



**FINAL REPORT**

# Brownfield Economic Redevelopment:

## Preparing Modern Intermodal Freight Infrastructure to Support Brownfield Economic Redevelopment



A Joint Project of the  
North Jersey Transportation Planning Authority, Inc. and  
the New Jersey Institute of Technology

*Funded by the Federal Transportation and Community  
and System Preservation Pilot (TCSP) Program*

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This report was financed by the US Department of Transportation, Transportation and Community and System Preservation Pilot program. The NJTPA and NJIT are solely responsible for its contents. Information presented on case study properties in this document is intended to provide only general guidance as to the issues affecting possible development of the sites and cannot substitute for due diligence on the part of those advancing development proposals.

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## FINAL REPORT

## Section I - Introduction

Northern New Jersey is positioned to reap significant economic, environmental and social benefits from changes in global trade patterns and business practices that already are increasing the flow of goods through the region's port, airport and rail terminals. The region can best take advantage of these changes by undertaking well-placed infrastructure investments in conjunction with efforts to redevelop abandoned and under-used industrial sites in the port area to serve as warehousing and distribution centers (W/DCs).

This final report on the Brownfield Economic Redevelopment (BER) project focuses on how these sites, known as brownfields, can be used as strategic assets to meet the evolving needs of the freight industry. The report presents the findings of several case studies of brownfield sites, which yielded insights into the complex issues that confront the region in achieving the redevelopment of the thousands of acres of brownfields in the port area.

The report makes clear that this is an ideal time for the state and region to adopt policies and programs to aid redevelopment of these brownfields for freight related purposes. The anticipated use of giant container ships carrying goods from Asian markets via the Suez Canal to the East Coast, combined with the deepening of channels at the port of New York & New Jersey, means that there will be significantly greater volume of high-end consumer goods moving through the port in the near future. At the same time, changes in logistics practices by businesses are favoring distribution operations closer to ports and other freight terminals and are creating new types of warehouse facilities that employ larger numbers of workers to process and manipulate goods before they are shipped to markets.

If the region can capitalize on these trends through large-scale freight related brownfield redevelopment, this report shows, it can create a strong new base of

employment to help make up for the continuing decline in the state's manufacturing base. It can also offer a more effective alternative to siting warehouses and distribution centers on the fringes of the region, which has led to a massive loss of open space, an increase in truck traffic over already congested roads and added regional air pollution.

Moving freight activity closer to the region's core to efficiently use available land and existing transportation infrastructure, makes this an ideal Smart Growth initiative for the state and region. It also is an effective economic growth strategy: as other sectors of the economy have been buffeted by recession, traffic through the port has continued to grow and even more dramatic growth is projected for coming years.

However, as discussed in this report, there are significant obstacles to realizing these benefits. High remediation costs, lack of coordination of government programs, inflexible and time-consuming environmental regulations and a piecemeal approach to planning are among the barriers. The report presents a set of targeted recommendations that will move the state's brownfield redevelopment process forward and highlights critical policy questions that must be addressed by state, local and regional officials in cooperation with the private sector.

The BER project was funded under the federal Transportation and Community and System Preservation Pilot program. This report draws upon and incorporates findings of Phase I of the project, which was completed in 2001. The report is divided into sections on background, methodology, case study summaries, case study findings, analysis of findings and conclusions-recommendations. The "Port District" referred to in this document is defined as the area within a roughly 25 mile radius from Port Newark/Elizabeth.

## Section 2 - Background & Context

### 2.1 Global Trends Affecting Brownfield Reuse

#### 2.1.1 Importance of Freight

The goods handled by the port, airport and rail terminals in northern New Jersey underpin much of the tri-state metropolitan region's economy. Nearly every commodity used, consumed or sold in the region passes through the northern New Jersey freight distribution system. A study in 2000, pointed to the value of freight to the State of New Jersey: <sup>1</sup>

- New Jersey is ninth among states in the volume of exports generated, sending goods made in the state to over 200 worldwide destinations.
- These exports include pharmaceuticals, chemicals, electric and electronic machinery and computer-related equipment.
- New Jersey is fifth among states for foreign investment with over 1,200 foreign owned firms.
- More than 375 million tons of freight move through the state each year, with more than 80 percent moving at least part of the journey by truck.
- The NJ freight distribution industry employs over 484,000 workers, more than the entire manufacturing economy of the state. The Port of New York and New Jersey generates more than 166,000 bi-state regional jobs ranging from white-collar insurance and banking to blue-collar stevedores and truckers.
- New Jersey already has more than 440 million square feet of warehousing and distribution space.

This importance of freight to New Jersey has deep historical roots. The region was settled and grew around its port facilities and river systems (Hudson River, Erie Canal, Delaware River, etc.) that allowed for the movement of commerce to inland communities. Ship, barge, and rail facilities and later interstate

highways concentrated around the largest metropolitan population in North America. Because of its central location on the East Coast, the region became a distribution platform for a wide area extending north to New England, south to the Delaware River/Philadelphia metro area and west nearly to Chicago.

The huge consumer market in and near the metro-NY, NJ, CT, PA regions helped to stimulate innovations in freight distribution practices. The birth of modern "intermodal containerization" occurred in 1956 at the growing port facilities in Port Newark/Elizabeth when a trucking entrepreneur named Malcolm McClean lashed truck vans to the deck of a ship to facilitate more rapid handling of cargo at their destination port. Following this logistical breakthrough, cargo operations accelerated at marine terminals. Previously concentrated on finger piers along the New York Harbor waterfront, these terminals migrated to New Jersey because of the need for upland to handle container storage and marshalling and to take advantage of extensive national rail and highway connections. The Port of New York Authority (later the Port Authority of New York and New Jersey) invested in new facilities for handling containerized freight, making the port the largest ocean container facility on the Atlantic and Gulf coasts.

As a result, container traffic through the Port of New York and New Jersey grew from approximately 2.5 million twenty-foot equivalent container units (TEUs) in 1995 to some 3.3 million in 2001. The Port of NY/NJ is increasingly seen as a hub port for Atlantic trade. This role was strengthened in June 1998 when the giant marine freight corporation, Sealand-Maersk, which had been considering moving its operations to the rival ports of Norfolk, Baltimore or Halifax, agreed to renew its lease of port facilities in Newark-Elizabeth for another 30 years. This development was widely hailed by regional officials as the foundation for continuing strong growth for commerce in the region.

While the marine port is the focal point for the



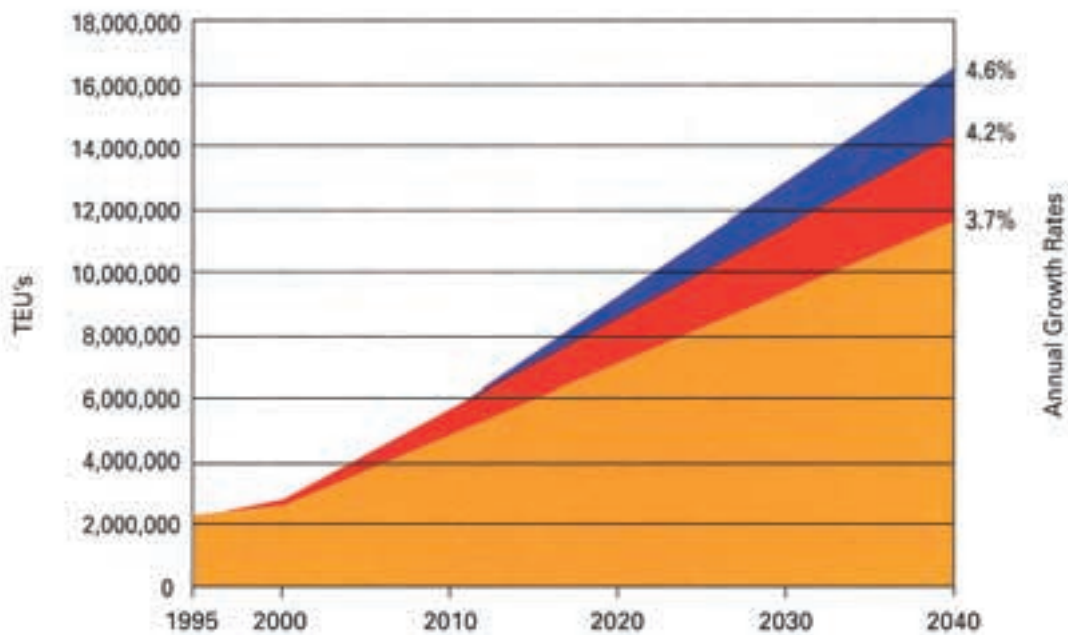
largest volume of commerce in the region — and therefore is devoted most attention in this report — the role of the airport and rail terminals cannot be overlooked. The region’s extensive rail freight network is being upgraded and expanded as a result of the acquisition of Conrail by Norfolk-Southern and CSX railroads which in 2000 handled more than 28 million tons of cargo either originating or terminating in New Jersey. Newark Liberty International Airport has become the eighth largest air cargo hub in North America, handling some 1.2 million tons of air cargo worth more than \$52 billion in 2000. The availability of these freight modes in proximity to the port (and in the midst of the region’s extensive highway network) allows the region to serve as an efficient multimodal goods distribution center for companies handling many types of products and serving many destinations nationally and internationally.

These many significant advantages underlie the continuing growth of commerce despite the current recession and even after the 9/11 tragedy and are the basis for projections for dramatic growth in commerce in coming decades. Container movements of “general cargo,” which defines most manufactured goods, are projected to grow at an annual rate of between 3.8

and 4.4 percent. By the year 2040, according to Port Authority projections, port container traffic could increase more than fivefold to as many as 17 million TEUs (Figure 2-1). This level of growth could create hundreds of thousands of new port related jobs (Figure 2-2) as well as have positive ripple effects throughout many sectors of the economy. According to the Port Authority of New York and New Jersey, it represents “a rare opportunity for the New York-New Jersey region—to create new jobs and generate higher incomes, to reduce the cost of doing business and to raise the standard of living enjoyed by the region’s people.”<sup>2</sup>

However, realizing this level of growth is far from assured. The region still faces many difficult challenges to sustaining its leading role in commerce on the East Coast — not the least of which is the continuing and relentless competition from other ports in realizing new efficiencies in handling freight. This report shows that brownfield redevelopment for freight purposes will be a key strategy in meeting many of these challenges and safeguarding the region’s future.

**Figure 2-1 Growth of Container Volumes**



Source: Port Authority of NY & NJ, 2000

### 2.1.2 The International Supply Chain

The reason dramatic growth in commerce through the port, airport and rail terminals holds out such important promise for northern New Jersey stems from the expanding role of international trade in virtually all sectors of the economy.

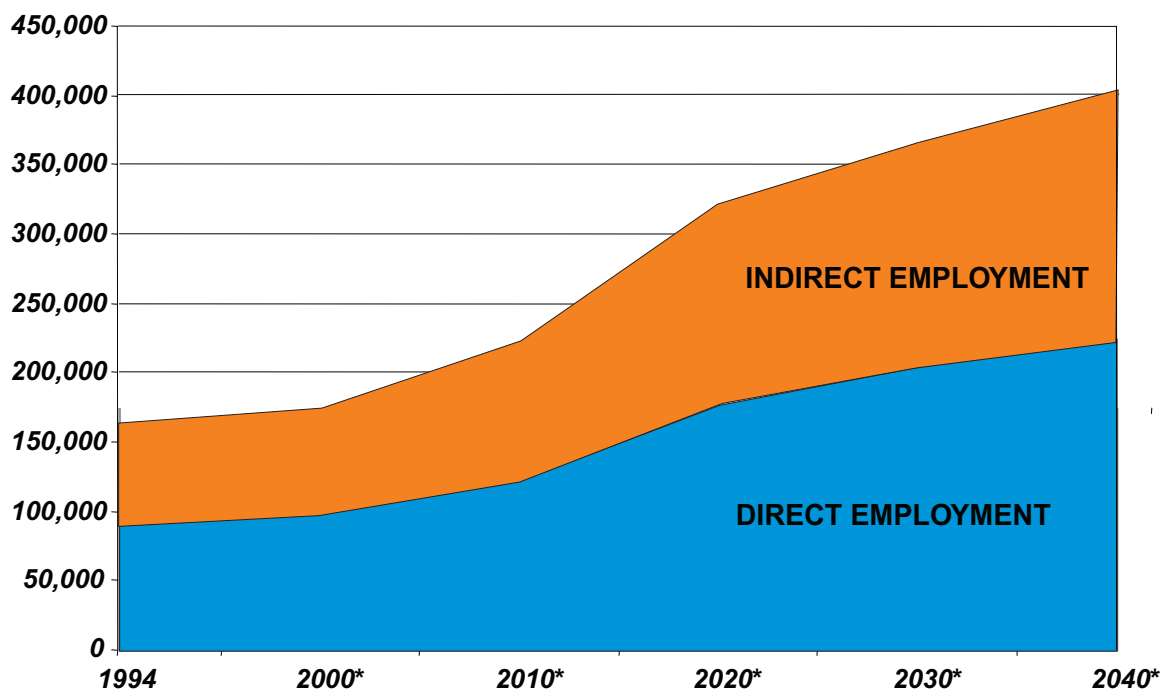
The U.S. economy is the most open economy in the world. Increasingly, many of our manufacturing inputs and most of our consumer products are sourced whole or in part from overseas markets. This has been a long-term process as U.S. manufacturers have downsized and moved many production and assembly operations to cheaper overseas production facilities. It has been abetted by U.S. and international trade agreements such as the General Agreement on Trade and Tariffs-GATT and the North American Free Trade Agreement (NAFTA) which have opened markets and permitted U.S. capital to move to off-shore locations for production.

A declining portion of the U.S. economy is devoted to manufacturing. As production has moved to far flung locations around the globe, the efficiency of

transportation has become a critical concern. Corporations, often employing specialized logistics firms, make millions of dollars in profit by shaving pennies off the cost of the production and movement of goods. They use elaborate production chains that take advantage of cheap labor in one country, raw materials in another, subsidized manufacturing or favorable tariffs in a third.

A case in point is the production and order fulfillment of Dell computer which uses a “horizontal” supply chain in which parts and sub-assemblies of electronic components are produced around the globe and provided to a central U.S. plant for assembly into a final computer based on orders already received from customers. This process avoids the overhead of maintaining large inventories of parts or of producing potentially stale products in advance that may sit unwanted on store shelves for long periods. In effect, for Dell, the truck, train and ocean vessels carrying computer parts have become “inventory in motion.” This inventory is managed through advanced logistics practices to insure that the goods arrive at “time definite” intervals for inclusion in the production process or to be sold directly to consumers or delivered to retail outlets. Many other cor-

Figure 2-2 Employment Projections



\* Estimated Source: Port Authority of NY & NJ, 2000

porations supply their needs in a similar manner. None of this would be possible without open markets and sophisticated logistics-driven transportation systems and supportive communication infrastructure.<sup>3</sup>

The extent to which these practices integrating the global economy have taken hold was underlined in the October 2002 by the strike halting freight traffic through West Coast Ports. Parts were not available for cars, washing machines, computers, and an wide variety of other goods that are “manufactured” or finished in the U.S. Losses quickly mounted to more than \$1 billion a day, nationally, and threatened to move into the realm of \$3 billion per day.

The competition between economic regions for this international commerce is intense and will become more so as barriers drop under relentless global integration and the opening of markets. The winners will be those regions that develop the facilities, infrastructure and capabilities to most efficiently meet the time definite demands of the international supply chain.

Regions must also be prepared to accommodate new trade patterns and technologies. New, giant container vessels, requiring 50-foot drafts and carrying thousands of marine containers, are increasingly altering international trade routes. The larger ships are active in the Asia/Pacific trade (China, Japan, Korea, Taiwan, South

and S.E. Asia, etc.). This region is the manufacturing heartland of the global economy. The larger ships will also move west through the Suez Canal which has a 58-foot draft to serve the European and North American markets (see Figure 2-3). This trans-Suez route will decrease the importance of trans-continental rail shipments from West Coast ports — via the so-called “land bridge” — which is how most Asian goods currently reach the New York–New Jersey region. These Asian goods include electronics and much of higher value manufactured and assembled goods consumed in the region.

The port of New York and New Jersey as a hub destination on the Atlantic stands to become a major beneficiary of this new global trade system. Yet, as discussed below, the extent of benefits to be realized will depend on the region’s success in accomplishing major investments to address obstacles to greater port efficiency.

### 2.1.3 Port Efficiency Challenges

The port is challenged on a number of fronts to manage its growth in traffic and to adapt its practices to meet the demands of international shippers. On the waterside, the port must deepen its channels and berths to over 50 feet to handle the “megaships” that

**Figure 3 Shifting Trade Patterns: Estimated Diversion of West Coast Trade to East Coast**



Source: Moffat-Nichol Engineers

carry thousands of marine containers. The federal government is currently matching Port Authority investment in channel deepening on a 60-40 basis. Overall, the 10-year project being undertaken by the U.S. Army Corps of Engineers to deepen the main channel to 50+ feet is expected to cost \$2.3 billion dollars over the next decade. Once deepened, the port also must maintain channel depths and find ways to dispose of sometimes-contaminated sediments, which now require expensive upland disposal options.

But even greater challenges face the port in its terminal operations and in its landside transportation capacity. In terms of its terminal operations, the port must increase its efficiency and utilization of precious land resources. The Port of New York and New Jersey has a very low terminal efficiency rating, which is usually measured in containers-per-acre-per-year (that is, how many marine container equivalents, TEUs, move through the terminal per acre per year). Currently, the Port moves approximately 1,900 containers per year, whereas West Coast Ports such as Los Angeles/Long Beach move anywhere from 4,000 to 7,000 TEUs per year, depending on the terminal. Overseas, Hong Kong and Singapore move upwards of 18,000 TEUs per year and Rotterdam in the Netherlands, which has a distribution function similar to NY/NJ, moves over 10,000 TEUs per year. This suggests that the Port must use its available space more efficiently, creating more upland for container handling and storage and moving to a 24hour /7day or a 24/5 operational schedule to handle more and larger ships, enabling traffic to move in and out of its terminals on off-peak roadway hours.

On the landside, New Jersey is the most developed state in the U.S. and is also one of the most congested. The road and rail infrastructure is heavily congested, especially during peak hours. The main roadways in proximity to the Port and Newark Liberty International Airport, such as The New Jersey Turnpike, I-78, I-280, U.S. 1&9 handle heavy volumes of vehicular traffic. Truck traffic, often resembling miles-long convoys, slows to a crawl during peak hours, but is strong during all hours of the day.

To address these issues, the Port Authority is slated to invest hundreds of millions of dollars over the next decade in its port operations. Much of this invest-

ment is devoted to terminal improvements such as extending piers, new intermodal facilities, clearing old warehouses for increased container activity and improving Intelligent Transportation Systems (ITS) information architecture; and improved access to terminals. Key projects include the revamping of ExpressRail, the port's on-dock rail facility in Elizabeth; upgrading Arlington yard and expansion of capacity at Howland Hook, Staten Island; and improved security at terminals and other enhancements. The Port Authority is also involved in the relocation or creation of facilities such as its Automarine terminal, which handles vehicle imports and exports. This facility is expected to move from its present location on the Port Jersey Channel to either Woodbridge, NJ or to Staten Island.

The private sector is matching Port Authority investments. The port's major terminal operators, such as Global Terminals, Inc, Maher Terminals, Inc. and Sealand-Maersk have undertaken capital investment programs such as purchasing new large ship cranes, straddle-carriers, and installing new information systems and architecture to process the more than twelve thousand daily truck/container movements into port terminals. Additional port capacity will come on line when the Port Jersey complex of Global Terminal, Inc. is expanded to replace the Automarine terminal and the adjacent Military Ocean Terminal of Bayonne is developed into a deep-water container port complex over the next decade.

While the port is focusing on dredging and upgrade of its terminals, there is increasing pressure on the Port Authority to deal with the landside impacts of its port activities. A consortium of federal, state, and regional agencies, along with numerous public interest groups under the acronym of "CPIP" (Comprehensive Port Improvement Program) is studying the landside needs and feasibility of continuing port growth. Their studies will be accompanied by a separate environmental impact statement (EIS) on overall transportation and economic impacts as well as infrastructure needs to address port traffic throughout the region. The port is also exploring the possibility of setting up peripheral terminals outside the region to handle its growing cargo manifest. These terminals, known as the Port Inland Distribution Network (PIDN), are envisioned to be

at least 75 miles distant from the Port Elizabeth. Containers offloaded at Port Elizabeth would be reloaded on barges or rail cars and moved directly to these locations for processing and final delivery.

A separate effort in the state of New Jersey is an effort to strengthen and coordinate transportation plans to support port growth in the area under the aegis of the “International Intermodal Transportation Corridor,” an advanced industrial and distribution corridor ranging from the George Washington Bridge (I-80/I95) in the north of the state to central New Jersey, along the I-95 corridor. Federal legislation has offered support for planning agencies to study ways to take advantage of the economic and distribution synergies that are possible. It has established a transportation information center at the New Jersey Institute of Technology to gather information and to study industrial and distribution strengths of the corridor.

Additional efforts to support port growth include the following:

- The state of New Jersey has committed to a series of infrastructure improvements collectively designated the “Portway” project. It is a 17-mile semi-dedicated trucking corridor that is intended to provide fast and efficient movement of goods between key port, airport and intermodal rail terminals
- Other state and federally funded infrastructure projects are being undertaken in the area including improvements in the Route 1/9 corridor.
- Union county is pursuing major roadway improvement in conjunction with hotel and retail developments south of the Port Area. These improvements would separate auto traffic from truck traffic and eliminate a number of freight bottlenecks in the area.
- CSX and NS railroads have invested \$120 million in the regional freight rail network since acquiring the assets of Conrail in 1996. They are planning for another \$150 million in joint public/private investments to expand rail system capacity. The state and Port Authority plan to match the freight rail investment 50/50.

The major investments being made by the Port Authority, private shippers and the state of New Jersey

are doing much to realize the “throughput” and efficiency needed to capture a significant share of growing international trade and safeguard the region’s status as a hub for the east coast. However, as noted later in this report (Section 6.2.5), additional needed infrastructure investments — potentially totaling in the billions of dollars — warrant the consideration of new financing mechanisms, such as modest fees on certain port activities, in coming years.

### 2.1.4 Logistics and Value Added Facilities

Achieving the efficient logistics practice required by the international trading system will require more than simply improving the speed with which shipping containers move between production and consumption markets and megaships docked in the port. The area around the port must also develop the kinds of support facilities and services that stage, sort and prepare goods for delivery to businesses and consumers. As explained below, these services include high-throughput warehousing and value-added processing which can potentially be performed at new facilities on the region’s brownfield sites.

As noted previously in this report, the global supply chain has become lean and fast: the increasing pace of production, assembly and order fulfillment dictate where distribution and logistics services are located. One aspect of this push for efficiency is a shift away from storing goods for long periods in warehouses in favor of delivering goods under a “time definite” contract to meet the needs of users. A report produced by consultant Ann Strauss-Wieder under BER Phase I examined the evolution of warehouses and distribution centers. She noted that “[t]he overarching philosophy is to keep the inventory in motion; use information tracking capabilities to manage the inventory while it is in transit and maintain a flexibility in transportation that allows for shifts in delivery instructions. Within the warehouse, velocity translates into moving products through the facility as efficiently and quickly as possible.”<sup>4</sup>

Warehouses located near ports, airports and rail terminals — such as those developed on brownfields in the port area of northern New Jersey — have advantages in maintaining and managing this velocity of goods movement. The shorter distances involved mean



truckers can make multiple “turns” between the warehouse, the port and other transportation facilities rather than having to spend hours fighting traffic over regional roadways. A recent forum on issues related to freight transportation in New Jersey indicated that trucking and warehouse companies operating in the NY/NJ metro area face a minimum of a 15 percent congestion cost penalty in their distribution operations. Serving the region from the periphery only adds to these costs. A location close to the port district’s hub of transportation connections, therefore, can mean savings in both cost and time for businesses seeking to optimize goods distribution. These savings can greatly outweigh higher land and development costs near the port district — though they may be less tangible to many businesses compared to the “hard dollar” outlays for property, development and other business costs.

An additional factor favoring “close in” locations is the need for companies to be near final consumer markets where customization and product differentiation can take place. Many companies are finding that tailoring products to customer needs for each order is crucial to sales. So manufacturers want the final assembly or finishing of a product to take place at the latest possible intervention point before order fulfillment—often at a warehouse or distribution center.

Shippers can also take advantage of reduced tariffs when they import “unfinished” products. These goods arrive at the port-of-entry needing final assembly, finishing, labeling, “kitting,” and other “value added” processing. These services are performed to meet the requirements of individual orders or to prepare a product for its retail exposure. The goods are finished and then moved rapidly to customers.

Facilities that perform such value added services and address the need for advanced logistics (including high volume sorting and turnover of goods) tend not only to be located close to major transportation facilities; they also have characteristics very different from traditional warehouses devoted to storage. According to the Market Analysis prepared for BER Phase I by John Ricklefs of Moffat-Nichol Engineers, these operations can be located in modern facilities of 100,000 square feet or less, compared to traditional warehouses often many times that size. The new “value added” facilities also incorporate high tech

sorting and inventory systems and employ many more workers with a range of skill levels. Often the facilities are designed with “cross-dock” layouts which have truck loading docks on both sides of the building to facilitate transfers between vehicles including “transloading” from heavier marine containers to “street legal” container weights.

The BER Phase I Market Analysis pointed to proliferation of such facilities near the port complex of Long Beach and Los Angeles in California. There, Asian trade has spawned a large number of high velocity, value added warehouses within 15 miles of the port. Based on interviews with local warehouse managers, Dr. Ricklefs found that “static physical storage of goods from containers is dead” in the Long Beach/Los Angeles port region. Instead, goods are processed through clean, modern facilities ranging from less than 100,000 square feet to big box distribution centers of one million square feet or more. These facilities are often clustered together in modern industrial park settings, known as Planned Unit Developments (PUDs), and employ many non-unionized unskilled and semi-skilled workers for value added operations. With modern logistics practices, one warehouse manager noted, “over the previous two years, the volume [his warehouse] handled had quadrupled in the same amount of space.”

The adoption of this model of high velocity distribution centers in the northern New Jersey region, is happening gradually now, but is expected to accelerate with the arrival of increasing volumes of electronics, clothing and other consumer goods on direct



ocean shipment from Asia, as harbor channels are deepened for megaships over the next decade. Currently, the region's distribution industry is dominated by large warehouses of 250,000 to over 1 million square feet that occupy huge tracks of recently developed farmland and open space on the fringes of the region, such as Exit 8A of the NJ Turnpike and in Eastern Pennsylvania. Most of the distribution centers in the northern New Jersey region employ a moderate level of high technology goods handling, tracking and other systems. Some engage in more complex types of value added processing, but for most, their main function remains storage, often for long-term inventory.

A recent real estate industry analysis looking at emerging industrial investment opportunities,<sup>5</sup> indicated that such mega-warehouses will continue to play an important economic role as "bulk fulfillment distribution centers" for companies feeding products to retail and wholesale outlets over multi-state regions. However, the report also pointed to "increasing demand for speed-oriented facilities in hub/gateway metropolitan areas near major transportation infrastructure" (New York/New Jersey was specifically cited as one of the top-five hub/gateway metropolitan areas.) Operators of speed oriented facilities, according to the report, are less attracted to the cheap rents available on the fringes of metro regions and instead "place a high premium on quick access to a large customer base and proximity to ports and airports."

### 2.1.5 Brownfields: the Solution

Northern New Jersey has a portfolio of hidden economic assets that are the necessary ingredients in the logistics pipeline: thousands of acres of available land near the port, airport and rail intermodal terminals where new, speed oriented distribution facilities can be built to give companies opportunities perform advanced distribution and value added activities. This study has identified numerous sites available to accommodate this lucrative, job-producing work, ranging from relatively small sites of perhaps a dozen acres, to large sites of one hundred acres or more. There are also opportunities to assemble neighboring sites into larger parcels (one case study looked at the former Koppers Coke site that encompasses over 160 acres with two adjoining sites).

The five case study sites investigated as part of the BER project totaled 500 acres and the project team identified an estimated 2,500 acres of brownfield sites within ten miles of the port and airport that are potentially suitable for freight related reuse. Throughout the entire port district (a 25 mile radius from the port), the project team estimates that there are thousands of additional acres of brownfield sites.

While redevelopment of these sites often presents difficult environmental and other challenges, the sites nevertheless offer features of prime importance to shippers and importers: they are near to the largest port-of-entry on the U.S. Atlantic Coast; they are in the midst of one of the richest consumer markets on earth; and, with appropriate infrastructure upgrades, they can be linked to the excellent landside intermodal connections for movement to inland markets. The latter includes the largest intermodal rail terminals and FedEx and UPS hubs in the U.S. northeast, allowing goods to be moved rapidly to market without lengthy stays in warehouses.

The regional can capitalize on these advantages to achieve large scale brownfield redevelopment, which promises to provide important benefits to the region's economy, environment, transportation system and quality of life. At the same time, failure to act could be disastrous for the future of the region. A September 2001 editorial in the *Journal of Commerce* raised the prospect of "stunted growth" if the challenges facing goods movement in the NY/NJ/CT region are not met. It pointed out that over the last decade the New York-New Jersey port has been losing out to Savannah, Norfolk and Charleston in attracting the growing volume of Asian trade being shipped directly to the East Coast via the Suez or Panama Canals. It notes that "part of the reason is the success those ports have had in convincing major retailers to locate distribution centers (DCs) on ample plots of land near their ports. New York cannot make a similar pitch. So the land crunch that's hurting the port today may turn into a long-term disability."

This underlines the importance for the region to focus attention on the land resources that are available to serve the needs of the logistics industry and to position itself to handle the huge expected growth in cargo volume. The remainder of this report presents

findings, analysis, conclusions and recommendations intended to help the region see that this is accomplished..

## 2.2 Regional Trends Affecting Brownfield Reuse

### 2.2.1 Market Demand for Warehouse/Distribution Centers (W/DC)

Real estate trends in northern New Jersey appear increasingly favorable to brownfield reuse in the port district. As a result of northern New Jersey's extensive freight facilities and its location in the midst of major population centers, the region has been less affected than other areas of the country by the nationwide downturn in the W/DC industry. While the vacancy rate for industrial space<sup>6</sup> was over 11 percent nationwide during the third quarter of 2002, in northern New Jersey the rate was substantially less, in the 6 percent range.<sup>7</sup>

However, there are differences among the submarkets within the northern New Jersey region and these differences are helping drive the prospects for brownfield development in the region. Insignia ESG, a major real estate firm serving the region, identifies five submarkets in the region, four of which are located in the "core" area within 15 miles of the Port Newark and Elizabeth — Hudson River Waterfront, Meadowlands, Newark/Airport and South I-287/Edison. The remaining submarket identified by Insignia ESG, Brunswicks/8A, is on the fringe of the region stretching down to Exit 8A of the Turnpike.

Over the last two decades, the Exit 8A fringe submarket has been the big winner in attracting W/DC facilities. This submarket underwent rapid development based on the availability of thousands of acres of available greenfield properties along the Turnpike and other major highways. These properties allowed developers to build the largest of W/DC facilities — some 1 million square feet or more — cheaply and rapidly and customize them to the needs of major companies. The ability to access the port, airport and rail terminals in the core area within an hour's drive

was an important selling point. But more important were the good highway connections that allowed companies to use the facilities as distribution hubs serving major consumer markets in New Jersey, Pennsylvania, New York and surrounding states.

By 2000, approximately 45 million square feet of W/DC's had been built near Exit 8A.<sup>8</sup> As prime locations near this exit have been occupied, substantial development has shifted further south to greenfields near Exit 7A.<sup>9</sup> Other substantial concentrations have located even further south (such as near exit 10 of Interstate 295 in Gloucester County with approximately 17 million square feet of space) and just beyond New Jersey's borders in the Bethlehem/Lehigh Valley in Eastern Pennsylvania (with approximately 24 million square feet). The rapidly developing warehouse sector in Pennsylvania is generating significant truck traffic between the port, its warehouses and the tri-state NY-NJ-CT metro market.

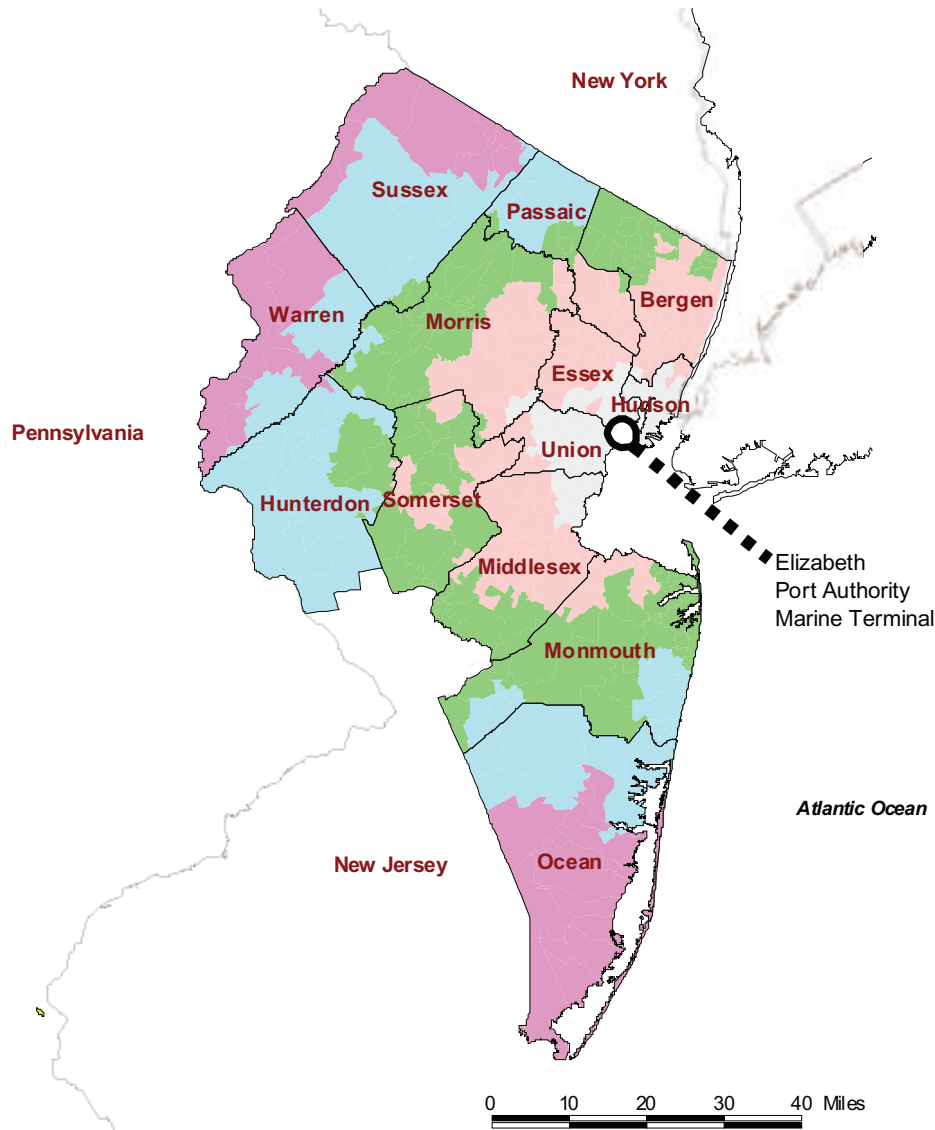
As these massive developments on the fringe have proceeded, the core submarkets have also continued to grow, though at a more deliberate pace. Many companies have been willing to pay the generally higher development costs and rents in the core submarkets to take advantage of better transportation access to the port, airport and rail terminals as well as to the large consumer markets in immediate surrounding areas and New York City. (Two-thirds of the NY-NJ-CT consumer market lies east of the Hudson River). The Meadowlands district in northern New Jersey, for instance, has become home to many W/DC's serving New York City retail outlets. Rents are in the \$6.50 per square foot range com-





## Figure 2.4 Round Trip Trucking Cost<sup>1</sup> from Elizabeth Port Authority Terminal

Loaded 1st Leg, 85% Empty 2nd Leg



### LEGEND

#### Mileage Cost Ranges

Light Pink	\$10 <sup>(2)</sup> to \$30
Light Blue	\$30 to \$60
Light Green	\$60 to \$90
Light Purple	\$90 to \$120
Light Purple	\$120 to \$193

1. Truck operational cost (\$1.31/mile loaded) were calculated by amortizing: Vehicle Depreciation; Insurance; Fuel Costs; Driver Wages; Overhead and Profit; on a per mile basis.

2. Minimum cost for trip, even if less than 1 mile.

Source: Moffatt & Nichol, January 2000

pared to the \$5 per square foot range near Exit 8A. Other large concentrations of W/DC facilities in the core submarket are located in Raritan Center in Edison, the Greenville area of Jersey City and southern Bergen County.

Figure 2.4 shows average costs for trucking goods from the port to locations within northern New Jersey, a key element of the cost of doing business in various sub markets in the region.

Recent trends suggest the beginning of a partial reversal in the fortunes of the fringe and core submarkets. According to Insignia, while rents in the core area submarkets have remained fairly stable, there has been fall-off of asking rents in the fringe submarkets, particularly in the 8A submarket. In addition, Insignia calculates that the availability rate has been below 10 percent for the core submarkets while it has steadily increased from 12 percent to close to 18 percent for the 8A submarket.<sup>10</sup> Similarly, CB Richard Ellis finds that its vacancy index was 9.1 percent for the northern area of the state compared to 10 percent for the mid-state area in the second quarter of 2002.<sup>11</sup>

This weakening in the 8A market reflects overbuilding, especially in relation to the reduced space needs of many companies in the current recession. At the same time, the stability, and even strength, of the core submarkets reflects new market forces that are making these close-in areas more desirable. In particular, with the pool of prime greenfield sites on the fringe diminishing, the real estate industry is now giving serious attention to opportunities in core areas including brownfield redevelopment.

Other factors building the strength of the core submarket include: recognition of opportunities being created by the dramatic growth projected for freight handled by the port and airport; the desire of some companies to optimize their supply chains through smaller, close-in facilities as discussed previously; and difficulties in hiring and retaining low wage workers in suburban or rural areas which has become a growing problem for some companies near Exit 8A.<sup>12</sup>

The new strength of the core sub markets is reflected in public comments by executives of the major development companies who previously targeted invest-

ments almost exclusively near Exit 8A.<sup>13</sup> According to one executive, "There are properties in play in places like Elizabeth, Linden, Carteret and Newark that nobody would have even thought about five years ago."<sup>14</sup> Members of the NJIT-NJTTPA study team saw this interest first-hand through numerous inquiries about the case study properties.

As the economy improves, the 8A market will no doubt rebound and large-scale development of facilities on greenfields will recommence, particularly for multi-state distribution, e-commerce and catalog fulfillment operations of major companies. However, if the emerging market trends can be encouraged and sustained through appropriate government policies, it appears realistic to expect that a significant share of the development activity can be channeled to brownfield sites in the core area.

Importantly, core areas could also be positioned to accommodate the substantial demands for W/DC space that will accompany the growth of port trade. The Market Analysis conducted for Phase I of this study, estimated that over the next forty years, the projected five-fold increase in the port traffic will create a need for 200 or more new W/DC facilities occupying 1,400 or more acres.<sup>15</sup>

The accelerated schedule of port dredging approved since these estimates were made suggests that these demands could materialize much sooner. In addition, larger assemblies of brownfield acreage will be required if current large-scale W/DC facilities continue to dominate the market rather than transitioning to smaller, "high velocity" facilities seen on the West Coast. Potentially hundreds of additional acres will be needed to accommodate the growth of air cargo in the next two decades. Thus, current market trends, together with market demands accompanying growing trade, are creating unprecedented opportunities for reclaiming northern New Jersey brownfields for W/DCs facilities.

## 2.2.2 Market Recognition and Activity

The strong and improving prospects for brownfield redevelopment in northern New Jersey have prompted a number of successful reclamation projects, with more on the drawing boards. Yet these projects account for only a small portion of the thousands of acres of brownfields in and around the port district.

Currently, the largest brownfield redevelopment projects in this area have been mixes of office, retail, entertainment and other uses, rather than freight facilities. The Jersey Gardens Mall, located adjacent to the port and airport, was built on a former municipal landfill and has become the anchor for additional hotel and retail development nearby. This development has been made possible by reconfigured roadway links to the area and financing drawing upon sales taxes generated at the sites. The City of Elizabeth has plans to make the area a major conference destination and is pursuing additional roadway improvements, a light rail line and ferry services to facilitate access to the site. Development on a similar scale is slated for a two square mile area containing former municipal landfills in the Meadowlands. It will be transformed into golf courses, hotels, housing and offices by the end of the decade.

Freight related redevelopment projects also are at various stages. Potentially the largest freight related project is the plan for creating an integrated freight district on 150-200 acres at Tremley Point, approximately nine miles south of the port and airport. A consultant report completed in June 2001, called for county and local governments to work with private developers to realize a well-planned "Global Freight Village" at Tremley Point drawing upon the model of such villages operating successfully in Europe.<sup>16</sup>

Environmental work is near completion on the first 130-acre parcel at the site. Full build-out will depend on road and rail improvements to the area, including completion of an access road to an upgraded Exit 12 of the New Jersey Turnpike. As discussed later in this report, the plan for Tremley Point — though it still faces challenges in being fully realized — promises to provide a vision for how large-scale freight development could be organized and developed throughout the port district.

As this project takes shape, scattered other freight related brownfield projects are being accomplished in and around the port district. Most involve individual landowners or developers reclaiming one property at a time, with minimal public involvement. A particularly active developer is the Morris Company. Among other projects, it has developed three modern warehouses in Carlstadt on a brownfield at the junction of Routes 3 and 21. The 50-acre site had been home to a manufacturer of pesticides, fragrances and other chemicals. The property underwent extensive clean-up to make way for three W/DC facilities totaling 850,000 square feet.

Other examples of brownfield redevelopment include 800,000 square feet of W/DC space being built on 50 acres at the former Greenville rail yards in Jersey City (two warehouses, totaling 520,000 square feet and providing 400 jobs, are now under construction); one million square feet or more planned at a former Tennoco chemical plant near Raritan Center in Edison; and the establishment of a Paterson Plank Road redevelopment district within the Meadowlands.

A recently announced freight development, adjacent to Exit 12 of the Turnpike, is slated for one of the case study sites that was part of the BER study. The city of Carteret announced in August 2002 that a developer will develop a "container-shipping warehouse and distribution center" in two phases. The first phase will involve 1.1 million square feet of warehouse space on a former garbage dump. Completion of this project will require extensive environmental cleanup and site preparation activities as well as construction of access roads.

The growing number of freight related brownfield projects moving forward recently suggest that a turning point may have been reached in opening up the market for these types of projects. However, the study project team also found that the pace of brownfield redevelopment activity is being held back not only by the costs and difficulties of redeveloping contaminated properties but also by continuing real estate speculation. Some property owners, hearing projections of dramatic increases in freight activity in future years, are holding off on sale or development in the hope of reaping greater profits when dredging is substantially completed. An August 2001 article in the New York

Times observed “some brokers are advising clients with property near the port to lie low while the market develops.”<sup>17</sup>

Breaking the log jam preventing the full realization of the market potential for freight related brownfield redevelopment, as detailed later in this report, will require government intervention in the form of new policies, financing and public-private partnerships targeted to the W/DC industry.

<sup>1</sup> Ann Strauss-Wieder, Inc: *The Value of Freight to the State of New Jersey*. Rutgers. New Jersey Department of Transportation. November 2000.

<sup>2</sup> Port Authority of New York and New Jersey . *Building a 21st Century Port*. Report, 2001.

<sup>3</sup> Abbey, Douglas D.; Twist, David C. and Koonmen, Leo J. (of AMB Investment Management, Inc.), “The need for speed: Impact on Supply-Chain Real Estate.” *Future* (A Publication of the Urban Land Institute) January 2001

<sup>4</sup> Ann Strauss-Wieder. *Warehousing and Distribution Center Context*. Report prepared for NJTPA-NJIT Brownfield Economic Redevelopment Project, Phase I. February 2001.

<sup>5</sup> Abbey, Douglas D., op. cit.

<sup>6</sup> The majority of industrial space is composed of W/DC space in New Jersey.

<sup>7</sup> Cooper, James C. and Madigan, Kathleen “Consumers Have Done Their Part. Now, Business Will Have To Pitch In” *Business*

*Week* September 16, 2002 Pg. 19; Holusha, John. “Commercial property: In New Jersey Warehouses Lead the Way.” *New York Times*, Section 11, P. 1, August 18, 2002.

<sup>8</sup> Strauss-Wieder, Ann Inc. February 2001. op. cit.

<sup>9</sup> Martin, Antoinette. “In the Region/New Jersey; Another Turnpike Exit as Industrial Destination.” *New York Times*, November 24, 2002, Section 11; Page 7.

<sup>10</sup> Insignia/ESG Research Services Group. “I on the Market” *Quarterly Commercial Real Estate Reports for North and Central New Jersey*.

<sup>11</sup> CB Richard Ellis. *Industrial Vacancy Index*. Second Quarter 2002.

<sup>12</sup> Holusha, John. August 18, 2002. op.cit.

<sup>13</sup> ibid.

<sup>14</sup> Martin Antoinette “In the Region/New Jersey; Brownfields Luring Builders With Good Locations” *The New York Times* April 7, 2002 Section 11; Page 9.

<sup>15</sup> Ricklefs, Dr. John. *BER-1Market Analysis Final Report*. Moffat-Nichol Engineers. Report prepared for NJTPA-NJIT Brownfield Economic Redevelopment Project, Phase I. February 2001.

<sup>16</sup> Planners Diversified. *An Analysis of the Potential for a Global Freight Village in the Tremley Point Area of the City of Linden*. Prepared for the Union County Department of Economic Development. June, 30, 2001.

<sup>17</sup> Holusha, John. “Commercial Property; Making Way for Bigger Ships.” *The New York Times*, August 5, 2001, Section 11; Page 1.

# Section 3 - Study Methodology

## 3.1 Introduction

This section describes the methodology used in this study to investigate the opportunities for freight-related redevelopment of brownfield sites. This methodology was intended to identify brownfield sites appropriate for freight-related redevelopment in northern New Jersey, select representative case studies from among these sites and carry out technical analysis to assist public and private owners of the selected sites to pursue redevelopment opportunities. The methodology described here has relevance to similar brownfield redevelopment efforts throughout northern New Jersey and other industrialized areas of the country. More detailed descriptions of aspects of this methodology are provided in the Appendix.

## 3.2 Summary of Phase I

Phase I was carried out under the direction of a project team from NJTPA and NJIT. A number of consultants and an advisory committee of public and private officials assisted in major project tasks. In addition, NJIT graduate and undergraduate students were employed on specific tasks.

The following is a summary of the tasks that comprised Phase I:

**Market Analysis:** This task was undertaken with the assistance of the consulting firm Moffat & Nichols Engineers. It involved surveying analogous U.S. regions with strong goods movement sectors – particularly Long Beach, California — to identify redevelopment patterns and types of industry locating in such areas, labor force needs and brownfield reclamation activities. Based on this survey, this task assessed the future of the freight industry in northern New Jersey and the prospects for freight-related brownfield redevelopment. It provided general criteria –(e.g., required lot size, needed transportation access, work-force accessibility etc.) for identifying brownfield sites suitable for accommodating freight industry development. A separate survey and analysis of the warehousing and distribution industry in northern New Jersey

conducted by consultant Ann Strauss-Wieder supplemented this activity. This locally focused market analysis provided key inputs for the Environmental Scan task.

**Environmental Scan:** This task was undertaken with the assistance of the consulting firm BEM, Inc. It involved compiling a database of brownfield sites in the NJTPA region using information from state agencies, local governments and on-site inspections. Geographic Information System (GIS) technology was used to map the sites. The resulting database was then screened using criteria developed in the market analysis to create an inventory of brownfield sites with varying degrees of potential for freight-related redevelopment. Among the key criteria used to screen the sites were that they are:

- within 25 miles of the port and ideally within 15 miles (“the port district”)
- within 2 miles of a highway exit or on a freight rail line
- larger than 3.3 acres; and
- removed from residential areas .

Further screening based on local input and field inspections by teams of graduate students were used to identify several dozen promising sites that would be candidates for case studies during Phase II.

**Community Outreach:** This task was undertaken with the assistance of the consulting firm McClaren Hart, Inc. It included a multilevel outreach approach that involved periodic meetings of an Advisory Committee, distribution of a quarterly project newsletter, informational meetings in local communities, workshops and the NJTPA web site. Many activities were undertaken in conjunction with gathering information as part of the Environmental Scan, including meetings with communities receiving EPA brownfield grants. A half-day conference was held for the presentation of consultant’s final reports.



### 3.3 Case Study Selection

The final stages of Phase I and the early stages of Phase II involved finalizing the selection of sites that could undergo detailed investigation as case studies. The Phase I activities described above provided a pool of 60 or more potential case study sites, many more than resources would allow to be studied. As a result, the project team further narrowed the pool based on the following considerations:

**Suitability for freight related re-use** – Using the GIS database, the Project Team was able to identify large sites (greater than 10 acres) located in designated industrial zoned areas. Additionally, rail and highway transportation infrastructure was overlaid. Sites near schools or churches, or surrounded by highly developed residential areas, were not considered.

**Variety** – The Project Team looked at sites ranging in size from approximately 10 acres to more than 100 acres with varying degrees of site characterization and transportation access. By looking at a wide range of conditions, the Project Team sought to gain a comprehensive look at the full array of issues facing brown-field sites.

**Status of Property** – Properties with redevelopment plans that have some level of local approval and properties zoned for residential, recreational or other non-industrial use also were not considered.

These further screens narrowed the list of potential case study sites. Efforts were then made to obtain owner consent, including giving the project team and consultants access to the site to conduct environmental, transportation and real estate market assessments (as described below). To accomplish this, letters were sent out to property owners identified in existing public documents. It was found in many cases, however, that lawyers or other parties were the actual decision makers controlling the sites. As a result, gaining consent for using particular sites as case studies proved very time consuming, requiring extensive field investigations, discussions with knowledgeable local officials, numerous contacts and meetings with owners/controlling parties, development of legal documents and often lengthy reviews by attorneys and governing bodies.

The final step in this consent process was the signing

of an access agreement. The Project Team, with the help of NJIT in-house attorneys, developed both a “Sampling Agreement” and a “No Sampling” agreement: the former allows access to sites for the purpose of carrying out soil sampling, while the latter permits the Project Team to obtain and review existing available environmental information from the property owner. After several months of effort, the project team gained needed permissions for four case study sites. A more limited analysis was conducted an additional site. These case study sites are as follows:

- **Arsynco** – The Arsynco site is located in the Borough of Carlstadt and consists of approximately 15 acres. The site is located immediately east of Route 17 between Paterson Plank Road (NJ Route 120) and Moonachie Avenue.
- **Carteret Redevelopment Properties** – Carteret Redevelopment Properties is located in the Borough of Carteret and consists of a collection of contiguous properties totaling approximately 300 acres. The focus of our case study is on a 160-acre parcel owned by the City of Carteret. The group of sites is located north of Roosevelt Boulevard, near New Jersey Turnpike Interchange 12.
- **Albert Steel Drum** – The Albert Steel Drum site is located at the southeast corner of Wilson Avenue and Avenue “L” in the City of Newark. The site is currently vacant and consists of approximately 12 acres.
- **Reichhold Chemical** – The Reichhold Chemical site includes approximately 17 acres of



currently underutilized property straddling the municipal line between the cities of Elizabeth and Linden. A single large structure is used primarily for storage. The site also has a large paved area, which serves as both a parking and vehicle maneuvering area, and an impervious surface constructed as part of a prior environmental mitigation effort.

- **Koppers Coke/Diamond Shamrock /Standard Chlorine** (limited investigation) – This study location actually consists of three contiguous brownfield properties, all located in the Town of Kearny: Koppers Coke, Diamond Shamrock and Standard Chlorine. Collectively, the group makes up approximately 120 acres. These properties were studied and evaluated together principally due to transportation access limitations. For the purposes of these discussions, the site will be referred to simply as Koppers Coke, the largest of the three sites.

### 3.4 Summary of Phase II Case Studies Tasks

The following summarizes the tasks undertaken by the Project Team with consultant support for each case study. The principal Phase II consultant was Schoor DePalma, Inc. More information about these investigations is available in the lengthy case study reports provided to the owners of each site:

**Transportation Assessment** – Transportation access was a key element in the evaluation of sites. The Project Team conducted a field investigation to identify specific transportation access features and issues that needed to be addressed. The Project Team examined highway, rail and marine access modes and received input from state, county and local transportation officials. The Project Team also met and had regular dialogue with freight and passenger rail service providers. Trip generation tables (estimating the number of trips entering and exiting the site) and trip distribution patterns (estimating where, how and when trips take place) were developed based on existing travel patterns, proximity to major transportation facilities, and the expected use and square footage of the building. The special characteristics of

value-added warehouse operations, which were assumed to be the most likely redevelopment prospects rather than traditional W/DC operations, had to be taken into account when estimating trip generation. . These special characteristics include:

- A larger number of workers
- Longer hours of operation, often 24 hours a day, seven days a week
- More staffing levels, including entry level pickers and packers, delivery personnel, human resources personnel, shift supervisors, engineering and production personnel, marketing professionals and senior level management.

Based on this investigation, the team prepared conceptual layouts of transportation access for each of the sites. This included needed infrastructure improvements. Additionally, bus routes and rail upgrades were identified where necessary.

**Environmental Assessment** – The principal consultant reviewed existing environmental information from past site investigations and in one instance conducted environmental characterization to determine the degree of environmental contamination and possible methods for remediation. In the instance where additional site characterizations were performed, sub-tasks included:

*Preliminary Assessment* – to identify potential contaminants and areas of concern based on prior environmental characterization and use of field analytical methods.

*Preparation Of Conceptual Site Models* – to provide a systematic planning methodology for identifying remediation goals/action levels for all identified contaminants.

*Dynamic Workplan Preparation* – to provide a decision making framework and logic to be utilized for field decision making.

*Field Implementation* – conducting appropriate dynamic work site investigations include performing all necessary environmental testing and/or sampling, including soil/sediment samples, groundwater analysis, magnetometer surveys, aerial photographs, etc.

*Remedial Selection And Costing* – providing an evaluation of all environmental site characterization data to develop remedial options and costs for each case study site. This included using USEPA and/or NJDEP data; identifying of all remedial strategies and/or options; providing cost estimates to implement and operate each selected remedial option and developing a draft Remedial Action Selection Report.

In instances where only existing environmental information was reviewed, the purpose was to evaluate the adequacy of the current understanding of environmental contamination at the site and what additional characterization was needed to complete the delineation of impacts to a level sufficient to identify the appropriate remediation. Then the consultant was asked to speculate on the type of remedial activities that would be needed to clean the site to a level compatible with industrial redevelopment. Finally, the consultant was asked to determine how this remedial approach could be design so that it would integrate with site redevelopment by a W/DC.

**Real Estate Market Analysis** – Subconsultant evaluated each case study property in relation to the current real estate market to gain insight into redevelopment prospects and strategies. A key step involved assessing each site's highest and best use, including its suitability for warehousing and freight-related uses based on highway/road access, property size, construction cost, workforce availability, site approval time impacts and access to ports, as well as local land use regulations and community interests. Other real estate analysis included a valuation appraisal to determine the anticipated value of each site once it had been redeveloped with warehousing. Trends in warehouse rental rates and associated returns on investment analyses were provided both for the site areas and region



wide. The latter analysis took the form of a separate report prepared by subconsultant Anne-Strauss Wieder. Finally, a real estate marketing package was developed for each site containing conceptual views of warehouse redevelopment consistent with the communities' aesthetic values; identification of companies known to have an interest in redevelopment of similar properties; identification of financing options (both public and private); and identification of risk management insurance options.

**Community Outreach** – Throughout phase II, the project team and consultants participated in a variety of meetings both related to the case study investigations and to larger efforts around the state and region to promote brownfield redevelopment. Presentations and information about the project were provided to NJTPA committee meetings, a county brownfield task force, a statewide transportation conference and other meetings. The project Steering Committee, composed of key state agency representatives, met periodically. In addition, the project team issued periodic newsletters and maintained a project website.

### 3.5 Evaluation

Both phases of the project were subject to an independent evaluation designed to provide feedback during the course of the project and an overall assessment of the effectiveness of the project. During Phase I, consultant Richard Roberts, presented the project team with a paper evaluating many of the key concepts and approaches underlying the project, particularly as presented in the Market Analysis. Insights from this evaluation were incorporated into Phase II and are reflected in this report. Consultant Bruce Mackie, Geotrans, Inc., prepared a final evaluation of the project. This evaluation is attached (Appendix G).



# Section 4 - Case Study Summaries

## 4.1 Introduction

This section provides summary descriptions of the five case studies conducted as part of the BER project. The purpose of conducting case studies was to evaluate in detail the factors that influence the redevelopment of industrial brownfield properties for warehouse and distribution and identify the site-specific characteristics that impact the redevelopment potential of the properties. Each case study consisted of a transportation access analysis, property assessment, a real estate market study and in some instances an appraisal.

The full findings of the case studies are contained in lengthy separate reports that have been provided to property owners and federal funding agencies and are available for review on request. More detailed executive summaries of the case study reports are provided in Appendix I.

The case studies were conducted for informational purposes only and reflect a snapshot of conditions at one period of time. As a result, the reports, summaries or analysis of case studies provide only general guidance as to the issues affecting possible development of the sites and cannot substitute for due diligence on the part of those advancing development proposals. A map showing the regional distribution of the case study sites is shown in Figure 4.1.



Figure 4.1  
Map of Case Study Sites

## 4.2 Brief Descriptions of the Case Study Sites

### 4.2.1 Arsynco Site

#### 4.2.1.1 General Site Description: Arsynco Site

The Arsynco site is 12.2 acres in size and is located in the New Jersey Meadowlands Commission District in the Borough of Carlstadt. The street address is 511 13th Street. The property is identified as Block 91-Lot 1 on the Borough of Carlstadt tax records. The Zoning Ordinance of the Borough of Carlstadt and the NJ Meadowlands Commission indicate that the site is located within the Light Industrial and Distribution B Zone, which allows for warehouse and

distribution activities. The property has been owned and operated by a number of chemical companies since the early 1900's. Arsynco has owned and operated the site since 1969. Operations on the site ceased in 1993. Arsynco was involved in the manufacture of specialty organic chemicals and pharmaceutical intermediates. A map showing the location of the site and its immediate surroundings is shown in Figure 4.2.

#### 4.2.1.2. Transportation Access: Arsynco Site

Arsynco is served through a network of local streets, NJ Route 17 and Paterson Plank Road. Additionally, there is an existing rail freight siding that runs adjacent to the property. Several bus lines operate near the site, providing access for a potential transit user workforce. In addition, the Pascack Valley commuter rail line would serve as an additional means for workers to

Figure 4.2 Aerial Imagery of Arsynco Site



access the site. Although the site is accessible via NJ Route 17, use of the network of local streets is recommended as a principal means of highway access. Freight rail access is possible, but is problematic due to increasing competition with anticipated increased passenger service on the Pascack Valley line.

#### **4.2.1.3 Environmental Assessment: Arsynco Site**

For the purposes of environmental investigations, the site has been divided into several areas. These areas have been investigated extensively. Based upon these investigations, possible remedial actions have been identified. These include:

- a. Excavation and off-site disposal of soil containing PCBs over 500 mg/kg
- b. Excavation and on site disposal in an engineered containment cell of soil containing PCBs between 50 and 500 mg/kg
- c. Installation and operation of a air sparging/soil vapor extraction system (AS/SVE) to remove VOCs in soil and shallow groundwater
- d. Covering the site with an approved cap
- e. Deed restriction institutional controls
- f. Monitored natural attenuation for groundwater with low concentrations of VOCs

Several important components of the clean up proposal are still in discussion and the outcome will greatly impact the remediation cost, principally the approval for on site containment of PCB impacted soil. Additionally, the extent of the AS/SVE system has not been finalized. Thus, there are still significant issues that remain to be resolved with regard to the final remediation program.

#### **4.2.1.4 Market Assessment: Arsynco Site**

The site is located within the Meadowlands industrial sub market in northern NJ. This is one of the strongest industrial real estate markets in the NY/NJ Metropolitan region.

Along with this is the fact that much of the growth in warehouse and distribution space in Bergen County has been redevelopment of old functionally obsolete buildings. These conditions fuel the demand for modern distribution centers in this area and this site offers the opportunity to build, at a minimum, a 200,000 sq. ft. building that would be an important step in satisfying this demand (Figure 4.3) provides a conceptual design for a warehouse and distribution center on this site). Not only would redevelopment of this property have important effects on the market demand, but it would also provide approximately 200 jobs and up to \$150,000 in tax revenue to the local municipality.

Additional market factors affecting redevelopment of this property is the fact that it is within the Patterson Plank Road Redevelopment District and the future of the Meadowlands Sports Complex. This site is within a group of properties that the NJ Meadowlands Commission has designated for redevelopment in conjunction with the development activities that are planned for the Sports Complex.

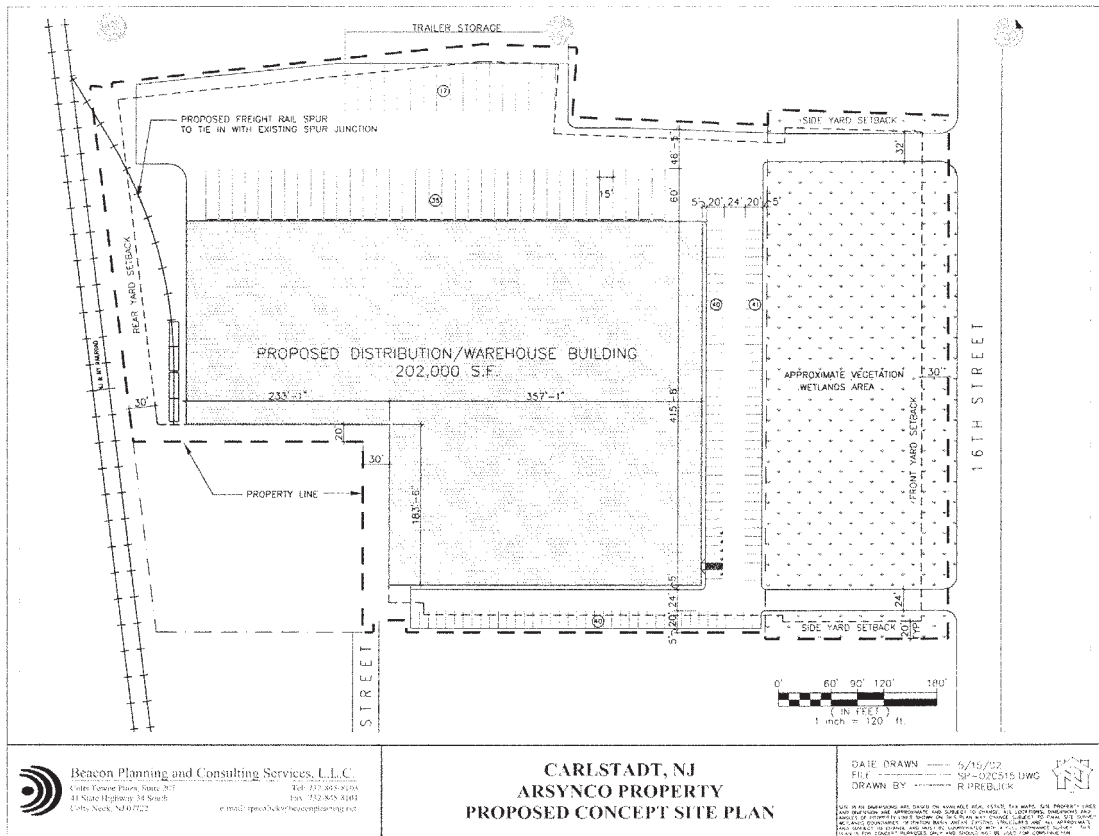
Thus, while there is strong demand for warehouse and distribution space in the area, there is the potential that these other factors could effect reuse options for the site. Possible other reuses for the property could be a mass transit center for accessing the Sports Complex, a local sports and entertainment complex, a records storage facility or an ethnic food distribution center.

### **4.2.2 Albert Steel Drum Site**

#### **4.2.2.1. General Site Description: Albert Steel Drum Site**

The 13.7-acre Albert Steel Drum (ASD) Site is located in the "Ironbound" section of Newark on the southeast corner of Wilson Avenue and Avenue L. The site consists of three parcels of land defined as Block 5038, Lots 70, 108 and 109 of the City of Newark Tax Assessor's map. Currently, the site is vacant. However, the site has been industrialized since the early 1900's. Albert Steel Drum leased their facility in 1974 and operated a drum recycling and recon-





**Figure 4.3 Proposed Concept Site Plan for Arsynco Site**

ditioning business until 1977. The site was purchased by the Newark Housing Authority in 1980 with the intention of rehabilitating the property for future industrial activities. The site is in an area zoned Industrial (H-3) by the City of Newark. This zoning classification allows for a variety of industrial uses including warehouse and distribution. Additionally, all major utilities are available in sufficient capacity to support redevelopment. However, storm water management is an issue because the area floods. Figure 4.4 provides a map of the site showing lot lines and surrounding land uses.

**4.2.2.2. Transportation Access: Albert Steel Drum Site**

Close proximity to several key regional highways, including Doremus Avenue, Route 1 & 9, the New Jersey Turnpike and the future Portway, make the Albert Steel Drum site desirable for access to Newark

International Airport and the surrounding marine ports.

The site is particularly important because of its accessibility to Portway. Currently, the first section of Portway is being built from the port area to the intersection of Doremus Ave. and Wilson Ave. Included in this construction project is a rebuild of the Doremus Ave. Bridge over the Oak Island Rail Yards. This bridge is specially designed to handle heavy weight trucks, which when complete will allow overweight containers to be trucked off the port directly into warehouse and distribution facilities with out impacting regional highways (Figure 4.5).

Although the Albert Steel Drum is relatively small for rail service customer, there is a strong potential to serve this site from both the north and south with rail. Conrail maintains an active track along the east side of the site, which connects to Brills Yard to the North



**Figure 4.4 Aerial Imagery of Albert Steel Drum Site**

and the Oak Island Yard to the south. Additionally, NJ Transit operates bus service along Wilson Avenue with stops where Wilson Avenue intersects Avenue L.

#### **4.2.2.3 Environmental Assessment: Albert Steel Drum Site**

This site has a long history of environmental investigation and remediation. Initial site investigations began in 1980 when the NJDEP Division of Water Resources installed 20 soil borings and collected 80 soil samples. Based upon the results of the sampling, several subsurface and surface “hot spots” were identified to contain site contaminants above site clean up levels (1000 ppm VOCs soil & 50 ppm PCBs soil). In 1999 Kimball & Assoc. was contracted by NJDEP to perform additional investigations at the site to further define the “hot spot areas” and develop a 65 percent design document for the remediation. During this effort an additional PCB “hot spot” was identified and include in the final design. This effort estimated the volumes of soil needing removal, identified dis-

posal options and provided more detail for the cap design. In May 2000, the NHA sold the site to Tony Pallet, Inc, which entered into an Administrative Consent Order (ACO) with NJDEP regarding the ASD Site in June 2000. A Remedial Action Work Plan (RAWP) was prepared and approved by NJDEP in August 2001. In the spring of 2002, the specified remedial actions were implemented. In October 2002, a revised RAWP was submitted that reflected changes to the cap design in order to accommodate the construction of a W/DC building.

Geologic strata at the site consist of an initial layer of historic fill that ranges in thickness from 6 to 12 feet. This layer is composed of a wide variety of materials including concrete, brick, plastic, metal and wood. Beneath the fill is the meadow mat, which is fairly thin (six inches to 1 foot). The geologic layer beneath the meadow mat is a silt layer. Groundwater consists of a shallow perched zone above the clay and a deeper zone in the fine sand. Also, the shale bedrock is a regional aquifer. Groundwater flow in the shallow

perched zone is from south to north and the quality of the shallow groundwater is generally poor, containing low levels of VOCs. Groundwater in the area is not used for potable supplies.

**4.2.1.4 Market Assessment: Albert Steel Drum Site**

The site is within the Newark/Airport/Sea Port sub market of the northern and Central NJ industrial real estate market. This sub market contains approximately 72 million sq. ft of industrial space as of 1st quarter 2002, consisting of 456 building over 50,000 sq ft. The availability rate was 6 percent and the average

asking rent was \$5.15 per sq. ft. However, the key market aspect of this site is its proximity to the Newark/Elizabeth Port complex and the ease of access once the Portway construction on Doremus Avenue is complete. This site holds tremendous potential for constructing a modern value added distribution center that can service the region's air and seaports.

Conceptual plans have been developed for a building that can range in size from 250,000 sq. ft. to 350,000 sq. ft (Figure 4.6). The size of the building will be controlled by various factors including storm water management, building coverage allowed by zoning,

**Figure 4.5 Truck Route from Newark Airport to Albert Steel Drum Site**





truck access and geotechnical considerations. The market study indicates potential users could be spirits & wine distribution, clothing or dry goods repacking and distribution. Estimated land values when remediated to non-residential standards are \$3000,000 to \$350,000 per acre. Based upon possible building sizes, there is the potential to generate up to 300 jobs for the local urban workforce and between \$500,000 to \$600,000/yr in tax revenue to the City of Newark.

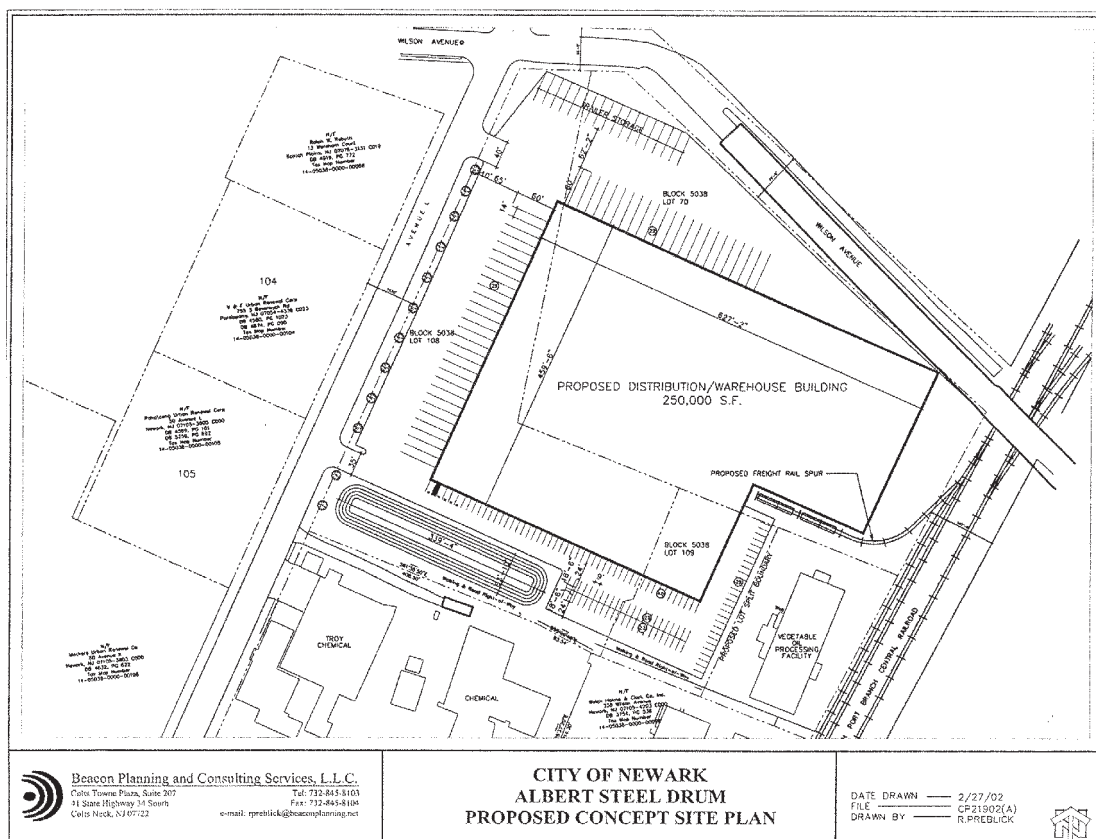
### 4.2.3 Reichhold Chemical Site

#### 4.2.3.1 General Site Description: Reichhold Chemical Site

The Reichhold Chemical Site is an assemblage of three tax lots located in southern Elizabeth, with a small portion in Linden. The property is identified as Block 4, Lots 63 and 67 (comprising 12.3 acres) on the City of Elizabeth tax map and Block 586, Lot 1 (comprising 7.2 acres) on the City of Linden tax

map. Based upon the tax record the property contains approximately 19.5 acres. Reichhold Chemicals, Inc owns the property. The property is currently vacant with the exception of a large warehouse building on the northern side of the property. A majority of the site is covered by impervious surface. Figure 4.7 provides a map of the site and surrounding land uses. The site is in an industrial area of southern Elizabeth that contains the Joint Meeting wastewater treatment plant and other manufacturing and bulk fuel storage facilities. A small residential area lies to the north. The site is traversed by a Class Two short line railroad (Sound Shore Line) and the southern portion, which falls within Linden, is only accessible through the Elizabeth component. The site falls within the M-2 Medium Industrial Zone of Elizabeth and the Linden portion is in the HI Heavy Industry Zone. There appears to be no wetlands on the property and the topography is generally level.

Figure 4.6 Conceptual Redevelopment Plans for Albert Steel Drum Site



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**CITY OF NEWARK**  
**ALBERT STEEL DRUM**  
**PROPOSED CONCEPT SITE PLAN**

DATE DRAWN: 2/27/02  
 FILE: CP21902(A)  
 DRAWN BY: R.PREBLICH





**Figure 4.7 Aerial Imagery of Reichhold Chemical Site**

#### **4.2.3.2 Transportation Assessment: Reichhold Chemical Site**

The Reichhold Chemical site presents both many challenges and opportunities for transportation access. Bayway Avenue borders the site to the north and First Avenue to the east. To the west, the Chemical Coast rail line, a major north-south freight rail line owned and operated by Conrail on behalf of CSX and Norfolk Southern, borders the site. The Reichhold site is bifurcated by a short line railroad called the Sound Shore Line.

While the site is within close proximity to several key highway links, including the New Jersey Turnpike and the Gothels Bridge, highway access is limited due to a number of undesirable highway geometric and traffic control features along likely trip paths. And other alternative trip routes require use of narrow residential streets and substandard bridges.

Several initiatives are planned in the area that will

enhance roadway access to the site. These include realignment of Relocated Bayway, widening and reconstruction of First Ave. and replacement of the First Ave. Bridge over the Elizabeth River. These improvements could enhance roadway access to the site. Rail access can be obtained from the Chemical Coast Line through the Class Two short line that exists on the site. The Chemical Coast Line extends north to the Trumbull Yards and the Oak Island Yards and intersects with the North Jersey Coast Line near Perth Amboy. Limited existing bus transit is available.

#### **4.2.3.3 Environmental Assessment: Reichhold Chemical Site**

Industrial operation began on the site in the early 1900's. Initially the site was used for metals manufacturing operations or was left undeveloped. Reichhold began operations on a portion of the site in 1936. Reichhold ceased operations in 1991 and a decommissioning program was initiated. All on-site structures have been demolished with the exception of a ware-







**Figure 4.9 Aerial Imagery of Carteret Redevelopment Properties**

provide 200 to 250 jobs and provide approximately \$600,000/yr in property tax.

Another reuse opportunity for this site is plastic products manufacture. The site is near the Tosco-Philips refinery plastics pellet manufacturing facility. Preliminary analysis indicates it is possible to move rail cars of plastic pellets from the refinery to the site through rail connections under the NJ Turnpike.

## **4.2.4 Carteret Redevelopment Properties Site**

### **4.2.4.1. General Site Description: Carteret Site**

This property is an assemblage of fifty tax lots that collectively comprise approximately 137 acres. It is Phase I of a two-phase redevelopment project. The property is located north of Industrial Road, near NJ Turnpike Exit 12 (Figure 4.9). Of the 137 acres only approximately 50 acres are developable and these con-

sist of a former landfill. The property is located within the HI-A (Heavy Industrial) Zone. Permitted principal uses include industrial or manufacturing as well as a permitted conditional use as a regional mall.

As mentioned previously, the redevelopment site is composed of numerous lots. The Borough of Carteret does not own all of the lots. A portion of the landfill is occupied by an active recycling business called Dauman Recycling, Inc. CDI Industries, GATX, Industrial Reclamation Inc. and Middlesex Landfill Corp own other lots within the redevelopment area. Thus redevelopment will require purchasing and assemblage of lots owned by various entities.

### **4.2.4.2 Transportation Access: Carteret Site**

Carteret Redevelopment Properties is located within close proximity to the New Jersey Turnpike, Interchange 12. Portions of the site are currently active and are served principally through the existing network of streets, including Industrial Avenue and

Roosevelt Boulevard, which connect to the interchange. The New Jersey Turnpike Authority is pursuing extensive improvements to Exit 12 including reconfiguration of the ramps and construction of a new roadway. Three possible alignments are shown in Figure 4.10. The proposed improvements to Exit 12 will also include designs to access any redevelopment that will occur on the former Carteret landfill. However, the remediation of the landfill will include capping which will possibly place building floor elevations at 45 ft msl. Any roadway design for accessing the redevelopment on top of the landfill must consider the elevation difference between the site and the surrounding land area. The site is also located within close proximity of a major regional rail freight line, the Chemical Coast Rail Line. However, the substantial amount of fill needed for a likely environmental remediation scenario would make a direct rail connection impractical.

Several nearby bus routes with stops along Roosevelt Avenue could provide transit service for the Carteret site. Service is provided on weekdays with limited weekend service. Bus service should be coordinated

with work schedules to ensure that efficient worker transit access is provided.

#### 4.2.4.3 Environmental Assessment: Carteret Site

Approximately 70 of the 137 acres are former landfill. These comprise three solid waste landfills, the Carteret Landfill, the Cranbrook Landfill and the Middlesex Landfill. These landfills officially terminated active disposal operations in 1985, 1966 and 1979. According to 1997 Remedial Investigation Report, the Cranbrook Landfill was closed in accordance with NJDEP requirements, but the other two have never been properly closed.

In 1997 a remedial investigation was conducted of the three landfills. Soil borings were advanced into the landfills and they were found to consist of a heterogeneous mix of wood, soils, household refuse and construction and demolition debris. A leachate mound exists within the landfill material with discharge along the east, north and west sides of the landfill mound. Shallow groundwater was found to

**Figure 4.10 Possible alignments of redesigned New Jersey Turnpike Interchange 12**





contain VOCs, SVOCs, metals and PCBs. Sediment was found to contain low levels of metals and pesticides.

Two engineering firms have developed conceptual designs for landfill closure by capping. Both consider the closure to include preparation of the landfill such that building foundations and other site improvements can be constructed. It is estimated that 2 million cubic yards of compacted fill will be required to cap the landfill. The material proposed for the capping fill would be dredged sediment. Additional closure items include landfill gas collection and treatment system, asphalt cap on top of the landfill, groundwater monitoring, leachate collection and treatment, relocation of two creeks, creation of new wetlands and enhancement of existing wetlands. Costs for impending this program range from \$19 million to \$36 mm. This program would result in the creation of approximately 50 acres of land on top of the landfill (in the form of a plateau) that would be available for redevelopment.

#### **4.2.4.4 Market Assessment: Carteret Site**

The success of the redevelopment of this parcel is closely tied to the proposed reconfiguration of the NJ Turnpike Exit 12 interchange. Transportation access to the site is dependent upon integrating into the design a roadway to the north that will match the proposed grade of the final landfill capping. One possible access option is shown on Figure 4.11. This figure also provides a reuse design that consists of a 670,000 sq. ft and a truck service travel center.

Market research indicates the need for a full service travel center proximate to the ports and the New York City area. A travel center at this location would allow truckers to stage up before accessing the ports. The concept proposed in Figure 4.11 includes hotels, restaurants, fueling area, truck service area, internet access, laundry and other amenities. Based on the concept provided it is estimated that the proposed travel center would yield approximately \$2 million in annual taxes and significant provide employment opportunities for low to moderate-income workers in Union and Middlesex Counties.

The other component of the proposed redevelopment is a 670,000 sq. ft modern warehouse and distribution center. There are only a few buildings in

the area with the ability to accommodate a large end user who requires space in excess of 250,000 sq. ft. As part of this study a limited appraisal was performed on the property. The appraisal was performed under two conditions, "as is" (defined as remediated to industrial clean conditions but not developed) and "as if" (defined as developed in accordance with the concept design). Considering approximately 50 buildable acres, the "as is" estimated value is \$15.4 million and the "as if" estimated value is \$64mm. Estimate total annual tax revenue to Carteret from the development concept would be approximately \$2.9 million.

Following completion of the case study, in August 2002, th City of Carteret announced that a developer had entered into an agreement to build a W/DC complex on the site.

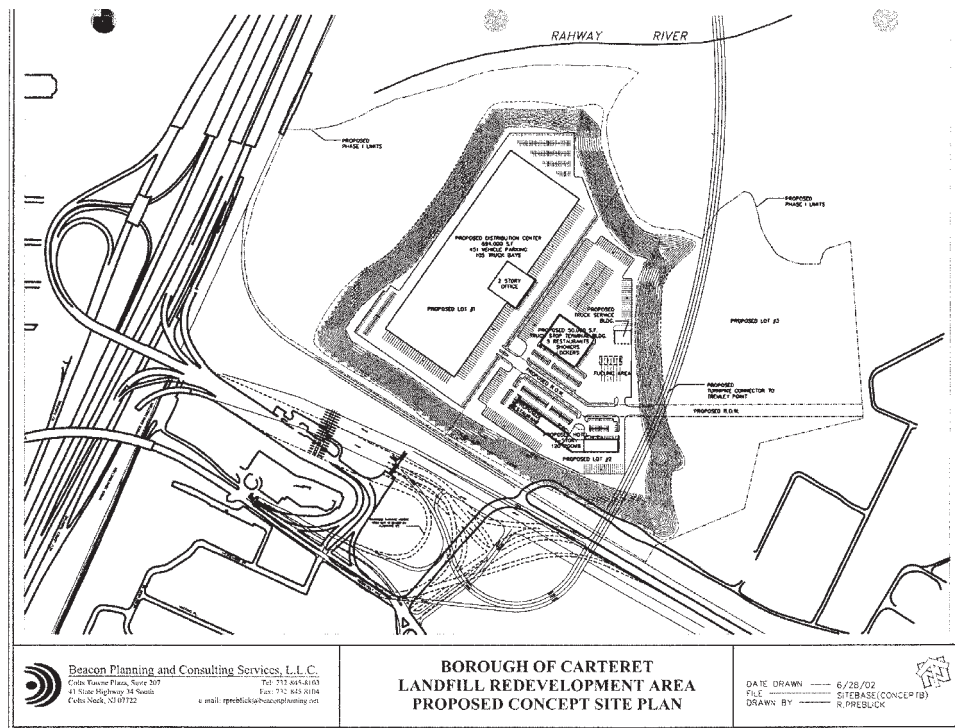
### **4.2.5 Koppers Coke/Standard Chlorine/Diamond Shamrock Site**

#### **4.2.5.1. General Site Description: Koppers Coke Site**

This case study consists of three contiguous properties, which collectively make up one of the largest pieces of available land for development in northern NJ. The properties are located in the Town of Kearny, Hudson County (Figure 4.12). The properties that comprise this piece are known as the Koppers Coke site (173 acres; 40 acres of which are in the River), the Standard Chlorine site (25 acres) and the Diamond Shamrock site (27 acres). Together they total 185 acres of developable land.

The site is in an industrial portion of Kearny and is zoned heavy industrial. The nearest residential area in Kearny is over two miles to the west. Additionally, the site is within the New Jersey Meadowland Commission Hackensack Meadowlands District, which has zoned the site as heavy industrial. Permitted uses within this zoning are motor freight terminals, freight forwarding and intermodal facilities.

The Hudson County Improvement Authority (HCIA) owns the Koppers Coke site, the Standard Chlorine site is owned by the Standard Chlorine Chemical Company, Kearny, NJ and the Diamond



**Figure 4.11 Proposed Concept Site Plan for Carteret Redevelopment Site**

Shamrock site was formerly owned by Chemical Land Holdings and is now owned by Terra Solutions.

The properties have almost a 100-year history of industrial activity. At the Koppers Coke site, the Koppers Company used the site from 1917 to 1979. At the Standard Chlorine site, industrial activities began in 1916 when the site was purchased by the White Tar Company and continued until 1993, when the facility was closed. At the Diamond Shamrock site the Martin Dennis Company constructed a chromate chemical manufacturing facility in 1916.

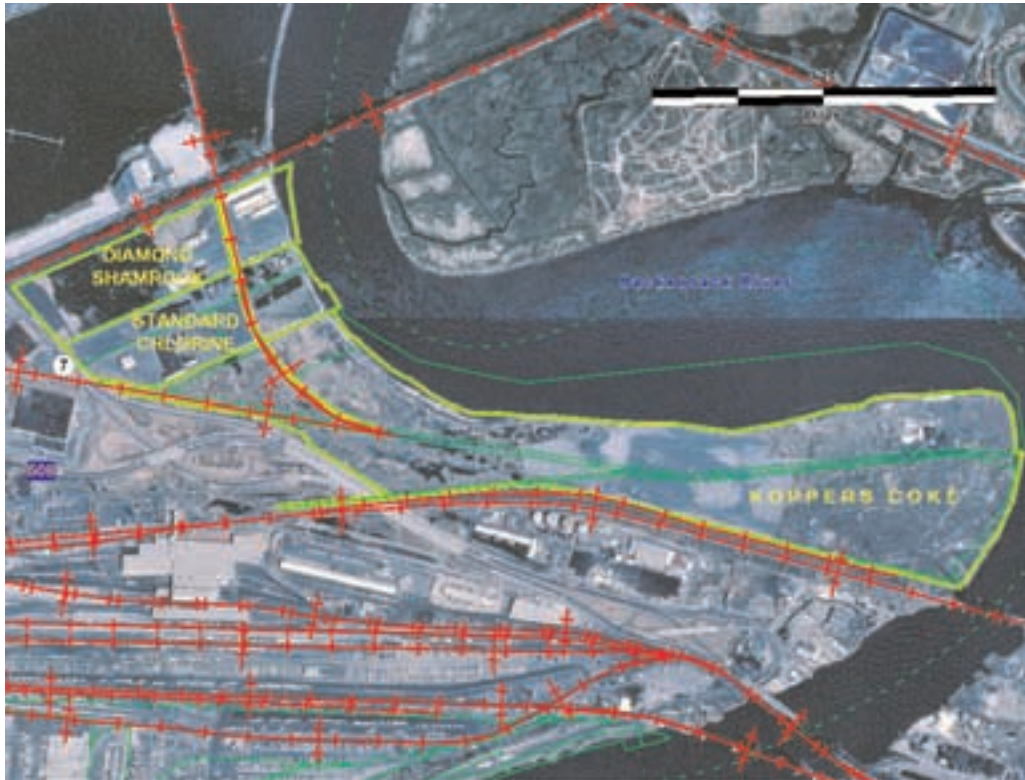
**4.2.5.2. Transportation Access: Koppers Coke Site**

The proximity of Koppers Coke to a major navigable waterway, the Hackensack River; existing passenger and freight rail lines including, the Morris & Essex Line, Boonton Line, northern Branch, and P&H Freight Lines Line; and key highways such as Fish House Road and Route 7 provide many challenges and opportunities for transportation access.

**Highway Access: Koppers Coke Site**

Currently, highway access to the Koppers Coke property is achieved through a narrow tunnel under the Morris and Essex Rail line in the eastern portion that connects to the Fish House Road ramp for the Wittpenn Bridge. The Standard Chlorine and Diamond Shamrock properties are currently accessed via an existing driveway off Rte 7 near the intersection with the Fish House Road ramp. Both of these access points are problematic and would be inadequate to handle increase traffic from redevelopment.

The southern edge of the Koppers Coke site is adjacent to or near several major regional roadways and two important intersections (Figure 4.12). Southeast of the site, Route 7 connects to Fish House Road via a grade-separated ramp. This ramp is also the western access to the Wittpenn Bridge over the Hackensack River into Jersey City. Along the southwestern edge of the Koppers Coke site, Route 7 and the Newark-Jersey City Turnpike (County Route 508) merge at a major interchange. Two important highway transportation improvements are planned for areas south



**Figure 4.12 Aerial Imagery of Koppers Coke, Standard Chlorine and Diamond Shamrock Site**

of the Koppers site. First, Portway, a roadway/inter-modal connector system that will link the region's marine ports, airport and intermodal rail yards will be built along Fish House Road to the south (Figure 4.13) and integrate with the Wittpenn Bridge/Rt. 7 interchange. This will allow access from the Koppers site to the Portway road complex. Second, NJ Department of Transportation (NJDOT) plans to replace the existing Rt. 7 Wittpenn Bridge with a new bridge that will carry three lanes in each direction. The reconstruction of the Wittpenn Bridge and the Portway project upgrade of Fish House Road provide important opportunities to develop a useful access to the eastern portion of the site.

A western highway access point is also needed to provide adequate traffic flow through the entire site. This access would have to be on Rt. 7 in the vicinity of the Diamond Shamrock site. Several options exist, as depicted in Figure 4.14. While a traffic signal at the Rt. 7/Amtrak overpass could accommodate vehicles exiting the site, restricted sight distance and interaction

with merging traffic could create safety problems for westbound Rt 7 traffic

#### ***Rail Access: Koppers Coke Site***

Because of significant elevation differences and extensive passenger service, access to the site from the Amtrak and Morris & Essex lines is not possible. Additionally, use of the Seaboard Lead is not practical because of the at-grade crossing over Rt. 7 and lack of adequate connection to NS's Croxton Rail yards.

#### ***Marine Access: Koppers Coke Site***

Marine access to the Koppers Coke site via the Hackensack River could provide a viable transportation alternative for freight movements. There is an existing dock facility on the eastern portion of the Koppers site that has in the past been used for off-loading of dredged material. Thus, the site is accessible by barge from the Port Newark/Elizabeth complex. Vessels would use the Newark Bay North Reach to



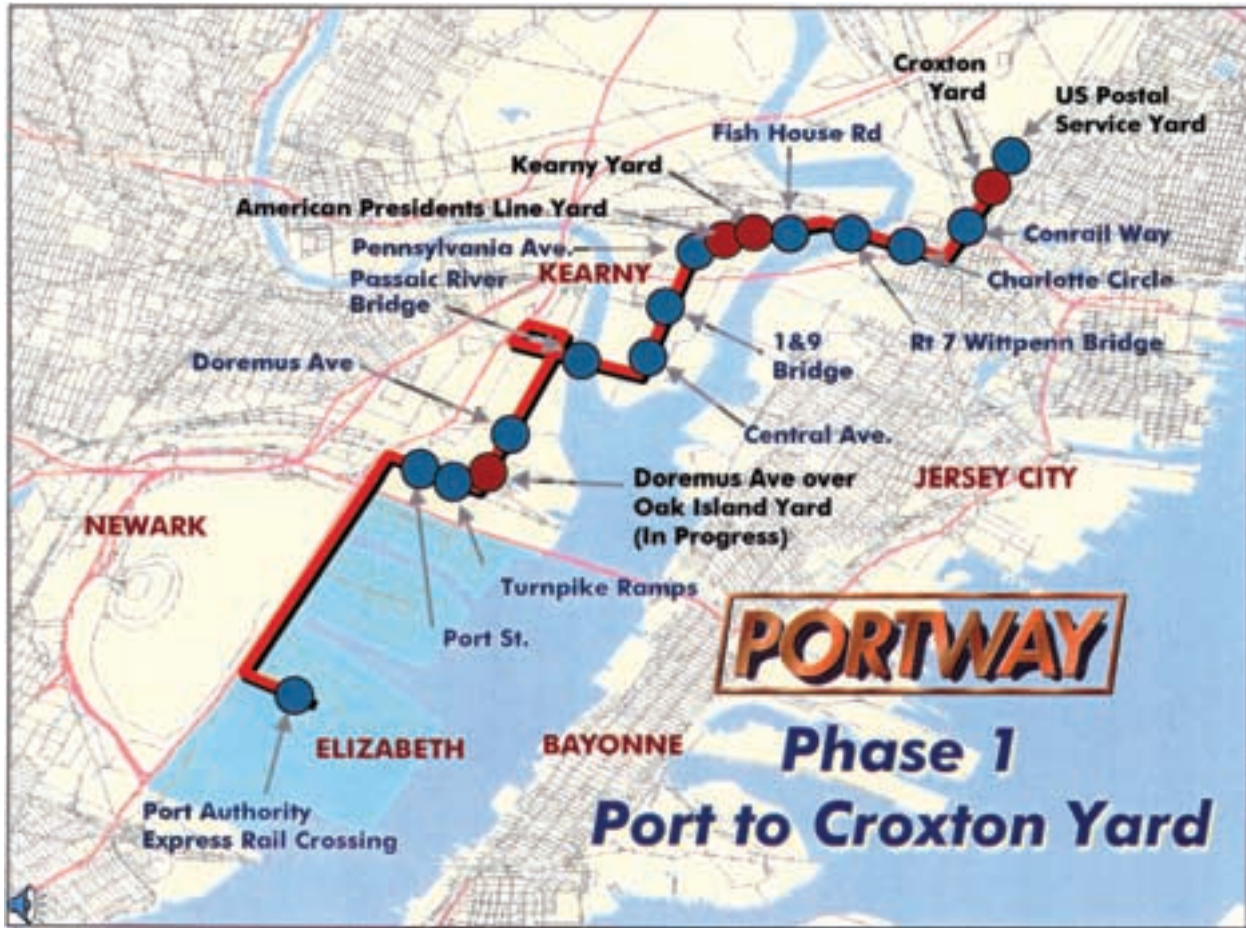


Figure 4.13 NJDOT's Proposed Portway Alignment



Figure 4.14 Transportation Improvement Options at Koppers Coke Site

the Drovers Point Reach then to the Marion Reach (Figure 4.15).

Currently transit access to the Koppers Coke site is very limited. NJ Transit operates a bus line from Jersey City to Newark with several transfer locations. However, hours of service are very limited.

**4.2.5.3 Environmental Assessment:  
Koppers Coke Site**

An important aspect that benefits the redevelopment of these three properties is their commonality with regard to subsurface conditions and how this can support a uniform approach to the control of environmental contaminants. All three properties have had significant site investigations, which have included both the determination of subsurface conditions as well as the distribution of contaminants. Based on

these studies some conclusions about the geology and hydrogeology underlying the properties can be made that have an important bearing on overall remediation strategies.

Historic industrial fill overlies the entire 184 acres. While this unit varies in thickness (six to 20 feet) and composition (cinders, COPR, slag, building debris, coal ash, etc.) its presence is consistent and will require a cap over the entire site. Most important of all from a remediation perspective is a low permeable clay/till unit that is at least 80 feet thick. This unit is continuous beneath all the properties and separates the surface contaminant from the regional groundwater. Because of this clay/till layer, near surface contaminants are confined to the historic fill/meadow mat/fine sand layer combination and are prevented from moving downward and impacting the regional groundwater. Thus contaminants at these properties



**Figure 4.15 Marine Access to Koppers Coke Site**



are primarily isolated to the immediate site environs and the only potential for migration is horizontally to the Hackensack River (Figure 4.16). Important remediation considerations as a result of common subsurface conditions are:

- a. A steel sheet pile (SSP) wall currently exists along the Hackensack River edge of the Koppers Coke site. This wall is “keyed” into the clay/till layer and is designed to prevent site contaminants from leaching into the Hackensack River. Since the clay/till layer exists under the other two properties, the SSP wall can be extended to the Standard Chlorine and Diamond Shamrock properties. By “keying” the SSP wall into the clay/till layer along the entire rivers edge, this will effectively seal off the properties from further impacts to the Hackensack River (Figure 4.17).
- b. Groundwater conditions are similar on all properties. A shallow water table aquifer system is present. While impacted from released chemicals, it is not used for potable or industrial purpose. The

regional groundwater, a useful aquifer, is separated by at least 80 feet of low permeable material and is not threatened by site contaminants.

- c. This combination of isolated near surface contamination and continuous thick low permeable unit is conducive to a “hot spot” extraction, containment and capping and institutional controls remedial strategy (Figure 4.18).

Specific contaminants on each property, shown on Figure 4.16, include:

**Koppers Coke**– The Eastern area includes the former coal tar processing plant, former coke plant, and the former coal/coke storage area. Contaminates in the soil include BTEX, PAHs and cyanide. Additional free phase DNAPL has been observed in the Eastern area. In addition to the SSP wall, a slurry wall was installed in the Eastern area to contain the DNAPL. The Western area includes the former light oil residual area, spent oxide deposit area former coke/coal storage area.

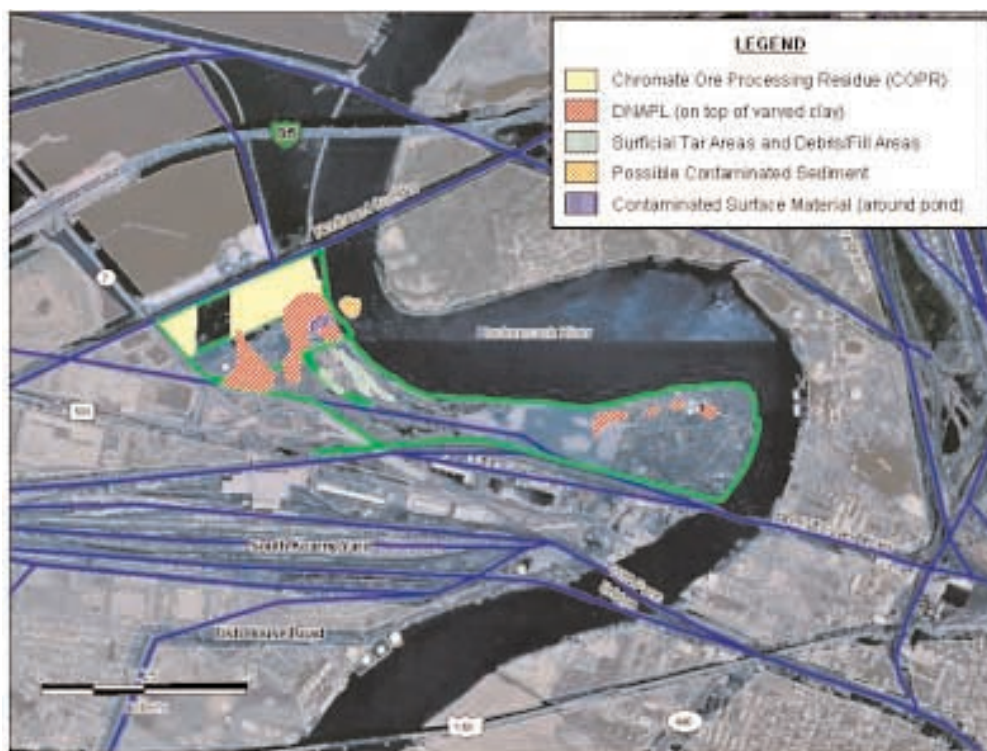


Figure 4.16 General Environmental Issues

Soil contaminants include PAHs, cyanide and chromium.

**Standard Chlorine site-** A variety of contaminants has been detected in historic fill at this site. These include total and hexavalent chromium, VOCs and SVOCs and Dioxin. The chromium is associated with COPR and is confined to area above the meadow mat. The most prevalent organics are chlorobenzene, dichlorobenzene and naphthalene. Additionally, pooled DNALP has been detected in above and below the meadow mat.

**Diamond Shamrock site-** The majority of the site contains elevated levels of total and hexavalent chromium above the meadow mat as a result of the massive COPR filling that has occurred at the site. Additionally, VOCs were detected in soil and groundwater along the southeastern edge of the property, near the DNAPL area on the Standard Chlorine property. Indications are the DNAPL has migrated on to the Diamond Shamrock property in this area.

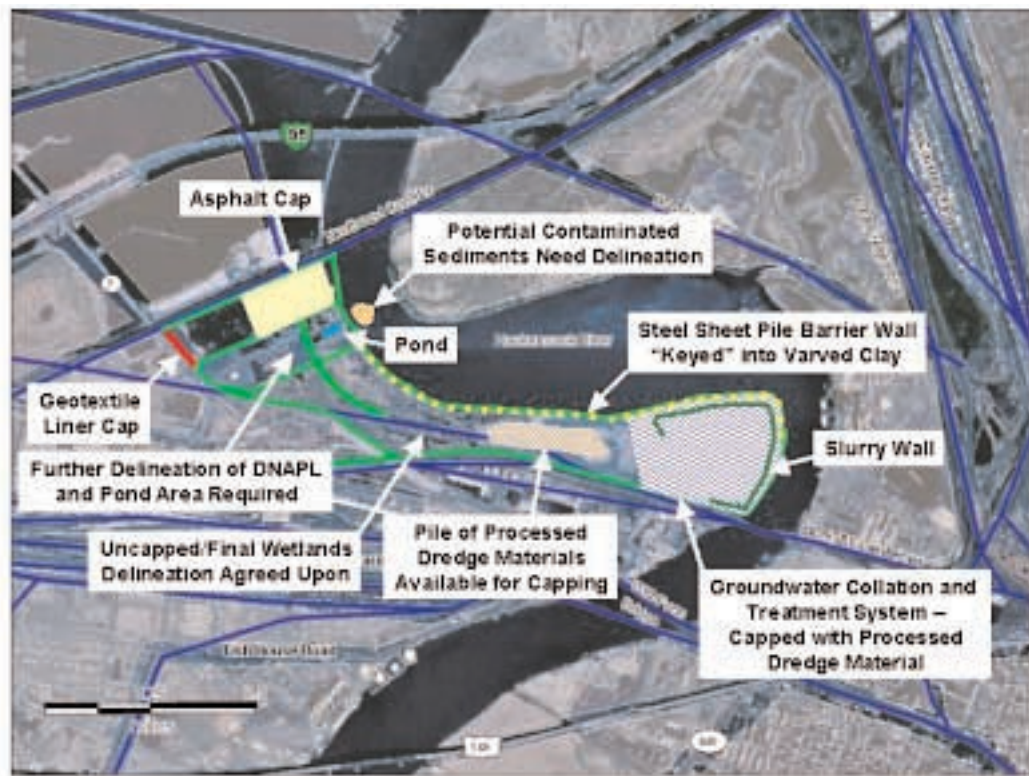
Finally there is several areas of tidal and fresh water

wetlands on the Koppers site. HCIA filed an application with the USACE to fill the wetlands as part of the remedial action plan. HCIA is currently working on a wetland mitigation plan, which will determine those area requiring mitigation and the mitigation ratio.

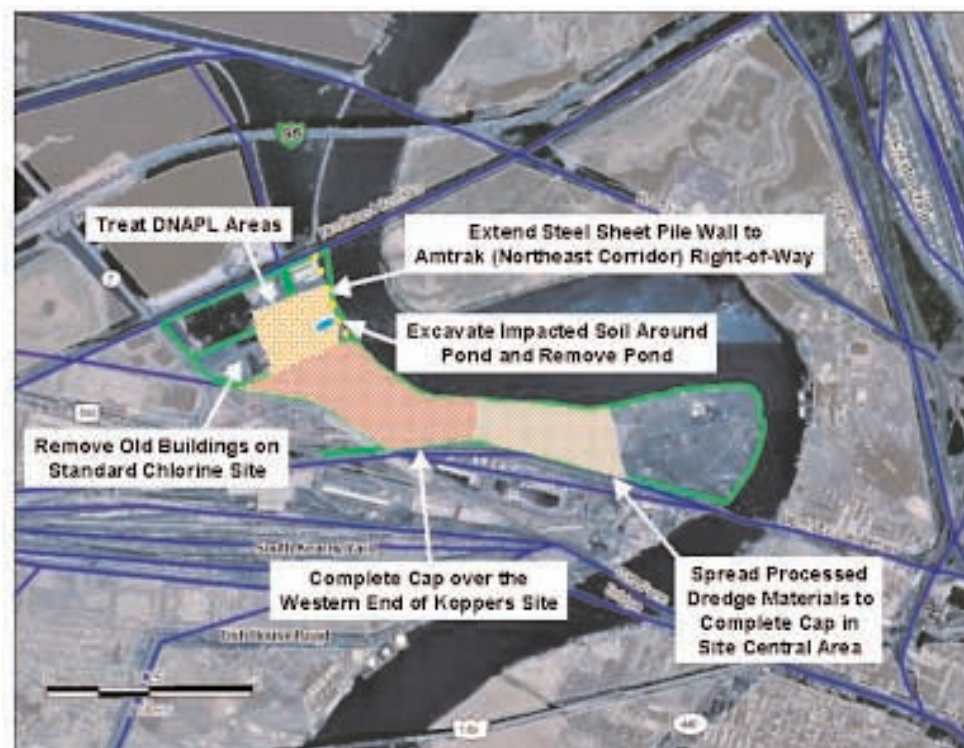
**4.2.5.4 Market Assessment: Koppers Coke Site**

This assemblage of three properties represents one of the largest pieces of undeveloped former industrial land in the northern NJ Industrial real estate market. However, comparison of this site to current market demands is misleading because of the time required to prepare the site for redevelopment. Therefore, the market assessment has to evaluate the future benefits of freight related redevelopment within the context of Port growth, enhanced infrastructure, planned unit development (PUDs) and in close PIDNs.

This group of properties is particularly well suited to support growth. It is large enough to allow the development of a warehouse and distribution center



**Figure 4.17 Current Status of Remediation Activities**



**Figure 4.18 Overview of Additional Remedial Activities**

planned development similar to those near the Port of Long Beach. These PUDs involve the collocation of numerous W/DC buildings in such a manner that they can integrate with one another to achieve synergies (as described in Section 6.3.1). This site has the available land to build the integrated PUD that can be linked to Portway so that freight related trucking could easily move between the W/DCs and the intermodal rail yards and ports. In addition, the site can also support a barge freight system that can move containers

off the port dock area along a series of navigable channels to the existing dock at the Koppers Coke site. On-dock W/DCs can be built at the site that can quickly process freight in containers and be transferred in value added facilities. Thus this site has the significant benefit of being able to be linked to the port area through both enhanced transportation infrastructure (Portway) and marine barge freight.



# Section 5 - Case Study Findings

## 5.1 Introduction

The following sections discuss findings from the five case studies described in the previous section. The observations are provided within the context of transportation access, environmental conditions, market evaluation, property valuation, community acceptance and financing options.

An overall finding of the case studies is that there is an interplay among numerous factors that determines the viability of brownfield sites for value-added warehouse and distribution reuse. In particular, the case studies indicate a dynamic relationship between and among the extent of required environmental site clean up or remediation, transportation access to major regional arterials, and the industrial real estate market or value of the property. For example, transportation access is vital for distribution and logistics and has a significant impact on the value of the property. Simultaneously, the value of the property often dictates the level of transportation infrastructure improvements that can be undertaken by the developer. Higher market values are typically associated with residential properties yet these reuses very often require more extensive environmental remediation measures than value-added warehouse and distribution. Additionally, large impervious surfaces typically required for modern warehouse and distribution centers can become an integral component of the remediation strategy.

The interplay of these and other factors affecting redevelopment prospects is different for each brownfield site. The following discussion touches upon many of the key factors encountered in freight related redevelopment.

## 5.2 Transportation Access

### Summary of Important Findings

- Transportation access is critical to freight related brownfield reuse

- Rail access is complicated and influenced by factors beyond the immediate site environs
- Study sites do not have ready-made direct access to major highway or rail arteries
- Local concerns regarding truck traffic must be considered particularly
- Mass transit is available to all sites to convey urban workforce (primarily bus lines)
- Marine access should be considered for the Koppers Coke site
- Regional transportation improvements should consider benefits to clusters of sites
- Trucks will be the dominant form of freight movement

### Discussion

Access to transportation services and facilities is vitally important in the freight industry. For freight distribution and logistics operators on brownfield sites, transportation access is especially important. Ease of access significantly enhances the value of the property, offsetting potentially costly environmental remediation. In addition, good transportation access attracts the much-needed labor force necessary to operate high-end freight distribution and logistics facilities.

All the site locations are in close proximity to major interstate highways, active rail lines, navigable waterways and the important regional international ports of entry. This includes Newark International Airport, Port Elizabeth, Port Newark, the Northeast Corridor, Chemical Coast line and the New Jersey Turnpike, among others. Yet each site presents unique challenges to directly accessing the regional transportation network that links to the port and intermodal facilities.

Physical rail infrastructure is only one component in considering the feasibility of rail service. Other factors, such as the type and amount of goods being delivered, competing passenger service and ease of connectivity to regional freight rail lines must be

taken into account. For example, the Arysncoco site, which has an active freight rail siding along its western property boundary, is seemingly an ideal candidate to be served via freight rail. However, since the freight siding connects to a passenger rail line, freight rail service is largely dictated by the passenger line service schedule. The Koppers Coke site has both active and inactive rail lines adjacent to and running through the contiguous group of sites. However, freight rail service is highly problematic due to conflicting passenger service schedules, lack of connections to regional freight rail lines and grade separation. Other sites, such as the Carteret site have active rail facilities along their borders, but cannot feasibly connect to rail freight service because of significant grade separation.

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*Good transportation access enhances the value of brownfields, offsetting potentially costly environmental remediation. While most sites are in close proximity to major highways, rail lines and waterways, each site presents unique challenges to accessing the regional transportation network.*

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Trucking will continue to be the dominant form of freight movement, though in some cases other transportation modes may provide viable alternatives. Trucking is particularly important in providing cost-effective service to the nearby consumer market. Therefore, access to major highway corridors is essential. Each site or cluster of sites is within close proximity of major regional highways such as the New Jersey Turnpike and I-280. However, in some cases, the network of local streets that provide direct access limits connectivity to these important links. Reichhold Chemical, for example, is less than one mile from Interchange 13 of the New Jersey Turnpike. However, poor geometric and traffic operational features of the local roads that link this site to the New Jersey Turnpike hinder the maneuverability of trucks and significantly increase travel times. Access to port terminals, also located within close proximity of the site, requires use of local residential streets and travel over substandard bridge structures.

While truck access remains a critical element to redeveloping brownfield sites for freight related use, the study team found that there is strong local concern regarding increased truck traffic connected with freight distribution and logistics re-uses. As discussed in Section 5.6 below, education is needed to make better known the aesthetically pleasing designs of these modern buildings, the jobs and ratables they can bring and the likelihood of manageable traffic impacts.

Another key transportation issue is workforce access. The influx of new employment opportunities brings about the potential for increased traffic. Fortunately, peak hours associated with W/DC facilities usually do not coincide with roadway peak traffic periods. Furthermore, we found that transit service is provided to all of the study sites, enabling single occupant vehicle trips to be reduced as well as providing a means to transport transit-dependent workers. However, bus service, in some cases, is limited.

Marine access may be promising for waterfront sites. A portion of the Koppers Coke site is located directly on the Hackensack River and has a deepened channel that could potentially be used to bring in barge freight traffic. Owens Corning Fiberglass currently has an agreement to use a large dock on the eastern portion of the site. A shared use agreement between the prospective property owner and Owens Corning Fiberglass would be required for using these dock facilities in conjunction with the W/DC reuse. Expansion of existing or construction of new dock facilities should also be explored to accommodate marine freight access. In general, the viability for marine access must consider factors such as site topography, time sensitivity of goods delivery, tidal patterns, physical features of the waterway (such as depth, width and curvature, bridge clearances) and roadway access.

Regional transportation projects, if planned properly, can have an important impact on clusters of sites. Two planned regional projects are particularly significant to large groups of brownfield sites that could be redeveloped for freight related purposes. These are Portway and the Exit 12 upgrade and expansion. As shown on Figure 4.13, the proposed Portway alignment will pass adjacent to and within close proximity to numerous large brownfield sites in Newark, Kearny and Jersey City. When built this roadway could link together a number of W/DCs on brownfield sites with enhanced



infrastructure that would connect the Port complex with the major intermodal rail yards. This would be the creation of the “string of pearls” concept discussed in the Phase I Market Analysis (see Section 6.2.2). In a similar vein, the upgrade and expansion of Exit 12 will allow redevelopment of not only the Carteret site but over 500 acres of additional sites including the GAF site on Tremley Point and the Port Reading Yards in Woodbridge.

## 5.3 Environmental

### Summary of Findings

- Wide variety of chemical contamination exists on the sites
- Contaminated media is primarily soil, groundwater, and sediments
- Cleanup objective for redevelopment with W/DCs is non-residential (industrial) standards
- All sites have had some level of characterization, though in most cases insufficient to allow accurate estimate of clean up costs
- Triad Approach to site investigation is an effective method to accelerate characterization, fill data gaps and target cleanup
- NJDEP involved in every one of sites, and bureaucratic policies, procedures and regulations substantially delay and complicate redevelopment process
- New NJDEP policies and programs promise to address many key issues including streamlining approvals
- Much of the cleanup work projected for these formally industrial sites does not integrate the reuse concepts, forcing redesign and resubmitted of RAWPs & permits

### Discussion

The case studies deal with wide variety of environmental issues that affect redevelopment and provide a cross section of the types of environmental conditions that need to be taken into account when considering a site for value-added warehousing and distribution. Four of the case studies were former industrial faci-

ties (Reichhold, Albert Steel Drum, Arsynco and the Koppers group) and as such are indicative of the environmental conditions associated with New Jersey’s industrial past. The other site consists of former landfills that were not properly closed and present their own issues with regard to remediation, building construction and stability.

The case studies and environmental evaluations raised serious concerns that some state environmental programs and regulations are not working effectively to advance brownfield reuse. Since the completion of the case studies in mid-2002, however, the NJDEP has initiated new policies, regulations and programs which promise to address many of the issues and problems by expediting environmental review of brownfield sites and providing certainty for developers. Specifically, in November 2002, NJDEP announced the creation of the Office of Brownfield Reuse within the Site Remediation Program (SRP)

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*NJDEP has initiated new policies, regulations and programs which promise to address many barriers to brownfield redevelopment by expediting environmental review of sites and providing certainty for developers.*

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and had assigned a director to this office. The purpose of the new office is to provide an advocate within NJDEP for brownfield site reuse and become an incubator for new initiatives that will expedite brownfield site redevelopment. Additionally, NJDEP announced a new brownfield policy to bolster redevelopment, accelerate the process and make it more efficient and predictable. Elements of the new policy include establishment of the Office of Brownfield Reuse, liability reform, separation of NFAs between soil and groundwater, an area wide reuse program, expanded use of financial and market instruments to facilitate redevelopment, a certification program for consultants and zero tolerance for “mothballing” abandoned sites. The purpose is to encourage the remediation and reuse of brownfield sites, particularly in smart growth areas.

Because these initiatives are new, it remains to be seen how effectively they will address all the issues found in the site investigations.

### 5.3.1 Site Characterization and the Triad Approach

The industrial sites have a wide range of contaminants, which in many cases are mixed with historic fill that had been placed on the site to reclaim former marsh areas. The typical contaminants found are chlorinated solvents, a wide variety of petroleum hydrocarbons, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and heavy metals including chromium, lead, zinc, arsenic and cadmium. These contaminants are the result of various facility operations and disposal practices including leaks and spills from manufacturing processes, discharge lagoons, underground storage tanks, waste piles, dumping of liquid wastes, discharge outfalls, drum storage and cleaning and the spreading of by products of the manufacturing processes. Contaminated media is primarily of three types: soil, groundwater and sediments.

All the former industrial sites have some form of NJDEP oversight, primarily through their involvement with the ECRA/ISRA regulatory programs. These programs began in the mid-1980s and require that investigations be performed and, if necessary, sites be cleaned up to appropriate standards. Specifications for this process are contained in the Technical Requirements for Site Remediation. As a result, there has been some level of site characterization performed at the sites that can provide a basis to evaluate possible remedial actions. However, at several of the sites there are substantial gaps in the investigation data that result in a large uncertainty as to the remediation approach and associated cost. This translates into a large cost range for the remedial options, which impacts developer's willingness to consider redevelopment because of the level of unacceptable environmental and ultimately, financial risk. The Triad Approach to site characterization was evaluated as an investigation method that could, quickly and inexpensively, provide site environmental information that could fill these data gaps and bring more certainty to remediation costs.

Site characterization is a process whereby the hori-

zontal and vertical extent of environmental contaminants is identified and the level of contamination for the entire site is estimated. Typically, site characterization methods may include obtaining and analyzing ground water and soil samples at a limited number of key locations. The information gathered from this sampling is then extrapolated to develop a picture of what contaminants are present at the site. Once a site is characterized, the type, extent and cost of environmental remediation can be determined. However, this process is slow and cumbersome and not compatible with brownfield redevelopment. An alternative approach to traditional site characterization, Triad Approach was evaluated as part of this study and found to be more useful. The Triad Approach is an innovative site characterization technique that includes three elements, Systematic Planning, Dynamic Work plans and Real Time Data Generation. Field analytical methods and mobile laboratories are used to analyze samples in the field, thus generating real time data that is used to select new sampling locations.

The Triad Approach was used to characterize the Albert Steel Drum site in order to fill the data gaps and reduce the remediation cost uncertainty. These methods are effective for quickly and inexpensively delineating "hot spots" with a high degree of accuracy. This allowed soil remediation efforts to be focused on well-delineated areas, which provided a much higher degree of certainty to the cost estimates. This greater certainty helped to attract the interest of a major warehouse developer, who has entered into a sales agreement with the owner.

The strategy envisioned with the application of the Triad Approach at the Albert Steel Drum site was to use real time data in conjunction with field decision making to map the boundaries of VOC and PCB "hot spots". The purpose was to map them with sufficient detail to allow the collection of "in place" post excavation samples and to develop accurate estimates of soil volumes to be removed and treated. Previous investigations had identified several locations on the 13-acre site where VOCs and PCBs exceeded the site specific non-residential soil cleanup standard (1,000 ppm TVOCs and 50 PPM PCBs). However, these were single soil samples and the dimensions of the "hot spots" and subsequently the volume of soil needing remediation was unknown, thus still present-

ing substantial uncertainty. Using a combination of modified standard methods performed in a mobile laboratory and field analytical methods (FAMs) (field portable GC and immunoassay PCB test kits), the boundaries of the impacted areas were quickly delineated. This was accomplished because field personnel were receiving information on analytical results daily and could select new sampling locations in the field (judgmental sampling).

When used by experience applicators, this process is very powerful, saving time and money. In the end, this process removed much uncertainty from the remediation process, and soil excavation was performed quickly without costly delays. This study found that this type of approach is critical to brownfield redevelopers, who must be able to accurately predict cleanup costs and comply with schedules in order to stay within their established cost boundaries (pro forma) and complete a profitable project.

Based on our experience with the Albert Steel Drum site, we have found that methods to quickly and inexpensively identify contaminants and eliminate the level of uncertainty can facilitate redevelopment of brownfield sites.

### 5.3.2 State Environmental/Brownfield Policies

Another finding from the case studies is related to the role of the New Jersey Department of Environmental Protection (NJDEP) in the brownfield redevelopment process. NJDEP is involved in every one of the case study properties and in some instances has a significant impact on the rate of the redevelopment. Although clean up and redevelopment of the case study properties (totaling over 500 acres) represents a tremendous opportunity to improve the environment and create significant economic benefits for New Jersey from old non-performing assets, during the time the case studies were being conducted there was evidence of a short-sighted focus on forcing compliance with policies, procedures and regulations rather than on fostering a cooperative effort to get the property back “into play”. For example, in order for NJDEP to issue a No Further Action (NFA) letter, all elements of environmental contamination had to be resolved. As noted previously, the new initiatives at NJDEP promise to

provide a resolution to this and other issues and bring a more flexible approach to brownfield reuse, though actually accomplishing this will require much diligence on the part of state officials.

Based on the experiences of the NJTPA-NJIT project team, No Further Action (NFA) letters are essential for a brownfield property to progress to redevelopment. Such is the case with the Arysnc property, where ground water contamination has become an issue. Instead of a partial approval approach whereby the property could be redeveloped with a provision that groundwater be monitored, NJDEP policy previously linked soil and groundwater remediation actions, essentially preventing a property from moving forward. Ground water remediation is often extremely difficult and complicated to rectify. Almost all the groundwater remedies involve monitored natural attenuation and this requires an extended period of time to demonstrate that the natural attenuation processes are degrading the chemicals of concern. In many cases when preparing a site for industrial reuse, the soil remediation is limited to “hot spot” removal, capping and deed restrictions. Hot spot removal eliminates ongoing sources of groundwater contamination and capping/deed restriction prevents surface exposures. This type of remediation can be quantified, quickly achieved and if performed in conjunction with a redevelopment plan, can prepare a site for reuse in a predictable finite timeframe. Upon completion of these remediation efforts, an official soils NFA would provide developers and lenders with the assurances needed to fund the construction of a W/DC. The longer-term groundwater monitoring or remediation programs needed to achieve a groundwater NFA can be integrated in the W/DC design.

Thus it became evident during the review of the case studies that separating NFAs between soil and groundwater would have a significant impact on redevelopment timing, particularly with regards to industrial sites in northern NJ. NJDEP’s recent policy directives have substantially addressed this issue, though there will still need to be a more flexible approach taken to the application of this and other regulations. Lengthy, indeterminate delays are often deal breakers for real estate projects, where time is money. Thus, there is an underlying tension between NJDEP regulatory and enforcement officials and developers who wish to see a quick return on their real estate investment. In the

end, insisting on an all or nothing approach usually means no one wins, as the property remains vacant, site contaminants continue to spread and no economic benefit is realized for the community. The recent NJDEP initiatives appear to recognize these needs.

In another example, a case study property became involved with ISRA in 1993. At that time a number of areas of concern were identified and the owner was ordered to initiate a site investigation. Over subsequent years, a substantial amount of environmental information has been collected on the site, but because certain administrative procedures were not precisely followed, the site remains contaminated and undeveloped. Even though the site characterization did not follow the administrative process exactly, the information obtained by the investigation is still valid for developing a reuse approach and evaluating remedial options within the context of the redevelopment. Thus, there must be flexibility on the part of the regulators and cooperation among all involved, with an emphasis on keeping the end point in mind – reaping the environmental and economic benefits by moving forward with redevelopment of the property.

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*Insisting on an all or nothing approach in terms of site environmental cleanup usually means no one wins, as the property remains vacant, site contaminants continue to spread and no economic benefit is realized for the community.*

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In the recent past, NJDEP's lack of innovative approaches to address site contamination resulted in extended time frames for the redevelopment. This is inconsistent with the time demands of real estate projects. A balance must be quickly reached between enforcement based regulations and the needs of developers to satisfy environmental remediation requirements.

Another finding is that much of the remedial action planning by both NJDEP and property owners is being done without consideration of realistic and feasible property reuse. NJDEP's recent initiatives have not directly addressed this issue, though it appears to warrant attention. The NJTPA-NJIT project team

found that remedial action work plans do not account for new structures or a revised site layout. For example, at one site the final cap design required deep channels for runoff control. This was incompatible with the reuse proposal, a W/DC, because the building is going to occupy 60 percent of the lot and must be built on flat land. The remedial design had to be changed to reflect the new site layout, requiring an amendment to the Remedial Action Work plan. At another site, an air sparging system is proposed to treat shallow volatile organic carbons (VOC) that impact groundwater. The layout of this system is incompatible with the building design. Thus, the system will have to be modified to adjust to the site reuse option.

In many cases, reuse plans such as those envisioned by this study can be an integral part of the final remediation. Since these former industrial properties are being cleaned up to non-residential standards (industrial clean), most of the remedial approaches involve hot spot removal, along with containment or stabilization, capping, deed restriction and groundwater monitoring/natural attenuation. The large building and surrounding pavement associated with a warehouse and distribution center are excellent permanent caps. Thus, a finding of this study is that it is important to develop a remedial approach that considers the end use of the property. Modern warehouse and distribution logistics end uses justify different standards because these can become an important component of the remedial design.

## 5.4 Market Evaluation

### Summary of Findings

- All properties are in north & central New Jersey industrial real estate markets
- There is a strong demand for warehousing & distribution (W&D) in this market area
- Average building size in market area is from 60,000 to 110,000 square feet, but modern W&D requires 300,000 to 500,000-square-foot buildings. Thus there is a demand for larger buildings
- An expected increase in West-Coast-style value added facilities may reduce the needed size of buildings but increase the need for PUDs



- Public money will be needed to help “spark” larger properties, but private money can manage smaller sites.
- The type of labor force available in urban northern New Jersey is compatible with the workforce requirements of modern W/DCs

### **Discussion**

As discussed earlier (section 2.2), this study has shown that the strong demand for industrial space in northern and central New Jersey present a tremendous opportunity to create new wealth for New Jersey through the redevelopment of appropriately positioned brownfield sites.

The size of a building that the property will support has a significant impact on developer interest. All of the properties studied are in industrially zoned areas, which have allowable maximum building coverage of 50 percent to 70 percent. The greater the allowable building and impervious surface coverage, the more a developer is willing to pay for a property. However an issue arises in relation to zoning and other constraints that will restrict building size. These include wetlands, space for trailer parking, storm water runoff control, and transportation access and property shape. Other factors that influence property redevelopment potential include access to utilities, presence of a flood hazard zone and subsurface geotechnical conditions. The availability of financial incentives, such as tax abatements, special urban enterprise programs and employment credits are also key elements in market interest.

As part of the case studies, conceptual site plans were developed that depicted possible building layouts. Potential building sizes ranged from 200,000 square feet to 700,000 square feet. Analysis of the average building size in the northern and central New Jersey industrial market (exclusive of the Exit 8A area) indicates that the range is from 61,000 square feet in Bergen County to 109,000 square feet in Hudson County. However, specifications for modern warehouse distribution centers recommend building sizes above 250,000 square feet. Thus, there is a need to accommodate end users who require buildings in excess of 250,000 square feet. The case studies have shown that brownfield sites over 12

acres can provide the larger modern warehouse buildings needed for today’s logistics management demands. As discussed in the Section 2.1.4, it is expected that West Coast-style value added warehouses are likely to become more prevalent in northern New Jersey with the increasing handling of Asian goods through the port. While these facilities are smaller in size, they are usually clustered in PUDs or industrial parks which often are 100 acres or more in size.

Additional recommended requirements for modern high throughput warehouses are cross-dock loading configuration, 38 foot clear ceiling heights, ESFR fire protection, trailer parking, 10 percent or less office space, minimum of 140 feet of trailer swing room, trailer pads, and load levelers, bollards & bumpers at the trailer docks. Also lighting should be 400-watt metal halide and electric power should be minimum 2000 amps, 480 volts, and 3 phase.

## **5.5 Property Value**

### **Summary of Findings**

- Price paid for “raw” land for W&D usage is based upon allowable building size under local zoning
- Other factors that influence value are utility availability, proximity to flood hazard zones, wetlands, geotechnical conditions and financial incentives
- Industrial developers will pay from \$8 to \$12 per square foot of allowable building coverage for industrial clean land
- Soils’ NFA important for developers to receive lender approval
- Tremendous potential real estate value is “locked up” in the brownfield sites that if released can provide wealth to New Jersey
- Sale prices of “built out” W&D building range from \$50 to \$60 per square foot
- Price per acre of industrial clean land ranged from \$135,000 to \$350,000

Four of the case studies included preparation of a Limited Restricted Appraisal Report in order to obtain an estimate of the property value. The appraisal



was performed under two scenarios, one being “as is,” which was defined as cleaned up to industrial standards with all necessary approvals for construction. The other scenario was “as if,” which was defined as being developed in accordance with the industrial warehouse and distribution facility suggested by the study. A cost comparison approach was used as the basis for estimating value. One of the findings is that the underlying price paid for raw industrial property is based upon the building yield it can support. Typically, industrial developers will pay a maximum amount of \$8 per square foot of building estimate. However, in discussions with potential developers and brokers, the location of the case studies is of such value that a land value supporting as much as \$12 or more per square foot of building coverage is possible. This point is underscored by the sale of the Engelhard property in Newark, which was bought for \$18 per

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*At a potential price per acre of up to \$350,000, there is tremendous potential land value locked up in brownfield sites in the port district that can be released to provide wealth to New Jersey.*

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square foot of anticipated building area. Based upon this analysis, the “as is” value for the four case study sites ranged from \$1.6 million to \$15.4 million. Estimated price per acre of industrial clean land from the case studies ranged from \$135,000 to \$350,000. Thus, another important finding is that there is tremendous potential land value locked up in these brownfield sites that needs to be released to provide wealth to New Jersey.

With regard to the “as if” value, comparisons were made to building sales that have occurred between 1999 and 2001. All were big box industrial spaces with ceiling heights that ranged from 24 to 38 feet. The unadjusted range of sales values was between \$46 and \$53.48 per square foot. After adjusting for market conditions (time), ceiling heights and the favorable property location, a unit value from \$50 to \$60 per square foot of building area was judged to be realistically achievable. Based upon this analysis, the “as if” value of the four case studies properties ranged from \$10 million to \$64 million. Again, this indicates that there is

tremendous real estate value locked up in these and other brownfield sites that could be an important source of wealth creation for New Jersey.

These properties have real economic value. However, remediation costs can have significant impact on the ability to realize economic potential of the properties. Some of the properties are currently “upside down” because remediation cost can not be accurately quantified. Thus, linking redevelopment with remediation in such a manner that the two are integrated and support one another is important to unlocking the economic potential for the sites.

## 5.6 Community Considerations

### Summary of Findings

- Community involvement is critical to successful redevelopment for freight related use
- Municipal officials and community leaders need to become involved early in the redevelopment process
- Communities need to be educated on the improved labor requirements and aesthetics of modern W&D buildings
- Value added W&D could provide important job opportunities for lower income urban populations
- Community reception of freight related trucking is impacted by the sites proximity to residential areas

### Discussion

New Jersey is a home rule state. This means that municipalities have control over land use decisions including zoning and site plan approval. While most of the case study sites were in industrial areas, separated from residential areas, municipal officials and community residents are aware of the properties and may have a reuse option in mind that is different than W/DC. Two site studies were proximate to residential areas, which had an impact on the type of reuse that would be acceptable to municipal officials.

Thus it is important to involve municipal officials (and, where practicable, community residents) early

on in the redevelopment process, since eventually they will have to approve the reuse. This is particularly important with regard to freight related reuse because of the perception that W/DCs can have a negative impact on neighborhoods through trucking and unsightly design. The study found that there is a need to educate local officials on the positive aspects of modern W/DCs, especially with regard to the labor demands and aesthetically pleasing designs of these modern buildings. Additionally, operators of these buildings, who were interviewed for this study, indicted that impacts from trucking were not as significant as people suspected because the operating hours are such that most truck activity takes place in the early morning and late evenings.

Several of the sites are in industrial areas somewhat distant from residential neighborhoods. Over the last several years, the populations of these neighborhoods have changed toward lower income residents. Placement of W/DCs on the brownfield sites in these areas can provide important job opportunities for lower income populations. Modern W/DCs are much more labor intensive than old style warehousing. Not only do they employ more personnel, they also offer a wider diversity of jobs.

## 5.7 Financial

### Summary of Important Findings

- While there is generally a strong market for freight related brownfield re-use in the port area, financing is highly complex and is affected by a number of site-specific factors.
- Financial incentives fostered through current laws with tax rebates favor retail development.
- The development plan and associated remediation actions play an important role in the successful finance options.
- Knowledge of the extent of contamination and remediation necessary are essential in effective financial planning.
- Assembling properties can better spread environmental risk, can make infrastructure improvements more palatable thereby making financing

more viable.

- Implementing “Centers of Excellence” could enhance the delivery of knowledge and resources to developers and municipalities on innovative financing strategies and programs for brownfield site remediation.

### Discussion

A detailed analysis of financial issues and strategies related to freight related brownfield redevelopment, prepared by BER consultant Peter Zimmermann, is provided in Appendix F. The following highlights key points from this analysis.

It is no secret that brownfields redevelopment poses challenging finance issues. Even the perceived (as opposed to substantiated) environmental risks or other impairments present significant barriers can limit the marketability of the brownfield sites thereby increasing the chances of transactional failure. Freight-related uses have an added complexity, in that these types of uses generally follow consumer market demands as opposed to generating demand for goods or services on their own. Still, the study team found that there is generally a strong market for freight-related re-use of brownfields and that the significant demand for appropriately located industrial space within the study area helps diminish a portion of the competitive disadvantage of brownfield property.

However, financing must deal with the site-specific factors pertinent to the location and immediate surroundings. It is at this scale that the many concerns affecting successful financing arise. The list of these concerns is long, but a few examples demonstrate the real potential for intractable equity and debt lender issues with respect to financial risk identification, quantification, and management. Major uncertainties can exist with respect to:

- The extent of contamination
- Environmental agency remediation termination criteria (e.g., requirements For No Further Action)
- Timing and length of remediation
- Remedy success and cost/timing of cure
- Remedy cost variance (e.g., estimated 65% of

remedies go 10% or more over budget)

- Long-term and (potentially indeterminate) environmental risk exposure
- Incomplete Disclosure Risk
- Buyer/Seller Liability Transfer Failure
- Business Interruption Risk (rental loss/income loss)
- Buyer/Seller Remediation Control Risks (e.g., seller may have incentive to do less stringent remediation)

In addition, brownfield projects often require multiple layers of equity and/or debt financing, with all the commensurate lender take out, facility divestiture, equity partner contact(s) and other risk transfer structures. Another complexity can arise from the need for a combination of public as well as private funding to make a freight-related brownfield project feasible, in part due to the overwhelming need for adequate transportation infrastructure. In summary, from a real estate finance perspective, these and other issues make brownfield financing more complex than that for competing assets with lesser impairments.

### Financial Incentives

To help balance the overall costs between brownfields and “greenfields” development, vital public funding and tax abatements/incentives are being put into place, and risk management instruments to address equity and debt providers’ concerns are available, even in the current insurance environment. Also, new methods are being developed to solve long-standing problems associated with complex environmental liability structures (e.g., Superfund PRP groups) and assuring coverage of timing and cost risks associated with long-term operation, maintenance and monitoring (OM&M) for affected brownfield properties.

Unfortunately, current laws with tax rebates favor retail development versus freight, as the tax savings are derived primarily from sales taxes. While this has historically been very helpful for retail-related brownfield projects, it is not typically enough to override the other basic underlying risks inherent in brownfield work.

New legislation intended to assist industrial brownfield redevelopment has been proposed and will offer tax abatement mechanisms that should ameliorate some of the costs and risks associated with freight-related brownfields. In addition, the tax benefits stemming from developing mixed-use properties that include freight operations in these projects should also be considered.

Environmental insurance, when integrated into the real estate financing of a project, can be an essential factor in the success of the effort. It should be noted that every insurance package is project-specific, and that parties to the transaction should be prepared to invest the appropriate amount of time in the planning, negotiation and binding phases of the insurance-related work.

Another general guideline is to begin the insurance planning effort even during the site selection or feasibility study portion of a real estate deal. The reason for this is that problems and their solutions can be identified early on in the process, often in a preemptive mode. This can save considerable time and money, which are both critical in such projects.

Also, since quality insurance brokers have access to considerable databases of past projects, they are able to offer valuable advice in the planning phase, including recommendation for investment partners that work in the brownfields area, sources of debt capital, and specialty environmental consulting or legal assistance.

Finally, it will important to identify early on if the particular brownfields project is a candidate for insurance or not, and what alternatives are available in the financing aspects of the project. For example, remediation cost cap policies may only be feasible if remediation costs exceed certain amounts, or available only under restrictive terms if the estimated costs are insufficient are the duration of the remediation is too short.

### Advance Knowledge

Many of the candidate study sites were found to have ongoing or completed environmental assessment or remedial planning activities. However, more precise or thorough determination of likely remediation activities necessary to accommodate a future use would be needed to develop financing mechanisms and appro-

priately address a property's environmental risks.

For example, in the absence of a future use, residential soil cleanup criteria may have been applied. This could easily increase remediation costs to the point where a real estate asset already impaired by other value diminution factors could have the remediation cost greater the present or future value.

However, in the presence of a freight-related (i.e., industrial) use, where large amounts of paved areas are desirable and actually increase the property's value, then less stringent non-residential criteria could apply, and the property improvements provide acceptable engineering controls to mitigate the environmental risks.

Therefore, in the event that a property is being evaluated in a brownfields context, existing remediation plans may need to be reassessed and refined with respect to the development plan and the planning-level pro forma financial analyses, as well as the other available risk management tools such as insurance options.

Redevelopment often requires more equity in the debt/equity arrangement than purchases and improvement of land with existing structures and uses. Because equity financing and payback terms are often sensitive to unanticipated changes in any of a number of development factors, equity funding has its own unique constraints and risks. This automatically makes any land or property development riskier relative to potentially competing properties without such requirements. When the possibility of contaminated land and environmental risk management requirements are added to this situation it only increases these risks on equity. In any case, the parties providing the debt side of the financing equation will have in many cases very well defined risk management data objectives that must be addressed for a brownfield property transaction.

Therefore, it is imperative that financial planning be incorporated into brownfield redevelopment at its earliest stages. It is far better to learn that the “numbers just won't work” at the early stage, and begin to access the many tools and alternative solutions to resolve the situation, as timing risk remains one of the more significant development risks requiring man-

agement, and if not addressed in the earliest planning stage can lead to failure of the deal.

The conclusion of the analysis may be that the project is not financially viable, or only marginally viable, under the currently projected remediation and site disposition plan. In this case, the results of should be fed back into the estimated remediation cost and

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*New methods are being developed to solve long-standing financing problems associated with brownfield properties. Developers in the New Jersey/New York City metropolitan area can take advantage of some of the best financial and risk management expertise in the country.*

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schedule scenarios to achieve viability. For example, different remedial technologies may be assessed, mixes of passive and active technologies can be considered, or site use planning, grading or infrastructure can be revised.

It is important to note that early knowledge of the financial impacts of the preliminary financial plan will increase the value of the remedial planning effort. Using this information, subsequent remedial planning efforts can make a significant contribution to the transactional negotiations and increase the potential for project success.

### **Property Assemblage**

Through our case study work, we found that it was highly advantageous to assemble properties from environmental, transportation access and real estate market perspectives. Aggregation of brownfield properties also has financial advantages. Specifically, efforts to aggregate parcels can also be integrated into the insurance package to spread risk, increase the target coverage and buffer amounts, and obtain the best possible terms from underwriters. This may also significantly assist the overall project financing effort and increase the chances of success.



### **Public/Private Resource Center**

Finally, brownfield properties in the New Jersey/New York City metropolitan can take advantage of some of the best financial and risk management expertise in the country. Furthermore, we found that there are a number of innovative brownfield financing packages being offered through public and quasi –public agencies as well as private sector finance and insurance providers. Therefore, the climate is right to implement public/private centers of excellence where the skills and resources needed to make brownfield redevelopment a reality. These efforts, of course, would need to be closely integrated and coordinated with the many existing state and federal organizations and programs involved in brownfield redevelopment.

# Section 6 - Analysis of Findings

## 6.1 Introduction

The case studies discussed above yielded important insights into the opportunities and constraints affecting the redevelopment of brownfields for freight purposes. If freight related redevelopment is to be achieved on a large scale in the port district – as this report argues is vitally necessary to the future of the region – a variety of issues affecting redevelopment prospects of sites throughout the port district must be addressed. These include the need for major infrastructure improvements serving the entire district, improved environmental laws to speed site clean ups, new incentives to encourage redevelopment, coordinated land use policies, and other measures.

This section of the report analyzes the insights gained from the case studies in the context of these wider needs. It is divided into three subsections:

**Barriers** – the barriers that make brownfields more costly, time consuming and complicated to develop and how they can be addressed;

**Transportation** – the transportation needs in the port district and opportunities to use transportation improvements to bolster brownfield redevelopment; and

**Comprehensive Planning** – development models that can provide the basis for comprehensive land-use planning in the port district.

Recommendations and conclusions drawn from these analyses are presented in the final section of the report (Section 7).

## 6.2 Barriers

Brownfields, of course, are more costly, time consuming and complicated to develop than greenfield properties. State and federal programs in recent years have sought to close the “development gap” between the two. This has included the 1998 enactment of the Brownfield and Contaminated Site Remediation Act,

which established a fund for reimbursing developers for up to 75 percent of clean up costs. The Act also strengthened the Voluntary Clean Up Program through which developers can enter into an agreement for site clean up and obtain a “no further action” letter limiting future liability. The state also makes loans, tax abatements and planning assistance available through local governments.

While these resources have been responsible for much of the success in brownfield redevelopment efforts, the development gap remains. The following sections (6.2.1 – 6.2.4) discuss continuing barriers, such as problems with permit approvals and environmental regulations, that confront property owners and contribute to the development gap. Also discussed are wider issues, such as the growing use of properties for container storage and biases against freight related redevelopment, that constitute barriers for the region and state in realizing the economic benefits possible through reusing brownfields on a large scale to accommodate future growth in trade. Needed transportation improvements are dealt with in a separate section (6.3).

### 6.2.1 Redevelopment Climate

One of this reports key findings is that current market trends “are creating unprecedented opportunities for reclaiming northern New Jersey brownfields for W/DC facilities.” Yet many developers and real estate professionals continue to perceive an inhospitable climate for redevelopment of brownfields in much of urbanized northern New Jersey, especially in comparison with suburban and greenfield areas.

Developers complain about the additional costs of redeveloping properties in towns and counties near the port. While a significant share of remediation costs can be reimbursed, developers say that some localities charge high fees for permits or review of engineering plans. In contrast, nominal fees are charged by localities with plentiful greenfield acreage in eastern Pennsylvania and elsewhere. They also say that some localities lack the personnel and expertise to deal with applications in a timely manner.

Developers also face delays and uncertainties due to the need to navigate various New Jersey programs and requirements. While, as noted in Section 5.3.2, the McGreevey Administration has recently undertaken a series of initiatives to improve the effectiveness of state agencies and programs in promoting brownfield redevelopment, during the course of this study developers complained of one level of government or one agency not talking with another, of conflicting requirements and of delays caused by multiple reviews performed sequentially rather than in parallel. Many of these complaints involved environmental requirements (as discussed in more detail in a separate section below). As a result, developers said they faced a host of uncertainties that can make it difficult to meet the hard and fast timelines required by banks and prospective tenants/purchasers. Meanwhile, in greenfield areas a warehouse is typically built to suit a particular tenant within 12 months of the developer receiving permits.

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*Government must do more to streamline approvals and address fragmentation of authority regarding brownfield redevelopment. The recent initiatives of the McGreevey Administration appear promising in addressing these issues.*

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Many developer complaints about government red tape and snafus are no doubt well founded. However, government agencies must balance a variety of competing interests, including economic development, community desires and environmental concerns. They also must ensure cost effective use of public funds. Nevertheless, government must do more to streamline approvals and address fragmentation of authority regarding brownfield redevelopment. In particular, it must be better at providing “one stop shopping” for private parties exploring redevelopment.

The recent initiatives by the McGreevey Administration appear promising in addressing these issues. In addition to the new policies and programs within the NJDEP discussed earlier (Section 5.3.2), efforts are underway to revitalize the New Jersey Brownfield Redevelopment Task Force, which was created by the Legislature to provide government-

wide coordination of brownfields efforts. The Administration has also created a new cabinet level council and a new division of the Department of Community Affairs devoted to Smart Growth including brownfield revitalization. To be effective, these initiatives must be provided needed resources, staff and authority. They also must be accompanied by efforts to insure officials and employees throughout government give priority to using programs and procedures to support brownfield redevelopment.

Another promising development at the state level is the introduction of new legislation in the State Assembly (A-2585). Among other provisions, it will improve the financial assistance available from the state for site remediation. One financial provision would expand the definition of the sales and income taxes generated by brownfield sites that can be used to reimburse developers for remediation costs. This would give developers of warehouses and other industrial uses financing options similar to those that apply to retail developments.

While such steps are valuable at the state level, developers and property owners also must navigate local government requirements as well as those of banks and insurers. In this regard, the BER case studies demonstrated the value of bringing multi-disciplinary teams of experts together to help private owners and developers address issues at particular sites. The case study teams included experts in environmental cleanup, transportation, real estate marketing, architecture and financing. The case study reports they produced proved instrumental in advancing development plans for two of the five case study sites and provided comprehensive documentation that will facilitate development of the remaining sites.

This success suggests the value of institutionalizing multidisciplinary brownfield teams--such as through a state supported technical assistance center--that could work with the private sector and government to advance development of key properties. In addition, NJTPA and NJIT have proposed a third phase of this project to continue the team approach to promoting brownfield redevelopment.

## 6.2.2 Local Acceptance

Opposition or indecision on the part of local governments in and around the port district has been a key barrier to increased freight related redevelopment of brownfields. Under New Jersey’s “home rule” law, municipalities have the final authority on approving and regulating development within their borders. Some officials and residents of towns close to the port actively oppose freight-related development because they believe it will add truck traffic to already congested roads, worsen pollution and degrade their town’s image and aesthetics without yielding substantial tax ratables. They hold out hopes for development similar to the mall, hotels and cinemas the City of Elizabeth has shown can be established even in long derelict industrial areas. One town is considering zoning changes to limit facilities generating truck traffic. Other towns, while not actively opposing warehouse redevelopment, have repeatedly delayed approvals of developer proposals.

Towns in and around the port district have long been burdened with the legacy of the last generation of industrial development. This includes abandoned and often dangerously contaminated properties as well as aging infrastructure. Local opposition to freight facilities tends to focus on the possible expansion of types of freight facilities associated with this industrial past, without fully recognizing the potential for the creation of the clean, modern and well-managed freight facilities that increasingly are being built around the country. These facilities tend to employ more workers and yield greater tax revenues than existing land uses in the port district. As noted in Section 5.6, impacts from trucking for many facilities may not be as significant as people suspect because most truck activity tends to take place in the early morning and late evenings or is spread out throughout the day. In addition, towns sometimes do not fully take into account the car and truck traffic associated with malls and other retail development.

Freight-related development in any case does not have to exclude retail, office and other non-freight uses favored by towns. The experience in Elizabeth has shown that transportation investments can be used to separate freight and other traffic, creating mutually compatible development zones. Transportation improvements facilitating access to

brownfield sites also can be the key to minimizing the negative impacts of increased truck traffic on communities. Transportation needs are discussed in Section 6.3.

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*Communities find themselves home to huge mountains of empty freight containers that dominate the landscape and fill properties that otherwise might be redeveloped for more productive uses.*

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If localities are to be enlisted in helping to create the kind of facilities that will be needed to ensure the efficiency of freight movement for the region, it is clear that outside support, resources and expertise must be mobilized to help them plan and develop brownfields within their borders. As noted above, improved state brownfield programs and teams of experts offering technical assistance could fulfill this need. Also, the region may have to explore new regional-level mechanisms for accomplishing comprehensive land use planning in and around the port district, as discussed in Section 6.3.2.

## 6.2.3 Container Storage on Brownfields

“Container mountains” have become a prominent feature of the port district skyline. These are the stacks of hundreds of empty containers, up to seven high, that have been created on large swaths of land near the port. This study estimates that 400 acres are now devoted to long-term storage of containers

These container mountains are the result of a shipping imbalance at the port, with a greater volume of imports than exports. Shipping companies find it cheaper to stack empty containers than to ship them back empty to their point of origin, often halfway around the globe to Asia. Terminal operators have contracted with third parties to move the empties from the terminal areas to offsite storage locations.

The practice has provoked opposition from communities, which find themselves home to huge, ugly stacks of metal that dominate the landscape and fill properties that otherwise might be redeveloped for



more productive uses. Not surprisingly, the mountains have strengthened local opposition to any and all freight related development, which officials fear will only attract more trucks and more containers storage.

The project team found evidence that the continuing build up of empty containers at the port was indeed crowding out other types of development. Because of the growing demand for land, container companies can offer property owners an immediate revenue stream, leaving the owners free to sell or redevelop their properties at a future date if more lucrative offers arise. This container storage leaves the land undeveloped for higher economic uses that would benefit the local community and region. For instance, one property owner was offered \$3,000 per acre per month for a 10-year lease on 13 acres. The site is in a prime location where a developer has offered to build a 330,000-square-foot warehouse, pending environmental clearance to proceed. For the landowner, a 10-year revenue stream is an attractive proposition compared to continuing to deal with the onerous requirements of site clean up. However, for the region it means that needed redevelopment of properties is being stymied, removing the potential for jobs and tax ratables. It also has made the entire port district less attractive to some developers who are wary of having such mountains as long-term neighbors.

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*The thrust of state law has been to establish a better balance between cleaning up the environment and promoting economic development . . . However, the case studies found significant barriers for redevelopment imposed by environmental regulation and bureaucracy.*

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While some container storage in and around the port is inevitable, the current level of storage appears harmful to prospects for realizing and sustaining increased trade. Over the long term, the Port Authority of New York and New Jersey foresees an increase in exports that will help alleviate the problem.

Nevertheless, it appears imperative that the region take steps in the meantime to reduce and control the current volume of empty containers stored at the port. A possible approach is suggested by steps taken by the

Port of Hampton Roads in Virginia. Empty containers there were accumulating in increasing numbers in terminal areas and taking up space needed for operations. Empty containers there were accumulating in increasing numbers in terminal areas taking up space needed for terminal operations. While some of the empties were shifted to offsite areas, as is done in northern New Jersey, port officials also negotiated a quota system with container carriers in early 2001. As a result, the number of containers dropped from a high of 14,000 to 6,500 several months later.

A similar quota system for northern New Jersey would require negotiations and close coordination among the state, communities, Port Authority, shippers, terminal operators and storage companies. Such an effort should be given high priority as clearing the port of growing container storage is a prerequisite for large-scale brownfield redevelopment.

#### 6.2.4 Environmental Regulation

New Jersey is among the leading states in the nation in promoting the redevelopment of brownfields. The state's actions include rewriting laws and establishing major agency initiatives and programs to facilitate redevelopment. In 1998, the state legislature adopted the Brownfield and Contaminated Site Remediation Act. This Act is intended to encourage the redevelopment of brownfield sites through a variety of mechanisms. The Act addresses four main areas: 1) liability protection for innocent developers; 2) financial incentives for redevelopment of sites; 3) technological barriers to redevelopment and 4) institutional issues. To further promote brownfield redevelopment, the NJDEP recently announced the creation of a new Office of Brownfield Reuse that will implement and serve as the focal point for the departments new brownfield programs. NJDEP's new brownfield policy is focused on reducing uncertainties and inefficiencies in existing site remediation regulations, broadening the scope of potential reuses for brownfield sites and working with communities to support area wide planning and redevelopment in municipalities that have multiple brownfield sites.

In general the thrust of this law and other state laws has been to establish a better balance between cleaning up the environment and promoting economic development. One of the most important aspects of these

programs has been to provide liability protection to parties who acquire contaminated land and voluntarily undertake remediation. It allows those seeking to buy a brownfield site to enter into a Memorandum of Agreement (MOA) with the NJDEP to perform the remediation after title is acquired.

If the clean up is performed in accordance with NJDEP standards, the state can issue a NFA along with a covenant not to sue the party performing the remediation. The covenant will provide protection from claims by NJDEP for further clean up for as long as the conditions imposed by the NFA letter are met. An amendment to the liability provisions under the state's Spill Act also protects potential buyers. Taken together, the covenant not to sue and the amendment to the Spill Act provide innocent purchasers of property with substantial protection from further cleanup costs once a response action has been completed. However, even though the state has provided statutory protection to purchasers of contaminated land, the case studies have shown that there are still significant barriers for redevelopment imposed by environmental regulation and bureaucracy. Some of these have been addressed in the new policy statements. The most important are:

- Slow response by NJDEP to redevelopment proposals and remediation programs that seek to integrate redevelopment with cleanup. To developers, time is money and if they are to take on the risk of redeveloping contaminated property, they want predictability in the review and approval process, as well as case managers committed to the end goals. The recently created Office of Brownfield Reuse and the Brownfield Task Force can provide the mechanism to allow focus on the sites.
- Changing and inconsistent application/enforcement of environmental standards and remediation cost calculation criteria. Developers of W/DCs operate on margins substantially less than those for retail and office buildings and therefore cannot afford additional costs added to the project once agreements have been reached. Normally, before beginning a project a developer will prepare a pro forma analysis that will attempt to account for and estimate all costs for the project. Once this is done, they expect to work within these boundaries in order to implement a profitable project.

- A laborious and proscriptive site characterization process that relies on outdated technology and procedures. More efficient site characterization methods have become available in the last few years that can provide accurate and complete site information in a more cost effective manner. Use of these techniques will remove much of the uncertainty associated with implementing cleanups. NJDEP is considering aspects of the Triad Approach within the context of Brownfield redevelopment and the Technical Requirements for Site Remediation.
- No further action (NFA) letters are the most critical item needed by developers to define end points and secure lender funding. Recent NJDEP policy appears to provide distinction between soil and groundwater NFAs. W/DC facilities integrate well with “industrial clean” type soil/surface cleanups. The new NJDEP policy of providing soil NFAs as a separate component of the cleanup process will allow the redevelopment to proceed without having to achieve cleanup of all media. By allowing an official soil NFA to be issued, the site can start generating revenue to fund the rest of the remediation.

## 6.3 Transportation

Accomplishing large-scale revitalization of brownfields to support goods movement will require investments in the regional freight transportation network. These investments are needed to resolve current congestion and access problems and to provide new options for efficiently moving freight in and around the port district and to external markets. The needed improvements range from reconfiguration of local roadways to facilitate access to individual sites to regional-level transportation projects like Portway to improve circulation throughout the port district to entirely new systems of goods movement such as the proposed use of barges for the Port Inland Distribution Network. These needed improvements and financing options are discussed below.

### 6.3.1 Site Access Improvements

The Case Study Findings (Section 5.1) highlighted a range of transportation issues facing property owners and developers seeking to redevelop brownfield sites in the region. As was noted, “While all the selected study sites are within close proximity to major interstate highways, active rail lines, navigable waterways and the important regional international ports of entry, each of the study sites face unique challenges in directly accessing the key regional transportation network that provides the link to the port and inter-modal facilities.” Among the challenges faced are inactive freight rail sidings, limited connectivity from local streets to major highways, poor geometric and traffic operational features of local roads, opposition to truck use from nearby residential areas and substandard bridge structures. Each case study report includes sections discussing site-level transportation access issues and potential solutions.

Transportation improvements -- more specifically, roadway improvements such as driveways, aprons and turnouts -- needed to provide immediate site access generally are the responsibility of the developer. For “off-site” or “off-tract” improvements, towns, counties and the state have developed traffic impact mitigation criteria for developers’ “fair share” contribution. While there are standard procedures and practices for allocating “fair share” costs, improvements are often negotiated. The State of New Jersey, through the adoption of the State Highway Access Code, has formalized the procedure and methodology for determining developers’ “fair share.”

Roadway improvements costs can escalate to the point that proceeding with development may not be financially attractive. Furthermore, developers often face delays in negotiating a satisfactory level of transportation enhancements and in submitting the necessary approval documentation (i.e. plans, studies). These are particularly relevant points for brownfield redevelopment, where owners also must consider environmental remediation costs.

While developers should be expected to construct improvements necessary to safely accommodate site traffic, mechanisms must be in place for implementing off-site improvements. The burden of these improvements cannot fall entirely on the developer of brown-

field properties nor the local community. New state transportation grant programs specifically targeted to brownfield sites and technical assistance provided to developers and municipalities may help to offset these costs. Additionally, greater flexibility for potential use of federal funds to improve access to industrial/freight distribution areas could provide additional resources in blending public and private funds into effective transportation enhancements. Finally, expediting the approval process related to transportation improvements for brownfield sites should be considered. Reduced transportation mitigation costs and more rapid turnaround from local, county and state reviewing agencies could help move brownfield redevelopment forward.

### 6.3.2 Portway/Highway Improvements

A number of transportation projects have been completed in recent years that are providing important benefits to the freight sector. A number of additional projects are underway or will be implemented with in the next few years. These include:

- Widening and rehabilitation of the Route 1/9 corridor in Newark, Elizabeth and Jersey City;
- Reconfigured ramps near the port/airport to I-78
- Replacement of the Doremus Avenue bridge (an initial element of the Portway project)
- Replacement of the Route 21 Viaduct in Newark
- Grade separation of the Express rail line in port Newark/Elizabeth
- Bridge rehabilitation and interchange redesign accessing Jersey Gardens Mall and the southern port area in Elizabeth
- Additional interchange and road improvements to separate freight and retail traffic in Elizabeth

In addition to these projects, the New Jersey Turnpike will redesign and upgrade Exit 12 specifically to facilitate truck movements. This project is key to the development of the planned Global Freight Village at Tremley Point<sup>1</sup> and the industrial park recently announced by the city of Carteret on one of the case study sites investigated by the BER project.

Despite this progress, additional major investments will be required to ensure that large volumes of freight can be unloaded, processed and moved efficiently. The most ambitious project on the drawing boards is the Portway Project. Portway is a 17-mile semi-dedicated trucking corridor that is intended to provide fast and efficient movement of goods between key port, airport and intermodal rail terminals. Portway will incorporate features such as overweight container handling capability and intelligent transportation systems (ITS) technology.

Portway potentially can provide the infrastructure backbone of a distribution corridor north and south of the Port/Airport Complex and also connect to the proposed marine terminal expansion in Jersey City and Bayonne. In the Phase I Market Analysis, Dr. Ricklefs envisioned Portway as the basis for a “string of pearls” freight distribution network. According to Dr. Ricklefs, “inland container yards surrounded by value-added distribution centers [could be] strung like ‘pearls’ along a dedicated freightway, or ‘strand’, connected to the marine container terminals” (Figure 6.1).

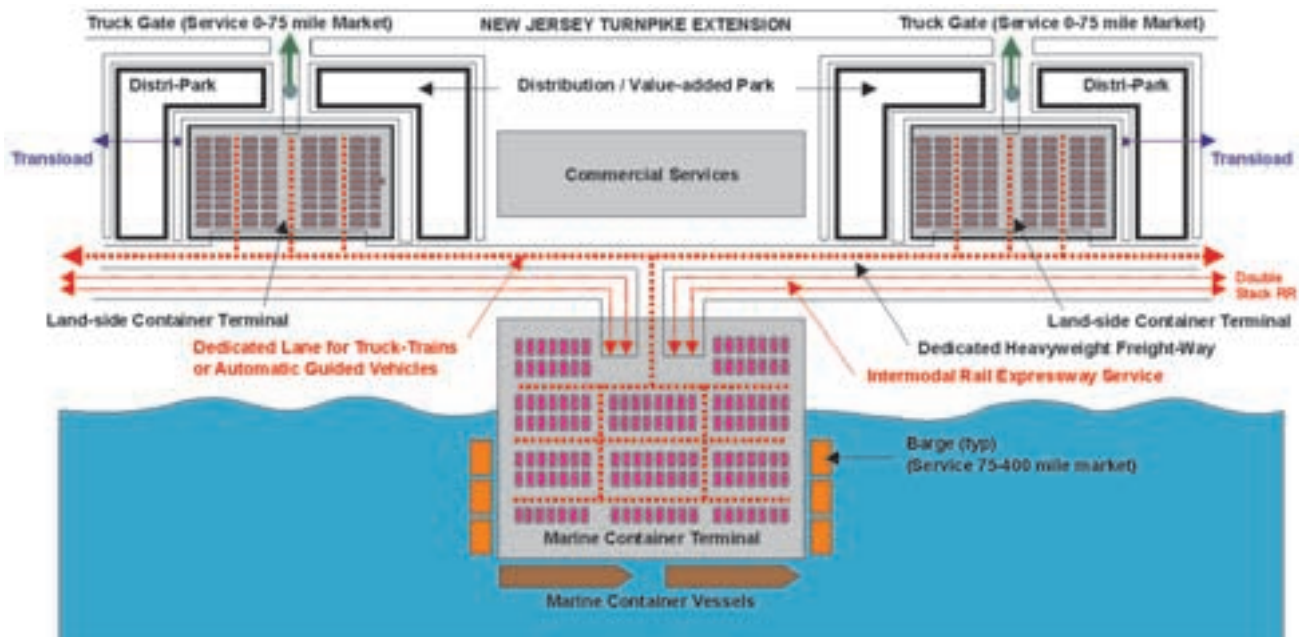
Portway thus could become an efficient means for moving overweight containers among freight-specialized industrial parks and distribution centers built on

brownfields in the port area. At the same time it would effectively relieve mounting congestion on local roads in and around the port district.

Portway is being built as a series of discrete projects, each of which must compete with other transportation priorities for funding. Phase 1 of Portway is estimated to cost \$800 million. Additionally, other major projects are under study for other phases that could potentially double or triple this cost. This funding will be difficult for the state to provide under current fiscal conditions. As discussed below in the Transportation Financing section (6.3.5), exploration of public-private financing or a fee on container movements for accelerating the Portway project appear warranted based on its potential importance.

Portway runs adjacent to a number of key brownfield sites and will enhance the redevelopment prospects for these sites by providing an efficient link to the regional transportation network (Figure 6-2). Future transportation projects should follow this example where a single improvement or set of improvements can stimulate new economic activity on a number of brownfield sites. Unfortunately, redevelopment of brownfield sites now tends to occur haphazardly with transportation improvements undertaken on a piecemeal basis. If large-scale brownfield redevelopment is

**Figure 6.1 “String of Pearls” concept for freight related redevelopment.**





to be achieved, a more orderly and proactive approach must be established. This includes greater cooperation among state, regional, local and community entities in coordinating transportation improvements with brownfield reuse proposals as well as achieving compatibility with local and regional development plans. This could be accomplished through improved regional level planning in the port district as discussed in Section 6.4.

Insuring that transportation projects serving brownfields receive necessary funding may require new policies at the state and regional level. The NJTPA's project prioritization system currently awards additional points to projects serving brownfields. However, it may be warranted to develop separate criteria for projects serving freight related brownfield redevelopment in the port district given their importance to the future of the region. Similarly, NJDOT should review its planning and funding policies to give greater attention to advancing these projects.

### 6.3.3 Rail

Many of the once-productive industrial sites in and around the port district contain rail rights of way and spur lines. Reconnecting these sites to the regional freight rail system often involves difficult hurdles, including the need to upgrade or replace rail lines and connect to a main line actively serviced by the Class One railroads (CSX/NS). Property owners/developers often have to engage a shortline railroad operator to build infrastructure and provide a connection to the interchange point.

The New Jersey Department of Transportation has a dedicated freight rail program but its funding has fluctuated over the years, generally not exceeding the current \$10 million per year. Most of the \$10 million goes to shortline railroad capital needs, such as increasing track weight capacity, repairing old bridges, etc. In addition, the state has allocated approximately \$1 billion per year for transit rail-related projects. Some of these investments indirectly aid freight traffic, as in the case where transit

**Figure 6-2. Selected brownfields along Portway route (in red) potentially available for freight related redevelopment.**



rail investments upgrade facilities that are jointly used by passenger and freight rail operators.

To provide an alternative to the inevitable reliance on trucking to serve the industrial and W/DC locations in the port area, larger freight rail capital needs must be addressed. The Class One railroads estimate that these needs will require \$150 million in expenditures over the next five years. Freight rail needs include the lack of adequate freight service time on sections of track shared with passenger operations, inadequate vertical clearances that limit doublestack trains, expensive local switching services, and insufficient tracks in industrial areas and rail yards. Norfolk Southern and CSX railroads have expressed a willingness to meet the state halfway in making the needed investments. Such a public-private partnership, they argue, would effectively double rail freight capacity in the region and at the same time reduce road congestion, improve air quality, and preserve the region's highways. In return for joining with the railroads in targeted investments, the state would have a right to insist that adequate service be provided to shippers who wish to use rail and are investing in the redevelopment of brownfield locations.

The Port Authority of NY&NJ has agreed to participate in funding a substantial portion of the needed \$150 million. The state has been asked to fund the remaining public sector match of \$50 million over the next five years. Thus, the state would need to appropriate an additional \$10 million per year over the next five years in addition to the maintaining or expanding the existing \$10 million allocated to shortlines and other needs.

These investments would insure the region could efficiently handle increased goods movement processed at W/DCs on revitalized brownfields in and around the port district. Increased land in the port district will also have to be set aside to meet the current and growing need for rail car storage and dry bulk materials storage facilities (Northern New Jersey is a big mover of dry bulk materials including minerals, lumber and plastics). In addition, while some physical track may no longer be suitable to accommodate today's rail vehicles, rights-of-way should be preserved as part of brownfield redevelopment plans to enable their future use.

A rail car's capacity is the equivalent of three or more truck trailers. That means efforts by the state to work with the major freight carriers and shortlines to address these needs could have another benefit – the reduction of overall truck VMT in the region.

While these efforts provide alternatives for reducing truck related congestion, short distance (i.e. less than 100 miles) movement of freight via conventional rail is usually not cost-effective for shippers. They rely on trucks for short trips but truck weights on public roadways in the United States are limited to 80,000 pounds. These restrictions are necessary to ensure the structural integrity and safety of our roadway system. This creates inherent inefficiencies for container transport via truck.

Alternatives to conventional rail and truck modes should be explored that could meet these challenges. Some companies, such as Titan Global Technologies, have explored innovative freight mover concepts, including one system, based on a "monorail" model, that would use an overhead freight container transport system constructed within existing road rights of way. While such systems have yet to be deployed or put under design, they could offer viable alternatives for short-range freight movement especially within several miles of the port district where traffic congestion limits mobility and where impacts of truck traffic on air quality and residential areas is of particular concern. Public and quasi-public transportation providers should work together with Titan Global Technologies as well as other companies, such as ABB Daimler-Benz Transportation, Bombardier Inc and MegaRail Transportation Systems to further explore use of innovative freight mover technologies for this region.

### 6.3.4 Barge/PIDN

Several brownfield sites identified during the course of the study are located along waterways. Although not suitable for ocean going vessels, several of these sites could be served via barge, offering an opportunity to reduce truck traffic on the region's roads. Sites that process bulk goods, raw materials or goods that are not time-dependent typically are good candidates for barge service. However, some value-added W/DCs could also be served by barge, particularly if they have favorable highway access.

Barges are slated to play a key role in the Port Authority's Port Inland Distribution Network or PIDN. As previously described, the PIDN would consist of several private inland container terminals located 100 miles or more from the port. Port officials envision as much as 40 percent of cargo arriving at the port being moved by barge or rail to these terminals. The Port of Rotterdam uses a similar system. The PIDN would greatly relieve congestion on regional roads and improve the throughput of existing port terminals without extensive expansion. A June 2001 article in *American Shipper* magazine stated "One barge route under consideration would go along the Hudson to Albany. The other could proceed through Long Island Sound and along the northeast

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*The Port Authority should explore an "Inner PIDN" comprised of satellite terminals near to the port that could help handle the large volume of containers destined for the local market.*

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coast to Rhode Island. The deck barges would serve roll-on/ roll-off or lift-on/lift-off traffic. Ro/ro barges can handle about 100 TEUs per barge, while lo/lo barges can carry up to 380 TEUs, stacked three or four high."

Recently, the Port Authority began exploring an "Inner" PIDN concept. This would involve establishing satellite terminals near to the port that could help handle the large volume of containers destined for the local market (within 75 miles). Containers would be transferred directly from ship to barge and moved to these nearby terminal sites, which would include distribution/value-added processing facilities served by truck and rail. In effect, the increasing volumes of port activity now concentrated in existing (and congested) terminal areas would be spread to additional sites throughout the port district and beyond that have access to the highway and rail transportation network. The BER study has identified three locations within the region that can perform this function. A concept for the Inner PIDN might include the following:

- Koppers Coke/Standard Chlorine/Diamond Shamrock tract (one of the case study sites investigated by NJTPA-NJIT) is located north of the

port and can be connected by existing rail to the Keegan Landfill. Collectively this is over 200 acres of land. The Koppers site already has about 1000 feet of access to the Hackensack River just upriver of the Wittpenn Bridge. There already is a barge dock on the property. Keegan Landfill has access to exit 15W on the New Jersey Turnpike and I-280, as well as rail. Thus containers could be barged to Koppers, rail transported to Keegan and shipped out via the Turnpike, I-280 or rail.

- Tremley Point, while not specifically investigated by this study, appears to be another potential off-port distribution center that is accessible by barge. There are more than 200 acres of brownfield land with dock facilities on the Arthur Kill. The New Jersey Turnpike Authority announced a major upgrade to Exit 12 in Carteret that will provide access to Tremley Point. Thus, container freight sent to distribution centers located on Tremley Point would be able to access the turnpike through an upgraded Exit 12. In addition, Union County is going to upgrade rail service in this area by consolidating the short lines under one operator, who will provide access to the Chemical Coast Line.
- The third potential location for an off-port distribution center (which would require further study) is Raritan Center in Middlesex County. This facility is already a major warehouse and rapid freight distribution area. It was an Army munitions storage and distribution center and the Army Corps of Engineers built a large dock on the Raritan River for barge traffic. This location has immediate access to the Turnpike, Rte 287 and Rte 440. Again, freight could be barged to this location, processed and shipped out through access to major roadways and a rail line. Additionally, there are two brownfield sites in Raritan Center with direct access to Industrial Way that would link directly to Rte. 287 and the Turnpike.

The BER study identified other sites and clusters of sites that with further study could be considered for use in implementing the Inner PIDN concept. This concept appears to hold much promise for easing congestion resulting from growth of port freight and achieving greater efficiency in port operations.

Whether the PIDN concept is advanced or not, the

State should work with the Port Authority and private interests to see that barge transport becomes a viable freight mode in the near future. Barge shipment could offer an attractive alternative to reducing vehicle congestion but it can only be successful if integrated as part of the site configuration and operation.

### 6.3.5 Transportation Financing

Transportation infrastructure improvements and, in some cases, capacity expansion are necessary to unlock the economic potential of brownfield sites. However, the transportation investments needed to underpin freight related brownfield reuse in the port district will be expensive, likely totaling in the billions of dollars. Funds from transportation authorities can be depended upon to underwrite some key needs. The Port Authority, for instance, will continue a \$1.8 billion agenda of improvements at port terminals (including Express Rail) and major upgrading of Newark International Airport (including air cargo facilities). The New Jersey Turnpike, in addition to its planned upgrade of Exit 12, is exploring a new or expanded exit near the port specifically to segregate port-bound freight traffic from other vehicular traffic entering a major retail centers nearby.

Other projects, however, must be funded with the limited state and federal funding available each year for transportation. Because of the many other competing state needs and priorities, this means that key freight projects – Portway, needed rail freight upgrades, interchange improvements and others – may take years to complete, threatening development of an efficient freight movement network. Options for bolstering funding for freight transportation must be seriously explored.

#### 6.3.5.1 Port Fees

One option may involve funding derived from port activities. The Port of Los Angeles/Long Beach (LA/LB) used this approach to underwrite half of the \$2.4 billion Alameda Corridor project, described in the Los Angeles Times as “a 20-mile rail cargo expressway linking the nation’s busiest harbor complex to train yards near downtown Los Angeles.” The LA/LB Port Authority issued \$1.2 billion in revenue bonds backed by a \$30 fee imposed on each 40-foot

container passing through the port (\$15 per TEU). The fee applies to all containers, even containers that do not transit the Alameda Corridor, except for containers trucked from the harbor to warehouses bound for domestic distribution. Shippers and port customers initially objected to the fees, but ultimately agreed to the additional costs because of the benefits of the Alameda Corridor project in speeding goods movement through the port.

It is not clear how such fees might be implemented in northern New Jersey. In general, courts have ruled that fees imposed by government on private businesses must be used for projects with a strong “nexus” to their business operations and impacts. LA/LB officials were able to avoid court challenges because of the demonstrable benefits of the Alameda Project for all containers moving through the port (even those moved by truck). However, the City of Los Angeles’ practice of using fees provided by the port for non-related expenses was struck down by the courts. In addition, a proposal by an area legislator to impose

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*A moderate container fee must be explored as a means for financing the targeted infrastructure upgrades necessary to accommodate huge future traffic growth and to take advantage of the economic promise of brownfield redevelopment.*

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additional fees on containers for general infrastructure improvements has been abandoned because of strong opposition from shippers. They argue that such fees make them less competitive with operators at other ports.

Northern New Jersey would likely face opposition from some shippers and port users to any fee on container movements or other port activity. However, it is not clear how strong such opposition would be and from which sectors it would come. Dr. Ricklefs in a February 2002 lecture on the “Role of Cost in Port Selection” pointed out that a number of other factors besides cost enter into decisions by shippers and companies about using particular ports. These factors include location of final consumer market, condition and availability of supporting landside infrastructure



(including intermodal options) and ability of local distribution companies to perform additional services. He noted that the market share for the New York-New Jersey port has been increasing despite the effects of the September 11 terrorist attack, the lack of a 50-foot channel depth, and higher labor and transportation costs. In effect, there is a certain price inelasticity in the demand for access to the port: companies may be willing to tolerate higher direct costs at the port in return for other advantages including the fact that the region is such a large consumer of goods, that it offers advanced intermodal infrastructure and that costs for trucking goods to the NY/NJ/CT metro region is much less than from any alternative port location. Therefore, he suggested, it might be possible to impose modest additional fees on port activities without jeopardizing the port's competitiveness.

Given port growth projections, a modest container "tipping" fee could be expected to generate millions of dollars for joint public/private improvements in nearby freight infrastructure. However, care would have to be taken in setting the fee. High fees imposed on port traffic would be sure to generate strong opposition and could lead to diversions to other ports that offer significant intermodal transportation alternatives, especially for cargo destined for hinterland markets.

Moderate container fees and other financing options must be explored as a means for achieving the targeted infrastructure upgrades necessary to accommodate huge future traffic growth and to take advantage of the economic promise offered by brownfield redevelopment. However, since financing freight infrastructure investments is a problem for ports around the country, federal legislation to authorize nationwide levies for this purpose may be warranted. These levies could be returned to the ports or the states on a prorated basis, depending on the amount of cargo generated by each port. These funds could also be allocated to special development authorities capable of providing targeted infrastructure improvements.

A national container tipping fee would put all ports on a more equal footing in their ability to undertake needed infrastructure improvements and contribute to a more efficient national goods distributions system. Such a national approach has been proposed in the context of Congressional bills requiring increased port security and the reauthorization of TEA-21. A

national approach to impose container fees at U.S. ports might provide a cost advantage to Canadian ports such as Halifax and Vancouver, but long-distance drayage fees from those ports could still offset most disadvantages in the shippers' calculations.

Even if a fee structure proves unworkable at a local or national level, shipping companies may be willing to make substantial contributions that, combined with state and federal funding, will achieve major beneficial improvements. Segments of Portway and even brownfield development projects along the Portway route may be ripe for well-crafted public-private partnerships.

### **6.3.5.2 FAST Model**

Efforts to cultivate such private sector participation could draw upon the successful model developed by the State of Washington to mobilize a broad state partnership behind a specific agenda of freight projects. Recognizing the progress being made in LA/LB in developing the Alameda Corridor project, officials at the Ports of Tacoma and Seattle in 1996 initiated the so-called Freight Action Strategy or FAST corridor program to select, fund and build key transportation projects. FAST became a formal body co-sponsored by the area Metropolitan Planning Organization (the Puget Sound Regional Council) and the Washington State Department of Transportation (WSDOT). It includes three counties, a dozen cities and towns, the ports of Tacoma, Seattle and Everett, state funding agencies, and the two major railroads (ex officio members). A multi-agency staff team known as the FAST Cast manages FAST. It consults with a Regional Freight Mobility Roundtable that includes many public and private sector participants.

FAST identified 15 projects — three truck access projects and 12 railroad grade separation projects — for a first phase totaling \$470 million. Originally, state legislators had intended to provide funding for the projects from motor vehicle excise taxes but a state anti-tax initiative in 1999 overturned these plans. Subsequently, FAST participants prepared a multi-year plan for funding the projects drawing upon state, federal, local and private sources. The high visibility given to the projects and the organizational resources focused on advancing them was responsible for garnering much of the needed fund-

ing, some of which came from Congressional earmarks. Most of the Phase I projects began construction in 2001. A Phase II agenda of projects is being formulated, valued at over \$400 million and focusing on truck mobility and access. The Regional Council calls FAST “a model for results-oriented planning based on broad-based partnerships including government and business.”

New Jersey already has many of the elements in place for replicating the FAST model. Like FAST, the IITC has been designated in TEA-21 as a national priority corridor eligible for special funding. Many of the public and private sector interests have participated in IITC and other forums discussing freight needs. The NJTPA (the region’s Metropolitan Planning Organization) has formed a Freight Initiatives Committee to begin prioritizing regional freight needs. State and local agencies and the region’s transportation authorities are actively involved in planning and addressing freight needs. What is required is to pull all these elements together to develop a common agenda of needed projects and concerted efforts to fund and implement them. The great economic stakes in improved freight transportation – revitalized brownfields supporting new economic opportunities and a cleaner environment — justifies extraordinary efforts to mobilize state resources behind a common freight vision.

## 6.4 - Comprehensive Planning

The dramatic growth of trade expected in the region will eventually induce the private sector to put in place many of the warehouse and distribution facilities needed near the port, airport and rail terminals. Government can accelerate this development activity by addressing the barriers to brownfield reuse and by implementing needed infrastructure improvements, as discussed above. Yet market forces alone may not create the kind of efficient freight distribution system needed in the region. The case studies have shown that private developers are best equipped to redevelop small and medium sized sites; large sites approaching 100 acres may remain vacant due to the scale of contamination and other complications facing developers. In addition, private-led redevelopment will tend

to take place on a piecemeal basis, one or two properties at a time, potentially perpetuating the haphazard and inefficient pattern of land use in and around the port district. Private-led development will also tend to lag behind the market, meaning that the region may not gain the capacity – or the ability to quickly create capacity – needed to attract and cultivate new business and achieve its full potential as an East Coast hub.

To address these issues, there is growing recognition of the need for comprehensive planning by government in partnership with the private sector to realize an overall vision for redevelopment in the port district. This vision would include orderly redevelopment of brownfields to take advantage of synergies between various types of land uses and freight businesses. It would also include upgraded infrastructure and new technologies to speed the circulation of goods within the district and to national and international markets.

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*Comprehensive planning by government in partnership with the private sector can realize an overall vision for port district. This would include orderly redevelopment of brownfields to take advantage of synergies between various types of land uses and freight businesses.*

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A framework for comprehensive planning in the port district was designated under federal legislation as the International Intermodal Transportation Corridor (IITC). The IITC initially centered on the port district in its first phase and was later extended from the George Washington Bridge along the I-95 corridor to Camden. It is seen as an economic zone of interlinked businesses including major New Jersey industries such as transportation, pharmaceuticals, telecommunications, petrochemicals and others, served by efficient goods movement infrastructure. The IITC contains most of the state’s freight terminals and has numerous brownfield sites throughout. NJIT has been designated as the research and resource center for studying the development of the IITC. Reclaiming brownfields and realizing more efficient land use are important goals of the IITC

Another comprehensive planning initiative is the Comprehensive Port Improvement Plan. This is a multi-jurisdictional analysis of landside and harbor needs related to the growth of the port. It will develop a broad based analysis and regional plan encompassing the entire bi-state port district and adjacent areas and conduct an Environmental Impact Statement under the guidance of the USEPA and the Army Corps of Engineers. Its management structure also includes a consortium of New York and New Jersey agencies.

The IITC and CPIP are intended to be advisory to local and regional planning bodies and have thus far focused on gathering data and analyzing trends to better understand issues affecting goods movement in the

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*The Port of Rotterdam’s Distriparks are oriented towards processing the massive volume of containerized goods passing through the port for distribution throughout Europe. The Distriparks can serve as models for the redevelopment of brownfields in the northern New Jersey port district.*

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port district. They also have consulted widely with officials and stakeholders in the port area. Increasingly, however, both efforts will have to grapple with more difficult “on the ground” matters – that is, looking at physical changes and transportation and land use issues in the port district and how can they be addressed. Some important considerations for shaping the future of the port district are present below.

#### **6.4.1 Development Models**

A number of public-private partnerships for freight distribution elsewhere in the United States and in Europe can serve as models for large-scale freight related brownfield reuse in the port district. The most familiar model is that of the industrial park. This is a cluster of modern buildings constructed based on a pre-existing plan, usually on 100 or more acres. Typically, the buildings have a uniform design and landscaping. Often a single owner or management company provides security, maintenance of roads and

common areas and other services. Industrial parks are often given a special zoning status as “Planned Unit Developments” by local governments allowing for expedited permitting and building approvals.

The Market Analysis conducted for Phase I pointed to the 350-acre Watson Industrial Center South property in the City of Carson, California (close to the Ports of Los Angeles and Long Beach) as a promising model for northern New Jersey. It includes 6.67 million square feet of space for numerous businesses engaged in valued-added processing of goods arriving in containers from the port. These businesses are housed in clean, modern buildings, ranging in size from 29,000 to 435,000 square feet, in a landscaped setting.

A number of industrial/office parks on the scale of the Watson Center exist in northern New Jersey. This includes major warehouse/distribution centers in the Meadowlands, Bayonne/Jersey City and Edison (Raritan Center). Public-private partnerships to develop additional centers on brownfield properties specifically for goods movement appear promising. Some of these parks could specialize in air cargo. In the “State of the Market Report” prepared for NJTPA-NJIT, Ann Strauss Weider cited the concept of an “aerotropolis” – “a cluster of logistics-related facilities around an air cargo hub used for shippers for just-in-time response” – which has been used in other regions of the country. The rail industry has its own vision. It has proposed creating a series of “Integrated Logistic Centers” along the rail spine of the Mid-Atlantic region containing light manufacturing, distribution centers, and storage facilities.

While the private sector is experienced with developing industrial parks, joint public-private comprehensive planning could guide where and how they are implemented, including siting along key transportation infrastructure to optimize goods movement efficiency (the “String of Pearls” concept discussed in Section 6.3.2). Government would have to play a key role in assembling properties, assisting in the creation of site plans, providing infrastructure, guiding and supporting environmental clean up and working closely with banks and private developers. Such industrial parks would insure systematic clean up of key brownfields and promote efficient use of land resources.

More ambitious models of development seek to adapt

industrial parks specifically to the needs of the freight industry and guide how and where business activity takes place to optimize goods movement logistics:

**Global Freight Villages:** Union County is currently pursuing the implementation of a “Global Freight Village (GFV)” in the Tremley Point area, which includes 150 to 200 acres of brownfields. A June 2001 report for the county pointed to the GFVs developed near major urban areas throughout Europe as a viable model for the county. Unlike industrial parks, the report notes, a Global Freight Village “is not a collection of independent operations in a defined geographic area. Rather, [it] represents a coherent and coordinated effort to provide transportation services” for freight purposes.<sup>2</sup>

Germany has established a network of Global Freight Villages. They are developed through a partnership between government and the private sector, which share both costs and profits. Companies in the villages coordinate their shipping operations. For instance, two companies serving the same area can combine deliveries in a single truck, avoiding “sending half-empty trucks to these areas and empty backhaul movements.”<sup>3</sup> The GFV (Güterverkehrszentren) in Bremen occupies 300 acres and is currently home to 40 companies employing 2,000 workers. Because of its proximity to the port of Bremerhaven, the Bremen freight village serves as a hub for distribution of international goods over a wide area. Other villages in Europe are more locally oriented, focusing on serving the freight needs of a single metropolitan area.

**Distriparks:** Three “Distriparks” have been established in the Netherlands adjacent to the Port of Rotterdam, which is Europe’s largest port and the freight hub for much of the continent. The Distriparks are similar to GFVs but oriented towards processing the massive volume of containers passing through the port. As such they have potentially great relevance to the northern New Jersey port district.

Established within the port’s Free Trade Zone, the three Rotterdam Distriparks at Maasvlakte, Botlek, and Eemhaven occupy 309 acres, 215 acres and 124 acres respectively. They are described as “Logistic parks with extensive facilities in a concentrated area.”<sup>4</sup> The Distriparks have become the principal European distribution centers for a number of large

corporations that either operate facilities there or contract with third party logistics companies for processing and distribution services. A key attraction is the availability of multiple modes of transportation: companies can use trucks, rail and barges to reach inland destinations and coastal shipping to reach smaller ports.

The Port Authority of Rotterdam has specifically encouraged value added operations in the Distriparks as a way to capture jobs and economic benefits from the flow of containers that otherwise might pass through the port unopened. These operations include repacking, labeling, weighing, assembling, quality control, just-in-time distribution, customs clearance etc.<sup>5</sup> The Port Authority has also established smaller industrial parks, called “Trade and Distribution Centres,” some miles away from the port to provide space for international companies that are not yet big enough for one of the Distriparks.

## 6.4.2 Planning Responsibilities

With appropriate commitments to comprehensive planning, there is little doubt that the northern New Jersey region could replicate aspects of the phenomenal success of the Rotterdam hub port. The region’s key assets for doing so include a confluence of multiple modes of transportation – rail, sea and air – in

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*To maximize brownfield reuse and goods movement efficiency, coordination of local plans and economic development policies with a comprehensive plan for the port district must be achieved. To this end, a planning entity for the port district could be designated.*

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proximity to thousands of acres of available land – mostly brownfields – that could be redeveloped based on the models of Distriparks, Global Freight Villages or California-style value-added industrial parks. Among other benefits, comprehensive planning could open up opportunities to use environmentally clean technologies, such as alternative fuel vehicles, “truck trains” and barges, for container movements within the port/airport district and nearby areas.



However, given the evolving real estate market in and around the port district and the lack of coordinated planning and institutional support, redevelopment by the private sector will continue to occur on a piecemeal basis. The window of opportunity for comprehensive planning may be short. Plans must be developed, funded and put into action over the next several years if a comprehensive vision for the port is to be realized.

Far-reaching institutional changes may have to be considered. One developer has suggested that local control over land use, permitting and other matters is at the root of many difficulties. Localities, he says, are too often guided by parochial considerations rather than regional interests and many times lack the expertise to adequately evaluate development plans. He suggests the state establish a development commission, similar to the New Jersey Meadowlands Commission, for the port district, with powers over land use and transportation. He also raised the possibility of establishing an authority with bonding capabilities for the port district. Such an authority could be the recipient of dedicated transportation fees discussed earlier in this chapter.

Establishing such an authority or commission would no doubt face very tall hurdles given state “home rule” policies governing development. Yet, if the region is to pursue comprehensive plans for the port district to maximize brownfield reuse and goods movement efficiency, coordination of local plans and economic development policies with the port wide plan must be achieved. To this end, a planning entity for the port district could be designated and possibly legally empowered by the state legislature. The comprehensive planning in the port district need not involve sacrificing the prerogatives of local jurisdictions. Instead, a “cross acceptance” approach, similar to that used in the State Development and Redevelopment Plan, could be pursued.

A high-level state commitment – accompanied by funding, staffing, legislated authority and mandates for interagency coordination – would be required to empower such an authority or planning entity. Even if such a commitment is not forthcoming, however, it appears essential to strengthen and expand the mandate of an existing state agency or other institution to provide the coordination among all levels of govern-

ment and the technical resources and expertise in planning, transportation modeling, environmental clean up and financing needed to support economic development in the port district.

The NJTPA, as the federally designated Metropolitan Planning Organization for the region, will continue to provide technical support, oversight and guidance for transportation planning and project development in the port district and wider region. It will work closely with its neighboring MPOs (the New York Metropolitan Transportation Council and the Delaware Valley Regional Planning Commission), as well as state and regional planning agencies to accomplish the best planning practices within the port district, the IITC and other freight-intensive areas.

Whatever institutional arrangements are ultimately made for shaping the future of the port district, it appears essential that the state begin now to give priority attention to addressing the needs in the district. Forces must be put in motion to ensure that the current unprecedented opportunities for brownfield reuse and economic growth are not squandered.

<sup>1</sup> Plans for a transfer station for New York City garbage at Tremley Point had been expected to accomplish extension of rail service to area. With the increasing likelihood that these plans will not be realized, the county is investigating other approaches to funding the needed rail access.

<sup>2</sup> Planners Diversified. *An Analysis of the Potential for a Global Freight Village in the Tremley Point Area of the City of Linden*. Prepared for the Union County Department of Economic Development. June, 30, 2001.

<sup>3</sup> Roberts, Richard. *A Commentary on the Draft Final Market Analysis Report*. Evaluation report prepared for NJTPA-NJIT Brownfield Economic Redevelopment Project, Phase I. March 2001.

<sup>4</sup> Port of Rotterdam: [www.portofrotterdam.com](http://www.portofrotterdam.com)

<sup>5</sup> Abbey, Douglas D.; Twist, David C. and Koonmen, Leo J. (of AMB Investment Management, Inc.), “The need for speed: Impact on Supply-Chain Real Estate.” *Future*, (A Publication of the Urban Land Institute) January 2001.

# Section 7 - Conclusions & Recommendations

## 7.1 Conclusions

The following statements identify the main conclusions drawn from the two phases of the BER study. These conclusions are the basis for the position that redevelopment of brownfield sites in the port district is essential for continued development of the port, airport and rail terminals and the economic health of New Jersey.

### **1. A network of warehouse/distribution centers (W/DCs) is needed near the port, airport and rail terminals to support the projected growth of goods movement.**

All projections indicate that the port, airport and rail terminals will continue to experience increased freight volumes. This growth will accelerate once the channels are dredged. A network of modern W/DCs in the port district is needed to process and distribute the freight efficiently to the consumer base.

### **2. There is sufficient brownfield property within the port district (25 mile radius) to provide the land necessary to build the required W/DCs.**

The port district is one of the industrial cores of northern New Jersey. Inventories compiled as part of this study have shown that within the urban environment of the port district thousands of acres of former industrial sites are available to build the required network of W/DCs.

### **3. The economic, environmental and social benefits that can be realized by New Jersey from linking brownfield site reuse with trade growth (freight related reuse) are tremendous.**

The redevelopment of brownfield sites in the port district for freight uses will allow New Jersey to derive greater economic benefits from increased international trade flowing through its terminals. Modern W/DCs have few negative environmental

impacts, are well designed and provide needed jobs for low to moderate-income urban workers.

### **4. Market demand for modern high tech W/DCs in close proximity to the port, airport and rail complexes is strong and growing**

Discussions with developers, realtors and end users during the preparation of the case studies indicate there is a growing demand for modern high tech distribution centers close to the port, airport and rail terminal complexes. This demand is driven by improvements in logistics technology/management, increasing costs to transport goods to and from W/DCs on the urban fringe, "time definite" business practices and the need for ready sources of labor.

### **5. Transportation access is critical for freight related redevelopment of brownfield sites.**

Northern New Jersey has a very sophisticated highway transportation system. Additionally, rail and marine transportation are also available. However, the transportation infrastructure serving many of the brownfield sites in the port district identified by this study has fallen into disrepair and may be only marginally suitable for new development. Therefore, regional transportation projects, such as Portway and the upgrade of New Jersey Turnpike Exit 12, are critical to providing improved access to these sites and integrating them back into the regional transportation system.

### **6. Substantial barriers to freight related reuse must be overcome to realize large-scale brownfield redevelopment.**

The case studies identified an array of barriers that must be addressed and remedied before freight related brownfield reuse can be fully realized. These are identified and discussed in detail in this report and recommendations are provided to address them. Public officials must act on these recommendations if the region is to realize the economic, environmental and social benefits provided by an efficient freight dis-

tribution system supported by brownfield redevelopment.

**7. Coordinated and comprehensive regional and state level planning is needed to assure that sufficient W/DCs are built on brownfield sites in the port district to support the growth of freight traffic through the region.**

While it is likely that market demand alone will prompt some freight related brownfield redevelopment, it will likely be done in a poorly coordinated manner that will mean higher costs and lost opportunities for realizing synergies in redeveloping properties and building supporting infrastructures. However, if the anticipated development can be managed on a comprehensive regional scale, then the ports, rail terminals and W/DCs can be linked to an integrated system that will benefit all of northern New Jersey.

## 7.2 Recommendations

The following recommendations are based on and summarize key points discussed in Section 5 - Analysis of Findings. They are intended to spur further study and action by public and private entities with jurisdiction over brownfield reuse. The recommendations are organized into three areas (reflecting the topic headings in Section 5): Barriers, Transportation and Comprehensive Planning.

### 7.2.1 Barriers

#### 7.2.1.1 Redevelopment Climate

*Narrow the “development gap” between brownfield and greenfield properties by passage of Assembly Bill 2585 and other measures.* State agencies and local governments should do more to see that the costs of redeveloping brownfield properties are reduced to make them more competitive with greenfield properties. Assembly Bill 2585 will improve financing options and other policies to facilitate brownfield reuse.

*Provide the resources, staff and authority necessary to ensure the effective implementation of the initiatives of the McGreevey Administration to promote brownfield redevelopment.* A range of recent initiatives by the Administration appear promising for facilitating brownfield reuse including new policies and programs within NJDEP, a new cabinet level body on Smart Growth, a new Office of Smart Growth, and revitalization of the State Brownfield Redevelopment Task Force. These are very ambitious initiatives that must be provided sufficient resources, staff and authority to make them effective. Brownfield redevelopment must also be made a priority throughout state government.

*Establish a state supported multi-disciplinary brownfield technical assistance center to advance redevelopment of key properties.* The NJTPA-NJIT study has demonstrated that multi-disciplinary teams of experts – knowledgeable in environmental cleanup, transportation, real estate marketing, architecture, financing etc. – can be effective in helping private owners and developers address issues at particular sites. Such teams should be formalized and funded to see that freight related brownfield reuse is accomplished in the port district.

#### 7.2.1.2 Local Acceptance

*Educate public and private officials on the benefits of clean, modern freight facilities on brownfields.* Education and outreach activities are needed to counter the negative perceptions about freight related redevelopment. Attractive, modern and well-managed freight facilities can help address critical needs, including providing recession-resistant jobs (with a range of skill levels) and tax rates. Such an approach can lead to better, updated local development plans.

*Take innovative approaches to addressing negative impacts of freight.* Well planned transportation improvements can remove truck traffic away from residential areas. Innovative approaches, such as the use of short rail links, barges and even freight mono-rails, can be explored for the movement of containers in the port district. Natural gas-powered truck drayage of freight containers can help address air quality issues, especially over short distances.

### 7.2.1.3 Container Storage

**Reduce container storage on vacant land in the port district.** While some containers storage in and around the port is inevitable, the current level of storage is harmful to prospects for brownfield redevelopment and sustaining increased trade. One approach would be to make long-term container storage financially unattractive through taxes or fees on stored containers. An alternative would be for the state, communities, Port Authority, shippers, terminal operators and storage companies to cooperate to reduce and control the current volume of empty containers, possibly replicating the quota system used by the Port of Hampton Roads in Virginia. Local zoning could also be employed. Over the long-term, the region should explore technology solutions such as recycling containers as scrap metal or for other uses.

### 7.2.1.4 Environmental Regulation

**Create incentives and policies within NJDEP to “champion” priority brownfield sites.** Currently all contaminated sites within the NJDEP Site Remediation Program are handled through the case management system. Many case managers are overwhelmed or do not see the need to expedite a particular site at the expense of others. However, all the case study sites have a substantial potential, if reused, to provide economic development for surrounding communities and the northern New Jersey region, particularly if they are linked to freight and logistics growth. Thus there is a need for a program and policies that will allow key sites to be “championed” so their redevelopment can be expedited. The new NJDEP Office of Brownfield Reuse and the revitalized Brownfields Task Force may be the solution, but they need to be empowered with the authority to take on the key sites and make important decisions.

**Improve the characterization approach for brownfield sites.** The key to brownfield redevelopment is time and cost management. The current site characterization process is laborious, costly and time consuming. New technologies have become available in the last few years that if used in a strategic manner can vastly improve the site characterization process. We recommend that the Triad Approach be strongly considered as an alternative to traditional characterization method for brownfield sites. If used correctly

by experienced practitioners this process will increase the level of information collected, allow for more precision in remedial design and costing and reduce time and cost of site investigations. Perhaps, a separate brownfield “path” can be established that will allow practitioners to use these methods under certain circumstances. Additionally, the “Star Program” can be a mechanism for certifying practitioner expertise in the area.

**Effectively implement the new policy of issuing media-specific NFAs.** Media specific No Further Action letters (NFAs) should be issued as elements of the remediation process are completed. These should be specific enough to give developers the confidence that they can move forward with the construction of a building. With regards to W/DC redevelopment, since the building and paved areas will become important components of the engineering controls, the remediation should be integrated with the redevelopment design and a soil NFA issued once a base cap has been completed. Recently NJDEP has issued Policy Directive 2002-003 which among other things, specifically states:

The Department shall issue No Further Action Letters for soils when remediation of soils at a brownfield property is complete, but groundwater contamination may remain. The Department shall issue No Further Action Letters for groundwater when a Classification Exception Area has been established for a brownfield site and natural attenuation has been approved as the appropriate remedial action.

Thus the NJDEP has taken steps to solve this situation. The policy change is a positive step directly supported by the case study findings and steps should be taken to insure it is effectively implemented.

**Integrate NJDEP brownfield programs and activities with those of state entities responsible for brownfield redevelopment.** Case studies have demonstrated that comprehensive coordination of the various state programs is necessary to expedite brownfield projects with freight related reuse. The revitalized Brownfield Task Force will allow for the integration to take place if it is empowered with the ability to focus on sites and bring all state resources to bear. Furthermore, NJDEP must consult closely with its



partners in brownfield redevelopment, which are the Office of Smart Growth, the Economic Development Administration, the Brownfields Taskforce and NJDOT.

## 7.2.2 Transportation

### 7.2.2.1 Site Access

**Provide public funding to help offset costs for brownfield access improvements.** New state transportation grant programs specifically targeted to brownfield sites and technical assistance provided to developers and municipalities may help to offset the cost of transportation improvements which sometimes are a barrier to redevelopment.

**Advocate greater flexibility in the use of federal transportation funding for brownfields.** Greater flexibility for potential use of federal funds to improve access to industrial/freight distribution areas through the federal TEA-21 process could provide additional resources for blending public-private funds into effective transportation enhancements.

### 7.2.2.2 Portway/Highway Improvements

**Better coordinate transportation improvements with brownfield redevelopment.** Transportation improvements in the port district are often undertaken on a piecemeal basis. A more orderly and proactive approach must be established to insure that transportation improvements contribute to brownfield reuse. This includes greater cooperation among state, regional, local and community entities. This could be accomplished through improved regional level planning in the port district.

**The Portway project should be accelerated and the Portway concept development study should incorporate a brownfield redevelopment perspective in its route and infrastructure assessments.** This project could become the efficient means for moving overweight containers among freight-specialized industrial parks and distribution centers built on brownfields in the port. At the same time it would effectively relieve mounting congestion on local roads in and around the port district. Measures to finance an accelerated schedule should be explored.

**Give funding priority to transportation projects serving freight related brownfield reuse in the port district.** To accomplish this, these projects could be accorded greater weight under NJTPA's project prioritization system. In addition, NJDOT should review its planning and funding policies affecting these projects.

### 7.2.2.3 Rail Improvements

**Expand funding for rail freight.** The state has been requested to fund a substantial portion of the estimated \$150 million needed to upgrade the regional freight rail system. These investments would ensure the region could efficiently handle increased goods movement processed at W/DCs on revitalized brownfields. In addition, increased funding is needed to fund shortlines, which are crucial to providing rail access to smaller companies.

**Preserve rail rights-of-way.** While some physical track may no longer be suitable to accommodate today's rail vehicles, rights-of-way should be preserved as part of brownfield redevelopment plans to enable their future use.

**Explore alternative innovative freight transportation modes.** Within this region, trucks provide the principal mode for transporting freight short distances. Unfortunately, roadways are becoming increasingly congested, making such movements costly and inefficient. Short line rail can divert some truck trips, but only on a very limited basis. Therefore, other means of transporting goods safely and efficiently such as freight "monorails" and other innovative technologies should be explored.

### 7.2.2.4 Barge/PIDN

**Implement the use of barges for moving freight containers and give priority attention to developing the Inner PIDN concept.** Freight barges hold great promise for providing fast and cost-effective means for goods movement. The state should work with the Port Authority and private interests to see that barge transport begins in the near future so that this mode of transportation will be available for integration by private developers into future freight facilities throughout the region. The Inner PIDN concept of using barges to feed satellite container terminals/distri-

bution centers in and around the port district deserves priority study.

### 7.2.2.5 Transportation Financing

*Explore supplementing public funding for freight infrastructure with a modest fee on container movements or other port activity.* While such a fee may present legal and competitive difficulties, similar levies have been imposed elsewhere, notably for the Alameda rail corridor project at the port of Long Angles/Long Beach. A modest fee is unlikely to result in an appreciable loss of trade given the locational and other advantages offered by the port.

*In concert with other states, pursue new national funding programs for freight infrastructure.* A national port user fee to fund infrastructure projects would help bolster the ability of all ports to accommodate increased trade. This and other new funding policies should be explored as part of the reauthorization of TEA-21, the nation's principal surface transportation law.

## 7.2.3 Comprehensive Planning

### 7.2.3.1 Development Models

*Encourage development of freight related industrial parks.* Public-private partnerships could establish strategically placed freight industrial parks to optimize goods movement and realize large-scale value-added goods processing, creating new jobs for urban residents. Viable models for this development are the industrial parks near West Coast ports and the Global Freight Villages in Europe – particularly the Distriparks near the Port of Rotterdam.

*The Port Authority should explore expanded hours of operation at the port to maximize the opportunity for freight transportation during non-peak periods.* This will not only help reduce traffic congestion and increase port efficiency but allow the port to support the operation of nearby warehouse/distribution centers which will operate on multiple shifts.

### 7.2.3.2 Planning Responsibilities

*Establish a mechanism to achieve comprehensive planning in the port district.* This could involve creating a new body or designating an existing agency to guide the development and implementation of a comprehensive plan and to coordinate this plan with local master plans and economic development policies. The body could be a formal authority, with bonding capabilities; a land use commission similar to those now in place in the Meadowlands and Pinelands areas; or a more limited coordinating entity possibly using a “cross acceptance” approach to coordinating development activities.

## 7.3 - The Case for Freight Related Brownfield Reuse

This report has made clear that there is a vital need to accomplish increased redevelopment of brownfields for freight purposes near the port, airport and rail terminals in northern New Jersey. Private sector companies, responding to market forces, are already leading the way in developing these facilities. Yet the extent of this reclamation activity – together with the form it takes, its location and its timing – could still leave the region without the kind of efficient landside freight distribution system needed to support and sustain its role as a East Coast “hub port.”

The private sector faces many difficult barriers – environmental, financial, legal and logistical – to accomplishing brownfield redevelopment. Left unaddressed, these barriers are likely to leave many key properties, particularly the largest and most contaminated, undeveloped. In addition, there is growing pressure to redevelop prime properties for purposes other than freight handling, including retail outlets and offices. The region has a window of opportunity over the next several years to achieve large-scale and well-planned freight related redevelopment in and around the port district. The stakes for doing so are potentially great:

**Economy** – The northern New Jersey port (together with the nearby airport and rail terminals) is a powerful economic engine for the region that has

continued to grow even through the current economic downturn. The dramatic growth in trade projected to accompany the completion of dredging could provide even wider economic benefits. Yet the port is facing stiff competition from other East Coast ports that have the land and infrastructure near to port facilities to move large volumes of goods quickly and efficiently. Failure to use close-in brownfields to match these advantages could greatly dampen future growth, leaving the northern New Jersey as a regional rather than national freight hub.

**Transportation** - Development of port district W/DC facilities engaged in receiving containers, sorting contents, performing value-added activities and reshipping goods via truck or rail, promises an efficient use of the region's transportation system. The alternative is transporting containers over already congested roads to far-off facilities and later shipping a large share of the goods back over these same roads to the core of the metro area. The increased miles of vehicle travel will add to infrastructure maintenance costs, harm regional air quality and worsen roadway congestion.

**Smart Growth** - Facilitating the W/DC development near the port and airport will reduce pressures for greenfield development in environmentally sensitive areas of the state. Such development is now threatening to overtake wider and wider areas. Bringing brownfields back to productive use will help revitalize urban areas.

**Employment** - Development of new W/DC facilities engaged in value-added processing of goods promises to provide a large pool of unskilled and semi-skilled jobs within easy commuting distance of urban areas where unemployment is the highest. It will help offset the continuing steep decline in manufacturing jobs.

**Community Development** - Towns near the port and airport can realize new, secure (recession-resistant) rentals and jobs for residents from the development of modern W/DC facilities. The experience on the West Coast indicates that such facilities typically are clean and well run to insure efficient operations. Potential negative impacts, such as increased truck traffic over local roads, can be minimized through planning and strategic infrastructure investments.

These stakes were starkly depicted in the original proposal for this study by considering two alternative futures for the region:

1) Freight traffic doubles over the next decade creating welcome economic benefits for some business sectors but many freight businesses move operations to "greenfields" on the fringes of the region and in neighboring states. Open space in these areas is consumed by sprawl development. Long-distance trucking of goods to and from the core port district increases, compounding already difficult congestion, worsening air quality and wearing out aging infrastructure. Residents of urban areas near the port are left with precious few job opportunities as former industrial sites sit idle and crumbling. Ultimately, the region's problems depress further growth in trade and economic development.

2) Many businesses taking part in the expansion of trade in the region redevelop and locate in abandoned industrial brownfield sites scattered in and around the port district and along major routes leading to it. Upgraded transportation infrastructure allows goods from these businesses to move efficiently around the region with truck trips kept to a minimum distance while facilitating maximum use of rail intermodal services to more distant markets. Regional air quality improves. Residents of Newark, Elizabeth and other urban areas gain access to a host of new job opportunities as warehousing, packaging and other freight related companies expand operations nearby. Cities gain new rentals allowing reinvestment in infrastructure, school systems and neighborhoods. Ultimately, the progress of the region attracts further growth in trade and economic development.

The first scenario is the likely outcome of an unguided and haphazard response to events. The second scenario, as discussed in this report, can be achieved through a broad-based, coordinated planning effort to encourage freight businesses to locate in the region's brownfield sites.