by creating impervious surfaces—rooftops and paved infrastructure—that further limit the absorption potential of soils and groundcover. As a result, greater amounts of water reach streams faster, thereby increasing local and regional flood potentials. Moreover, runoff that flows over roadways is likely to transport petrochemical contaminants directly into storm sewers and rivers. If rains persist and runoff continues throughout a watershed, the cumulative result may be massive flooding, contamination, or both among primary stream channels.

Throughout U.S. history, riverine waterways have been modified to facilitate transportation industries, mitigate potential floods, create water reserves, and generate power resources. For example, in the first half of the twentieth century, channels were widened and deepened and the naturally sinuous paths of rivers were straightened so that larger crafts could be used for shipping. Some projects incorporated series of locks to regulate river traffic and water levels. Others sought to create reservoirs through impoundment dams that could store water in case of drought conditions and strategically release excess water to prevent flooding. Such dams could also incorporate hydroelectric facilities to generate electricity for regional development.

Although these projects were beneficial to human interests, they were often devastating to neighboring aquatic and terrestrial habitats. Whether through channelization or damming, natural patterns of erosion and of sediment and nutrient deposition were disrupted or halted. This change affected processes that not only shaped landforms and distributed soils, but also allowed aquatic wildlife to migrate and propagate. Furthermore, traditional floodplains, as well as flood-mitigating and water-filtering wetlands, became submerged along with fertile soils. Finally, with increased industrialization, point and non-point-source pollutants infiltrated many rivers and connected waterways through the transport and deposition of dissolved and particulate contaminants.

In current riverfront redevelopment efforts, these factors must be considered if a healthy future for American river systems is to be ensured.

## CONCLUSION

Waterfront properties are considered to be extremely valuable for both their economic and aesthetic offerings, which range from real estate and tourism industries to wildlife habitats and open land resources, all of which translate into future rewards for local governments. By reinvesting in and redeveloping existing waterfront properties, local governments can not only revitalize valuable districts and facilities, but also restore the economic stability and cultural integrity of waterside communities.

Yet waterfronts can also be among the most complicated properties to redevelop because they often cross several political boundaries. This makes the coordination of multiple stakeholder interests and jurisdictional concerns, as well as the handling of contamination issues among massive hydrologic settings, extremely challenging.

For those reasons, careful long-term planning; comprehensive stakeholder involvement; and the formation of partnerships among local, state, and federal agencies as well as private sector organizations is essential to the long-term success of redevelopment strategies designed to revert the degradation of yesteryear's waterfronts.

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