HARBORING POLLUTION

The Dirty Truth about U.S. Ports

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ABOUT NRDC

The Natural Resources Defense Council is a national, nonprofit environmental organization with more than 1 million members and online activists. Since 1970, our lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and the environment. NRDC has offices in New York City, Washington, D.C., Los Angeles, and San Francisco. Visit us on the World Wide Web at www.nrdc.org.

ABOUT THE COALITION FOR CLEAN AIR

The Coalition for Clean Air is a nonprofit organization dedicated to restoring clean healthful air to California by advocating responsible public health policy; providing technical and educational expertise; and promoting broad-based community involvement. For more information about the coalition's work, visit www.coalitionforcleanair.org.

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Overview

Marine ports in the United States are major hubs of economic activity and major sources of pollution. Enormous ships with engines running on the dirtiest fuel available, thousands of diesel truck visits per day, mile-long trains with diesel locomotives hauling cargo, and other polluting equipment and activities at marine ports cause an array of environmental impacts that can seriously affect local communities and the environment. These impacts range from increased risk of illness, such as respiratory disease or cancer, to increases in regional smog, contamination of water, and the blight of local communities and public lands.

Most major ports in the United States are undergoing expansions to accommodate even greater cargo volumes. The growth of international trade has resulted in corresponding rapid growth in the amount of goods being shipped by sea. Despite the enormous growth within the marine shipping sector, most pollution prevention efforts at the local, state, and federal levels have focused on other pollution sources, while the environmental impacts of ports have grown.

Marine ports are now among the most poorly regulated sources of pollution in the United States. The result is that most U.S. ports are heavy polluters, releasing largely unchecked quantities of health-endangering air and water pollution, causing noise and light pollution that disrupts nearby communities, and harming marine habitats.

This report assesses efforts at the 10 largest U.S. ports to control pollution, and provides an overview of policy and practical pollution mitigation recommendations. A follow-up report, to be published in summer 2004, will offer detailed analysis of our technical recommendations for the benefit of port operators, regulatory agencies, and community-based environmental and health advocates.

AIR POLLUTION FROM PORT OPERATIONS

The diesel engines at ports, which power ships, trucks, trains, and cargo-handling equipment, create vast amounts of air pollution affecting the health of workers and people living in nearby communities, as well as contributing significantly to regional air pollution. More than 30 human epidemiological studies have found that diesel exhaust increases cancer risks, and a 1999 California study found that diesel exhaust is responsible for 71 percent of the cancer risk from air pollution.[1] More recent studies have linked diesel exhaust with asthma.[2] Major air pollutants from diesel engines at ports that can affect human health include particulate matter, volatile organic compounds, nitrogen oxides (NOx), ozone, and sulfur oxides (SOx).

Primary Air Pollutants of Concern

Particulate matter pollution, or PM, ranges from coarse dust kicked up from dirt roads to tiny sooty particles formed when wood, gasoline or diesel is burned. At ports, construction and daily operations often create coarse PM, but it is the tiniest PM that causes the greatest health hazards. Much of this fine PM—so small it is invisible to the eye—comes from diesel engine exhaust. Less than ⅟₂₀ the diameter of a human hair, fine PM can travel deep into the lungs, landing in the delicate air sacs where oxygen exchange normally occurs.[3] Numerous studies have found that these fine particles impair lung function, aggravate such respiratory illnesses as bronchitis and emphysema, and are associated with premature deaths.[4] Dozens of studies link airborne fine-particle concentrations to increased hospital admissions for asthma attacks, chronic obstructive lung disease, pneumonia, and heart disease, including an increased risk of heart attacks.[5] School absenteeism due to respiratory symptoms has also been linked to PM pollution.[6]

Volatile organic compounds (VOCs) are often toxic, and when they evaporate into the air they can react with other pollutants to form ground-level ozone, commonly referred to as smog. Common VOCs produced by diesel engines include benzene, 1,3-butadiene, formaldehyde, and toluene, each of which poses significant health risks, including cancer and birth defects.[7]

Nitrogen oxides (NOx) are a family of chemicals, including nitrogen dioxide, nitric acid, nitrous oxide, nitrates, and other related compounds. They can cause a wide variety of health problems, including respiratory distress, and react with VOCs in the atmosphere to create ozone. A number of studies have found that NOx can have a toxic effect on the airways, leading to inflammation and asthmatic reactions.[8] In fact, people with allergies or asthma have far stronger reactions to common allergens, such as pollen, when they are also exposed to NOx.[9]

Ozone, also known as smog, is a reactive gas produced when VOCs and NOx interact in sunlight and split apart oxygen molecules in the air. The layer of brown haze it produces is not just an eyesore, but also is a source of serious illnesses. Ozone is extremely irritating to the airways and the lungs, causing serious damage to the delicate cells lining the airways. It contributes to decreased lung function, increased respiratory symptoms, asthma, emergency room visits, and hospital admissions.[10] Ozone can cause irreversible changes in lung structure, eventually leading to chronic respiratory illnesses, such as emphysema and chronic bronchitis.[11]

Burning fuels that contain sulfur, such as diesel and especially marine diesel fuels that have a high sulfur content, produce **sulfur oxides** (SOx). Sulfur oxides include sulfur dioxide, PM, and a range of related chemical air pollutants. SOx react with water vapor in the air to create acids that irritate the airways, sometimes causing discomfort and coughing in healthy people, and often causing severe respiratory symptoms in asthmatics.[12]

In addition to the pollutants discussed above, there are other air pollutants that threaten public health that are not discussed in this report, including carbon monoxide (CO), formaldehyde, heavy metals, dioxins, and pesticides used to fumigate produce.

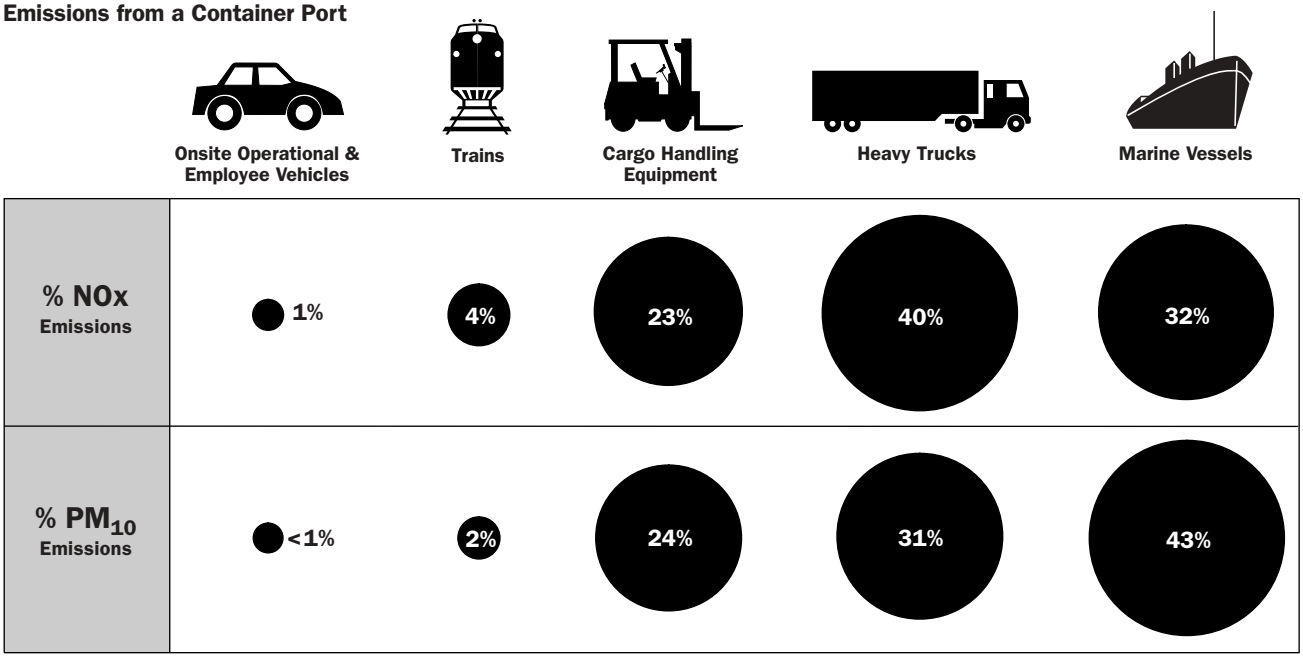
The Effect of Port-Related Air Pollution on Human Health

The health effects of pollution from ports may include asthma, other respiratory diseases, cardiovascular disease, lung cancer, and premature death. In children, these pollutants have been linked with asthma and bronchitis, and high levels of the pollutants have been associated with increased school absenteeism and emergency room visits. In fact, numerous studies have shown that children living near busy diesel trucking routes are more likely to suffer from decreased lung function, wheezing, bronchitis, and allergies.[13,14,15]

Many major ports operate virtually next door to residential neighborhoods, schools, and playgrounds. Due to close proximity to port pollution, nearby communities face extraordinarily high health risks from port air pollutants. Many of these areas are low-income communities of color, raising environmental justice concerns.

In the Los Angeles area, oceangoing ships, harbor tugs, and commercial boats such as passenger ferries emit many times more smog-forming pollutants than all power plants in the Southern California region combined.[16] And growth forecasts predicting trade to triple by 2020 in the Los Angeles region mean that smog-forming emissions and diesel particulate pollution could severely increase in an area already burdened by the worst air quality in the nation.

FIGURE 1
Average Contributions of Various Port-Related Sources to Total Nitrous Oxide (NOx) and Particulate Matter (PM_{10}) Emissions from a Container Port



Sources:
Marine Vessels Emissions Inventory (Ports of Los Angeles and Long Beach), ARCADIS, Sept. 1999. Appendix G, pg. 6, 2000 forecast—Marine Emissions Inventory and Table 4-2, page 4-2.
The New York, Northern New Jersey, Long Island Nonattainment Area Commercial Marine Vessel Emissions Inventory, Volume 1—Report, Prepared by Starcrest Consulting Group, LLC, for the Port Authority of NY & NJ, April 2003.
The Port of New York and New Jersey Emissions Inventory for Cargo Handling Equipment, Automarine Terminal Vehicles, and Associated Lcomotives, Prepared by Starcrest Consulting Group, LLC, for the Port Authority of NY & NJ, June 2003.
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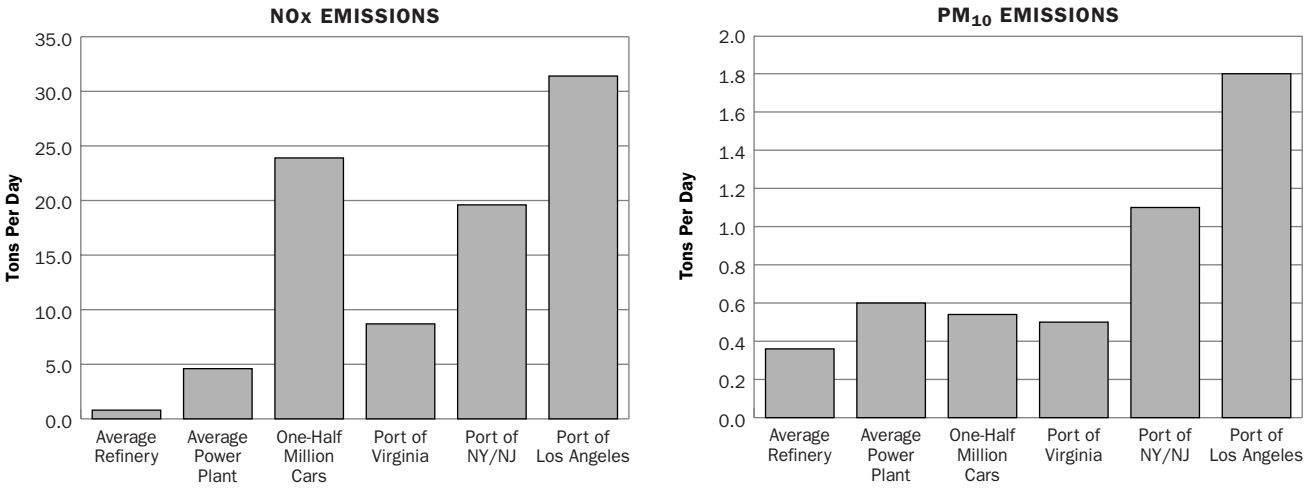
Port of Oakland Final Environmental Impact Report, Berths 55-58 Project, SCH. NO. 97102076, Appendix C: Emissions Calculations, December 1998.

Nationally, the proportion of pollution from commercial ships is growing due to the lack of regulation. This category of pollution is expected to account for one-fifth of all diesel soot generated in 2020, making ships the second-largest source nationwide.[17] Indeed, as Figure 1 shows, marine vessels contribute an average of 34 percent of NOx and 44 percent of PM emissions from ports alone.[18] While new trucks are fairly clean compared to other diesel sources, the local trucks that serve container ports tend to be much older than the long-haul truck fleet, and therefore more polluting. Figure 1 also shows that diesel trucks are the second-largest source of port emissions today. Locomotives and cargo-handling equipment are also extremely polluting compared to on-road trucks due to their much more relaxed emission standards—in some cases 15 times more polluting. While there is only a limited amount of cargo-handling equipment at ports compared to tens of thousands of trucks that can service a port in a single day, this pollution source on average contributes almost a quarter of the emissions of NOx and PM at ports. Locomotives are a relatively small contributor to overall port emissions; however, most of the large railyards serving ports from Long Beach to Virginia are significant pollution sources *outside* of port property, and therefore not included in overall port emissions.

Although cars, power plants, and refineries are all well-known, large sources of pollution, Figure 2 demonstrates that the air pollution from ports rival or exceed these sources. This can be attributed to varying degrees of regulations. Pollution from cars, power plants, and refineries are somewhat controlled, whereas port pollution has continued to grow with almost no regulatory control. The Port of Los Angeles is the

FIGURE 2
Nitrous Oxide (NOx) and Particulate Matter (PM_{10}) Pollution from Ports Compared to Refineries, Power Plants, and Cars



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Energy Information Administration, Petroleum Supply Annual 1982, Volume 1, DOE/EIA-0340(82)/1 (June 1983, Washington, DC), pp. 97-103 and and Petroleum Supply Annual 2000, Volume 1, DOE/EIA-0340(2000)/1 (Washington, DC, June 2001), Table 40; and company press releases; as posted at www.eia.doe.gov/emeu/finance/mergers/refcap_tab2.html.
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largest West Coast port, while the Port of New York & New Jersey is the largest East Coast port. The Port of Virginia represents other large ports such as Savannah, Houston, and Seattle. Figure 2 highlights emissions of NOx and PM because these pollutants are associated with very severe health impacts. Despite very conservative assumptions used to calculate port emissions, ports out-pollute some of the largest sources, begging the question: Should ports be regulated like other large sources of pollution?[19]

WATER POLLUTION FROM PORT OPERATIONS

Port operations, including waste from ships that is either dumped directly or leached into water, can cause significant damage to water quality—and subsequently to marine life and ecosystems and human health. These effects may include bacterial and viral contamination of commercial fish and shellfish, depletion of oxygen in water, and bioaccumulation of certain toxins in fish.[20]

Primary Threats to Water Quality

Bilge is water collected at the bottom of the hull of a ship–water that is often contaminated with oil leaking from machinery. Bilge water must be emptied periodically to maintain a ship's stability and to prevent the accumulation of hazardous vapors. This oily wastewater, combined with other ship wastes such as sewage and wastewater from other onboard uses, is a serious threat to marine life.[21]

Antifouling additives are often added to the paint used on ships to prevent the growth of barnacles and other marine organisms on ship surfaces. Some of these additives contain tributyltin (TBT), a toxic chemical that can leach into water.[22] While toxic antifouling additives are slowly being phased out of use, these toxic pollutants persist in the marine environment. Alternatives to TBT are in ample supply.

Stormwater runoff is precipitation that travels across paved surfaces. It can accumulate deposits of air pollution, automotive fluids, sediments, nutrients, pesticides, metals, and other pollutants. In fact, urban stormwater runoff from all sources, including marine ports, is the largest source of impairment in U.S. coastal waters and the second-largest source of water pollution in U.S. estuaries.[23] Virtually all of the land at a port terminal is paved, and therefore impervious to water.

When water bodies are overloaded with nitrogen, algae and plankton can rapidly increase in numbers, forming "blooms" which are sometimes called red or brown tides. This process, called **eutrophication,** has been identified by the National Research Council as the most serious pollution problem facing estuaries in the United States.[24] As major sources of NOx, ports are major contributors to eutrophication.

In the year 2000, 8,354 **oil spills** were reported in U.S. waters, accounting for more than 1.4 million gallons of spilled oil. The majority of these spills occurred in internal and headlands waters, including the harbors and waterways upon which ports rely.[25] A large share of oil contamination is the result of "chronic" pollution from such sources as port runoff, unloading and loading of oil tankers, and the removal of bilge water—resulting in up to three times as much oil contamination as tanker accidents.[26] However, large, "catastrophic" spills also have a significant impact.

Dredging is a routine activity of ports to remove sediment that builds up in ship channels from erosion and silt deposition. Dredging also creates new channels and deepens existing ones. Each year, more than 300 million cubic yards of sediment in waterways and harbors are dredged to allow ships to pass through.[27] About five to 10 percent of dredged sediment is contaminated with toxic chemicals, including polychlorinated biphenyls (PCBs), mercury and other heavy metals, polycyclic aromatic hydrocarbons (PAHs), and pesticides—all of which can cause water contamination and complicate sediment disposal.[28] Dredging may also increase water turbidity (cloudiness), harm habitat, and disturb or kill threatened and endangered species. It may also risk stirring up and releasing buried contaminants.

These various forms of water pollution cause a broad range of environmental problems, including loss of critical wetlands areas, water sedimentation that harms important habitat (seagrass beds, in particular), collisions involving boats and marine mammals, and marine life exposure to debris, including plastic bags, netting, and plastic pellets.

LAND USE PROBLEMS AT PORTS

The highly industrialized operations at ports are often in close proximity to residential areas, creating nuisances and hazards for nearby communities. Ports have several available options to avoid developing new terminals near residential areas. They can develop property previously used in an industrial capacity, or they can increase efficiency of land use at existing terminals. The land use patterns at U.S. ports suggest much room for efficiency improvements. Of the 10 largest U.S. ports, even those that are most efficient in terms of land use, Long Beach and Houston, are four times less efficient than the Port of Singapore, a model of land-use efficiency.

One positive approach to land use is for ports to focus their expansion efforts on brownfields, or tracts of land that have been developed for industrial purposes, polluted, and then abandoned.[29] The potential costs of cleaning up brownfield sites makes them less appealing to companies looking to locate or expand, and as a result, new industrial operations are often sited on pristine, undeveloped "greenfield" land. This often leads to a loss of habitat and wildlife, increases in air and water pollution, and urbanization of open space valuable for its recreational and aesthetic qualities.[30] However, developing brownfields offers many advantages to business, communities, and the environment. Businesses benefit from locating on sites near existing transportation infrastructure, and with a utility infrastructure already in place, while cleaning up contamination that poses a danger to both the community and the environment.[31]

PORT COMMUNITY RELATIONS

Ports can be very bad neighbors. In addition to the air and water pollution problems they create, they can be loud, ugly, brightly lit at night, and a cause of traffic jams. These problems can go beyond simple annoyance to cause serious negative health effects. For example, noise pollution has been linked to hearing impairment, hypertension

(high blood pressure), sleep deprivation, reduced performance, and even aggressive behavior.[32] At ports bordering residential neighborhoods, bright lights at night and the flashing lights of straddle carriers and forklifts can affect nearby residents, disrupting biological rhythms and causing stress and annoyance.[33,34]

In addition to the negative effects experienced by people, noise from ship engines may disturb marine mammal hearing and behavior patterns, as well as bird feeding and nesting sites.[35,36] Similarly, artificial lights at ports, sometimes burning 24 hours a day, can have negative effects on wildlife, including disorientation, confusion of biological rhythms that are adapted to a day/night alternation, and a general degradation of habitat quality. This pollution can cause high mortality in animal populations, particularly to birds attracted to brightly lit buildings and towers and that circle these structures until they die of exhaustion or run head on into them.[37,38]

Ports can also be bad neighbors by ignoring residents of the communities living next door, or making little or no effort to solicit community input into port operational decisions that will directly affect the life of the community and its residents. Many U.S. ports have developed decidedly hostile relations with their neighbors, not just because of the pollution the ports produce, but because they have consistently ignored residents of nearby communities, refusing sometimes even to share critical information about possible effects of port operations.

Environmental Report Cards for 10 U.S. Ports

The 10 largest U.S. container ports whose operations are the substance of this report are individually analyzed and evaluated in the pages that follow. A grade of "A" reflects the authors' judgment that the port is employing model environmental practices, especially with respect to air pollution, and a grade of "'F" reflects our judgment that the port's practices render it an environmental hazard. (See *Grading Legend,* below, for a specific description of the meaning of each grade and see *Appendix* for grading methodology.) In addition to an overall grade for each port, we calculate separate grades for four categories: air quality, water quality, land use, and community relations.

To be as objective as possible in our evaluation, the grading system intentionally does not factor in the regional air or water quality surrounding a port. The methodology also does not account for the proportional contribution of a port's operations to that region's air or water quality. The grading system was primarily

GRADING LEGEND

A The port has fully implemented a wide range of pollution mitigation and prevention programs and has clearly established community relations, public health, and the environment as top priorities.

B The port has demonstrated some success in reducing impacts to health and the environment through a number of implemented programs; however, considerable work remains to address the full breadth of pollution from its operations and community concerns.

C The port has taken initial steps to implement mitigation and/or prevention programs and has started to consider impacts to public health and the environment; however, the port has fallen woefully short in addressing the full extent of pollution generated by its operations and community concerns.

D The port has taken few steps, if any, to create and implement mitigation or prevention programs to reduce its impacts on public health and the environment, and has virtually ignored the voice of neighboring communities.

F The port has demonstrated a reckless lack of concern for public health and the environment.

designed to evaluate each port's current programs and other efforts based on their scope, degree of completion, and effectiveness in reducing environmental and public health effects from the port's current operations and future projects.

The following ports were graded, chosen because they ranked as the 10 largest ports in 2001, in terms of container throughput:[1]

1. Los Angeles, California
2. Long Beach, California
3. New York–New Jersey (the Port Authority of New York & New Jersey)
4. Charleston, South Carolina
5. Oakland, California
6. Hampton Roads, Virginia[2]
7. Seattle, Washington
8. Savannah, Georgia
9. Houston, Texas
10. Miami, Florida

We collected information on individual ports from the port authorities, community members, environmental and community groups, as well as from articles and other media outlets. In some cases, available information was insufficient, or we noted conflicting information from various sources—usually between a community source and the port itself. In addition, several ports did not provide answers to all questions, despite at least six months of lead time and numerous reminders. In those cases, grades may be slightly lower for the lack of information. Grades should therefore be understood as a general indicator of the environmental performance of the 10 ports.

In many cases, ports earned low grades in particular areas, even though they may have implemented a long list of environmental programs. In practice, many beneficial environmental programs have the cards stacked against them because their impact can do little to offset the much larger environmental threat posed by other, less environmentally friendly practices at the same port. For example, carpooling programs reduce air pollution and traffic congestion, but at their best, they cannot be expected to make a significant dent in the massive amounts of air pollution some ports generate. The lion's share of air pollution comes from other port-related sources—ships and other vehicle traffic at the ports. These larger sources could be made significantly cleaner, in the case of air pollution, by using cleaner fuels and other pollution control options.

Ports were evaluated based on their implementation of the best practices (see Table 1), where applicable.

We awarded credit toward air quality grades based on potential pollution reductions from each measure reported to be in practice at a port. The use of pollution control equipment, cleaner fuels, electric rather than fossil fuel power, significant infrastructure improvements, and replacements or engine repowers of old vehicles, equipment, locomotives, and ships counted the most toward air quality grades.

We based water quality grades mainly on best practices for stormwater controls, water quality monitoring, and oil spill and pollution prevention. However, we were

TABLE 1
Grading Criteria

AIR QUALITY

- **Cleaner yard equipment and cranes:** alternative fuel use, cleaner fuels and emission controls, electrified gantry cranes, new technology demonstrations
- **Reduced emissions from ships and harbor craft:** shoreside power (electricity) for docked ships, tugboat repowers, cleaner ships and marine fuel, ship speed limits, opacity enforcement on smokestacks
- **Reduced truck emissions:** incentive funding program, program to reduce traffic, including mode shifts to barge and rail, idling reduction efforts
- **Locomotive/rail improvements:** cleaner locomotives and fuel, on-dock rail, freight rail improvements, intermodal terminal on-site
- **Other:** community air monitoring, alternative fuel programs, PM control from dry bulk cargo, funding for off-site air quality improvements, special studies, emission inventories, carpool programs

WATER QUALITY

- **Water quality monitoring:** frequent monitoring, extensive monitoring for toxics, targeted monitoring after storm events, monitoring by independent party
- **Oil spill prevention:** personnel trained in spill response, maintain spill kits at terminals, awareness and prevention programs, frequent inspections on fuel related facilities, recurring safety meetings with the Coast Guard, prohibited waterside refueling (bunkering)
- **Stormwater control/treatment:** Stormwater Pollution Prevention Program (SWPPP) in place, pollution prevention training, reductions in stormwater runoff and stormwater retention, stormwater treatment, terminal inspections, annual site evaluations
- **Other:** progressive dredging practices and safe dredge disposal, wetlands and habitat restoration above mitigation requirements and well planned ship waste disposal policy, toxics reduction program (or financial support for one), progressive ballast water policies, water recycling, use of nontoxic pile-driving lubricant

LAND USE

- Avoid expansion on greenfield or otherwise inappropriate sites
- Maximum use of existing space resources before expanding
- Reuse of brownfields, industrial and/or unwanted property
- Proper disposal, storage, and cleanup of toxic materials
- Terminals located near transportation infrastructure
- Terminals located in naturally deep harbor or close to entrance of shallow harbor

COMMUNITY RELATIONS

- Community outreach and opportunity for public input, and public access to information
- Buffering for residential areas, including distance between residential and port development
- Avoid development against public sentiment or with disproportionate impacts on low-income communities of color

OTHER FACTORS

- Green ports or sustainability programs
- ISO 14001 (an environmental standard) certification or Environmental Management Systems
- "Environmental awareness" training
- Energy efficiency
- Public access and parks
- Bikeways
- Recycling program
- Organic and native landscaping program
- Attention to historic preservation

unable to assess water quality based on performance. Instead, the water quality program elements were evaluated based primarily on information provided by the ports. Other programs that affect water quality, such as wetland restoration, dredge disposal, and ballast water policies were factored into the water quality grade, where information was available.

Land use grades for the ports were based on terminal locations in relation to residential neighborhoods, transportation infrastructure, and harbor entrances.

TABLE 2
Port Grades[a]

Environmental Criteria	Los Angeles	Long Beach	NY/NJ	Charleston	Oakland	Hampton Roads	Seattle	Savannah	Houston	Miami
Air Quality	C+	C+	C	F	B–	F	C–	D	D	F
Water Quality	C–	C+	D+	B	B	B	B–	F	C+	D+
Land Use	D+	C–	B–	C–	C	B–	A–	C–	F	C
Community Relations	D	D	C+	F	C+	C+	D	B–	F	C
Overall Grade	**C–**	**C**	**C+**	**D+**	**B-**	**C+**	**C+**	**D+**	**F**	**C–**

[a] The overall grade for each port is not always equal to an average of the four subcategory grades because of extra credit from the other factors categories.

Efficiency of operations and reuse and/or remediation of industrial land were also significant factors considered.

We based grades for community relations on interviews with community members, where that was possible, as well as on port outreach and public input processes and the overall history of the port's efforts to address community concerns.

In surveying community groups, environmental advocates, and port staff, we discovered many programs that fell outside of our list of recommended best practices were still worthy of mention. Environmental Management Systems (EMS), bikeways, recycling, energy efficiency, green building, and public access were among the many elements forming the basis for small amounts of "extra credit" contributing toward a port's overall grade. We are particularly encouraged by widespread recycling, community parks, and EMS programs in place at many ports; however, these programs should not be viewed as replacements for substantive reductions in pollution levels or other adverse impacts from port-related activities. All of the ports reviewed need to focus more on substantive programs to reduce air pollution, protect water quality, conserve land, and improve community relations.

Grades for each of the ports are summarized in Table 2. Detailed descriptions of environmental programs and activities factoring into the grades for individual ports follow.

Port of Los Angeles

REPORT CARD	Total Grade: C–
Air Quality	C+
Water Quality	C–
Land Use	D+
Community Relations	D

The Port of Los Angeles is the largest port in the nation. If combined with the adjacent Port of Long Beach, the two ports would qualify as the third-largest port in the world.[3] The Port of Los Angeles has 30 major cargo terminals and covers 43 miles of waterfront and 7,500 acres of land and water.[4,5] Mainly as a result of lawsuits filed by local community groups, the port has taken a few commendable steps to mitigate environmental and health impacts and rehabilitate the industrialized landscape. Thus far, the port's efforts have failed to offset the cumulative effects of its colossal operations and continued expansion.

Summary of Findings

Although the Port of Los Angeles has undertaken a variety of commendable air quality and environmental mitigation projects, the port has not proactively sought to mitigate its severe public health effects on neighboring and inland communities. The port's relationship with local communities is dismal. While the community was hopeful that the positive settlement to litigation over the port's China Shipping terminal would change the dynamic between the port and its neighbors, this change (see *Victory Over China Shipping Expansion,* page 14) has yet to manifest itself. For the unmistakable and extremely harmful environmental effects of its operations, the Port of Los Angeles earns an overall grade of "C–" for having fallen woefully short in addressing the full extent of its pollution and community concerns.

AIR QUALITY

The Los Angeles area, long dubbed the smog capital of the nation, continues to suffer from what is arguably the worst air quality in the country. The city is in serious non-attainment with federal air quality standards for particulate matter (PM) pollution, and is in extreme non-attainment with the health-based standard for ozone.[6] In combination with the neighboring Port of Long Beach, the Port of Los Angeles is a major contributor to traffic congestion and diesel PM emissions, drawing more than 40,000 diesel trucks every day, a figure expected to approximately triple by 2025. During that same period, container throughput is expected to quadruple.[7]

Residents of the adjacent communities of San Pedro and Wilmington are already plagued by severe acute (short-term) and chronic (long-term) respiratory illnesses, and suffer from some of the highest levels of cancer risk in the Los Angeles region.[8]

Because of the port's major contribution to air pollution and its rapid expansion undertaken without adequate mitigation, the port earned a "C+" for air quality. Until the port completes implementation of the programs described below and includes sufficient, meaningful mitigation for all expansion projects, a higher grade cannot be warranted.

Cleaner Yard Equipment and Cranes

With allocated funds from port revenues and grants from the California Air Resources Board and the South Coast Air Quality Management District (SCAQMD), the port has taken initial steps to clean up its approximately 800 pieces of mobile diesel yard equipment. The port has ordered and received 585 diesel oxidation catalysts (DOCs) for installation on a variety of yard equipment, including yard tractors, side and top picks, and forklifts.[9] However, no DOCs have been installed to date. Additionally, the number of container terminals using emulsified diesel on 100 percent of their yard equipment has dropped from four to two.[10] In the future, after installation of the DOCs, 30 percent of the port's 800 pieces of yard equipment are expected to run on emulsified diesel in combination with a DOC. This combination is expected to reduce PM and NOx emissions by an estimated 50 percent and 20 percent, respectively.[11]

The Board of Harbor Commissioners for the Port of Los Angeles also signed a resolution in 2003 to require new and significantly renegotiated leases to use alternative fuel yard tractors or the cleanest diesel technologies available.[12]

Finally, the port's 57 shiploading cranes and 10 of its approximately 70 rubber-tired gantry cranes (RTGs) run on electric power.[13] An additional 20 RTGs are using emulsified diesel, while the remaining approximately 40 RTGs still run on diesel.[14]

The South Coast Air Quality Management District has identified the Ports of Los Angeles and Long Beach as the #1 stationary source of air pollution in the region.

Reduced Emissions from Marine Vessels

In November 2002, the Mayor of Los Angeles announced the "alternative maritime power" (AMP) program, which will allow ships to plug into electric power while docked, thus enabling them to turn off their auxiliary diesel engines.[15] Although the city of Los Angeles signed a Memorandum of Understanding (MOU) with six shipping lines to participate in the development of the AMP program, implementation has been slow. However, the port has now legally agreed to electrification of the docks at the China Shipping terminal. Once implemented, AMP would be the first application of this technology at a container terminal and would serve as a model for the rest of the world. The port should show its commitment to AMP beyond the legal settlement, however, by requiring the use of electric power for all future terminal expansions. Additionally, the port signed multiple agreements with shipping lines to use lower sulfur diesel (as low as 15 parts per million) fuel while at dock. That said, only one shipping line is currently using 0.2 percent sulfur content or 2,000 parts per million sulfur diesel fuel for its ships while at berth.[16]

With the assistance of California's Carl Moyer program, the majority of the approximately 45 tugboats servicing the ports of Los Angeles and Long Beach have been retrofitted with cleaner diesel engines, reportedly reducing aggregate NOx emissions by more than 80 tons per year—roughly the equivalent to the amount of NOx emitted from 4,600 passenger vehicles.[17,18,19,20] Six of the 12 tugboats based at the Port of Los Angeles have the capability to plug into electrical power while not in use.[21]

Finally, along with local, state, and federal environmental regulatory agencies, the Los Angeles Board of Harbor Commissioners and individual shipping associations signed an MOU calling for a voluntary vessel-speed reduction program that has achieved a 1.1 ton per day reduction in smog-forming NOx emissions.[22] However,

VICTORY OVER CHINA SHIPPING EXPANSION

In 2001, the Natural Resources Defense Council and the Coalition for Clean Air partnered with local community groups in a lawsuit against the Port of Los Angeles, charging that the port failed to conduct an Environmental Impact Report (EIR) before constructing container-handling facilities at a 174-acre terminal the port leased to the China Shipping Holding Co.

Residents and environmental groups emerged victorious following a favorable decision by the state Court of Appeals, and secured a settlement that required preparation of an EIR, a commitment to significant mitigation, and the payment of $50 million over a four-year period for environmental mitigation measures.

As part of the settlement, all of the yard tractors used at the terminal will run on cleaner alternative fuels, and at least 70 percent of the ships using the terminal will run on electric power while at berth—instead of running their diesel engines. In addition, the port committed to replacing two existing 16-story cranes with lower-profile cranes that are approximately half the height.

The stipulated judgment allocates the mitigation funds as follows:

- $20 million for air quality improvements
- $20 million for aesthetic improvements, including the creation of parks in nearby communities
- $10 million toward the Gateway Cities project to promote the replacement of old diesel trucks that serve the port with cleaner-burning models

An additional $5 million will be spent by the port to retrofit tenants' vessels, allowing the vessels to use electricity while docked at the berths.

The settlement is a monumental victory for local communities.

Source: *Natural Resources Defense Council, Inc. et. al. v. City of Los Angeles, et al.,* Stipulated Judgment, Case No. BS 070017, Superior Court of the State of California, County of Los Angeles, Mar 6, 2003.

the program is voluntary and the compliance rate has slowly decreased below 50 percent so the emission reduction benefits of this program could change.[23]

Reduced Truck Emissions

As part of the China Shipping settlement, the port was required to invest $10 million in a local program, called the Gateway Cities project, to modernize the trucks that serve the port. This program reduces diesel truck emissions through pollution controls and upgrades to newer trucks. As a result of the settlement, more than 80 trucks servicing the Port of Los Angeles have been modernized with the port's funds.[24,25] Truck idling may also be reduced as a result of appointment or queuing systems required by a recent California law.[26] Since implementation of this program in July 2003, however, complaints have arisen about queues being moved inside terminal gates to circumvent the law and avoid penalties.

Rail and Locomotives

The Port of Los Angeles has four intermodal rail yards that have helped decrease the number of truck trips in and out of the port. Unfortunately, a year after completion, the $2.5 billion Alameda Corridor connecting the ports of Long Beach and Los Angeles with inland distribution hubs continues to operate at less than half capacity, and so has not

helped alleviate freeway congestion as anticipated.[27] Meanwhile, the port continues to support expansion efforts of the major arterial freeway leading to the ports, which runs through communities already disproportionately affected by port operations.

Other Programs

The Port of Los Angeles began purchasing and operating alternative-fuel vehicles in 1996. In 1999, the Port of Los Angeles instituted an alternative-fuel vehicle policy for its port-owned fleet (approximately 200 vehicles). With the assistance of funding from the SCAQMD, the port has since replaced 45 passenger vehicles and light-duty trucks, as well as 12 heavy-duty construction vehicles with alternative fuel vehicles.[28,29] The vehicles run on compressed natural gas (CNG), liquefied petroleum gas (LPG or propane), or dual-fuel engines.[30,31] The Port of Los Angeles is also preparing an emissions inventory that is expected to be completed by the end of the first quarter of 2004.[32] Finally, as a result of community group lawsuits, the port is in the process of preparing a suite of environmental studies assessing traffic, air and water quality, aesthetics, health risks, and noise effects at the port.[33]

Retrofitting approximately 45 tugboats with cleaner diesel engines reportedly reduced smog-forming NOx emission by more than 80 tons per year—roughly the same amount of NOx emitted from 4,600 passenger vehicles.

AIR QUALITY ▶ IMPROVEMENTS REQUIRED

Despite these programs, the Port of Los Angeles continues to be a major source of air pollution in the region. The port should improve air quality by implementing its resolution requiring new yard tractor purchases to run on alternative fuel; expanding funding for retrofits or repowers of all existing, dirty diesel trucks; implementing the planned program to allow docked oceangoing ships and all tugboats to shut engines down and plug into dockside power; continuing the transition to cleaner fuels and pollution controls in tugboats and other harbor ships; offering incentives for cleaner locomotives serving the port and a greater effort to move freight via on-dock rail; capitalizing on existing rail capacity to alleviate the need to further expand highways in disproportionately affected communities; requiring ships to use the lowest sulfur content fuel possible (15–2,000 parts per million sulfur) while hoteling (until AMP is available) and cruising in coastal waters; addressing traffic congestion; and, finally, implementing electrification strategies for diesel trucks to end engine idling.

WATER QUALITY

The Port of Los Angeles earned a "C–" grade for its poor record on water quality issues, a reflection of the port's failure to do much beyond the minimum required by law, and its poor response to community complaints.

For more than 30 years, the port has conducted monthly water quality monitoring for basic parameters such as oxygen content and temperature. Additionally, responsible parties at the port conduct water quality monitoring to meet the obligations under industrial stormwater, municipal stormwater, and National Pollutant Discharge Elimination System (NPDES) permits requirements.[34] This level of monitoring, however, only meets minimum requirements and does not include extensive monitoring for toxics or targeted monitoring after storm events.

Cranes at the Port of Los Angeles are a looming reminder of how highly industrialized and noisy port operations often encroach on neighboring communities.

In particular, the port has not quantified toxic pollutant input into San Pedro Bay from stormwater runoff and deposition of airborne toxics that originate from port-related activities, nor have they characterized the effect of these toxic pollutant inputs on sediment quality, water quality, or aquatic life within San Pedro Bay.[35]

Furthermore, San Pedro Bay has been significantly degraded from sewage, industrial, and cannery waste discharges, as well as from surface water runoff directly into the harbor.[36] One of the most notable examples of water quality degradation relates to petroleum coke (a cancer-causing black powdery byproduct of petroleum refining) and coal transport facilities at the Port of Los Angeles.[37] For years, piles of the greasy coke, hundreds of feet high, stood completely uncovered immediately adjacent to San Pedro Bay.[38] In one area, 10 feet of coke and copper concentrates were found covering the bay's bottom, extending approximately 200 feet from shore. These piles have since been enclosed, pursuant to a rule adopted by the South Coast Air Quality Management District, and 300,000 cubic yards of sediment are proposed for removal.[39,40,41]

San Pedro Bay is widely known as home to the Consolidated Slip—one of the worst toxic hot spots in the nation. Although the Consolidated Slip falls within its boundaries, the port has not actively pursued clean up.[42] The port has maintained that upstream sources of runoff from the city of Los Angeles must be addressed first; however, as a department of the city of Los Angeles, the port has failed to work with the city to make its municipal stormwater program more stringent, specifically so the port can remove the worst sediment toxic hot spot in California.[43] Furthermore, because of the poor water circulation resulting from the port's breakwall, Cabrillo Beach at the Port of Los Angeles is the most polluted beach in Los Angeles County. Although the port will begin testing for coliforms, the port has made no concerted effort to clean up this beach, which is frequented by local communities.[44]

With regard to stormwater, individual tenants at the port are tasked with developing their own stormwater pollution prevention plans (SWPPPs).[45] The port routinely checks all catch basins on tenant properties, but does not conduct formal audits of tenants' stormwater compliance activities.[46] This approach is very different than the one employed by the nearby Port of Long Beach, which takes responsibility for overseeing the stormwater programs of its tenants, provides model best management practices and training, and reviews the individual SWPPPs. The port historically has not treated stormwater; however, it recently installed a network of Stormceptor units at one of its berths.[47,48] Although these devices capture trash and large

particles, they are inefficient at removing the small particles that transport the majority of metals, organic pollutants, and nutrients.

Despite its participation in the recently created Contaminated Sediments Task Force, the port has no overall plan to test routinely for toxic constituents in its sediments or to clean them up.[49] The port continues to characterize sediments in a piecemeal way, and only when necessary for routine maintenance of ship lanes and berths or for expansion projects. Additionally, the port has not made a significant commitment to beneficial reuse of dredged materials instead of in-bay or ocean disposal, and appears to support a current proposal to use a borrow pit within San Pedro Bay as a multiuser dredged materials disposal facility.[50] With regard to oil spills, the port relies on the U.S. Coast Guard as the lead regulatory agency and leaves fiscal and legal responsibility to individual terminal operators and shipping companies. To its credit, the port recommends general source controls to terminal operators to prevent spills, conducts periodic audits of fuel-related facilities, and provides its own police team to serve as first responders for the port to any spill.[51]

Also to its credit, as part of its tugboat retrofits, the port has added a holding tank to prevent accidental or intentional discharge of waste from boats, and allowed for a segregated bilge system to collect engine waste oils. The hulls of boats are also coated with Teflon-based material, which eliminates the need for painting with toxic additives to discourage barnacles. Additionally, the port restored 190 acres of shallow water habitat in the Outer Los Angeles Harbor. Although this project was performed as a mitigation effort, it is one of the few examples where mitigation projects actually benefited local communities. But even this project is contentious: Some community activists contend that the habitat was created using contaminated sediments. Finally, the Port of Los Angeles has joined with the Port of Long Beach in periodically conducting extensive aquatic biological resources studies.

San Pedro Bay is widely known as home to the Consolidated Slip—one of the worst toxic hot spots in the nation.

WATER QUALITY ▶ IMPROVEMENTS REQUIRED

The Port of Los Angeles should improve water quality by coordinating the SWPPPs of its individual tenants, combining municipal, construction, and industrial permits under one umbrella as does the Port of Long Beach; conducting a complete characterization of its sediments and prioritizing areas for cleanup; working with the City of Los Angeles to strengthen its municipal stormwater program to curb urban runoff; cleaning up identified toxic hot spots such as the Consolidated Slip; implementing the Standard Urban Storm Water Mitigation Plans stormwater treatment requirements at all facilities; employing beneficial reuse in its dredging practices materials instead of in-bay or ocean disposal; and limiting further dredging projects that affect marine life and ecosystems in San Pedro Bay.

LAND USE

The Port of Los Angeles earned a "D+" for land use for failing to establish sufficient buffers between operations and communities, mitigation projects that do not directly benefit neighboring communities, lack of efficiency, and unabated expansion.

The port has primarily performed off-site mitigation and restoration activities that do not directly benefit the communities most affected by port operations. These off-site mitigation projects give the Port of Los Angeles credit to expand into San Pedro Bay and destroy additional soft-bottom marine habitat and ecosystems.[52]

Furthermore, as part of their Trans Pacific Container Service Corp. expansion project, the port continues to push plans to expand the boundary of its operations closer to the community of Wilmington, approximately 81 percent of which is Latino. This project would remove the last natural buffer between the community and port operations, and build a truck highway immediately adjacent to homes.[53,54] Meanwhile, the port is nearly four times less efficient in land use and takes almost twice as long to unload and reload container ships as its Asian counterparts.[55]

On a positive note, recent community efforts have secured a commitment from the port to use the San Pedro waterfront only for nonindustrial uses.[56] In addition, the Port of Los Angeles has a comprehensive solid waste management and recycling program. The port has also indicated it has restored more than 70 contaminated properties for reuse.[57]

Overall, the Port of Los Angeles does not adhere to a strict long-term land use management plan. The Harbor Master Plan continues to be revised retroactively to accommodate new projects rather than serving as a long-term vision to limit expansion. Finally, the plan has no limit on how much soft-bottom habitat can be destroyed through expansion.[58]

The port continues to push plans to expand the boundary of its operations closer to the community of Wilmington-—a community that is 81 percent Latino.

COMMUNITY RELATIONS

The Port of Los Angeles's poor history of community relations with the nearby Wilmington and San Pedro communities earns the port a grade of "D" in that category. The two communities have long suffered from disproportionate exposures to the port's operations—exposures that can lead to significant negative health effects.

As recently as 2001, the port failed to conduct a full Environmental Impact Report (EIR) for the significant China Shipping expansion project. This violation of the California Environmental Quality Act (CEQA) buttressed the widely held view of the two communities that the port gives priority to economic concerns at the expense of serious environmental and public health effects borne by the nearby residential communities. In addition, community residents are deeply concerned about noise and light pollution, vehicle traffic, aesthetics, and ecological and property-value effects.

The port recently created the Port of Los Angeles Community Advisory Committee (PCAC), with the goal of increasing community input into port decisions. Some community representatives have seen in the committee's work the first indications of progress, including earlier access to critical documents and staff reports coupled with greater port responsiveness to community requests. Others complain that the port still refuses to disclose important documents or to provide adequate notice of important projects, and that its responsiveness is limited. A community representative to the committee cautions that, "The PCAC was a step forward; however, the port is the landlord and the developer and still has the ultimate say on matters either way. Nothing really has changed."[59]

Port of Long Beach

REPORT CARD	Total Grade: C
Air Quality	C+
Water Quality	C+
Land Use	C–
Community Relations	D

The Port of Long Beach is the second-largest port in the nation. If combined with the adjacent Port of Los Angeles, the two ports would qualify as the third-largest port in the world. In addition, container traffic at the port is rapidly increasing, with conservative estimates projecting a three-fold increase in the number of containers passing through the port in the next 20 years.[60] While the Port of Long Beach has taken some commendable steps to mitigate its environmental and health impacts and to rehabilitate the industrialized landscape, its rapid expansion takes a hefty toll on the environment and human health—a toll paid by communities adjacent to port operations and communities along feeder transportation corridors that reach far into the inland valleys.

Summary of Findings

The Port of Long Beach has made commendable efforts to mitigate environmental damage from its operations. But those efforts are long overdue, given the region's infamously poor air quality and the port's long-standing contribution to it. Unfortunately, upcoming major expansion projects, including the port's recently drafted "Mega-Terminal Plan," coupled with mitigation measures that will not take effect for years, will likely mean that nearby residents will breathe increasingly unhealthy air for decades.[61] The Port of Long Beach earned an overall "C" grade for having demonstrated only minimal environmental initiative despite the magnitude of its operations.

AIR QUALITY

The port's few fully implemented programs and contribution to the region's air pollution problems earned it a "C+" grade for air quality. Long Beach and Los Angeles are in the South Coast Air Basin, which does not currently comply with federal air quality standards for ozone or particulate matter pollution.[62] The ports of Long Beach and Los Angeles combine to emit more pollution than the top 300 emitting industrial plants and refineries in the region.[63]

The Port of Long Beach's operations are among the most significant sources of cancer-causing diesel-particulate emissions in the region. The roadways in and out of the ports of Long Beach and Los Angeles are severely congested with more than 40,000 diesel-spewing trucks visiting the ports daily, a figure expected to triple by 2025.[64]

Residents of the communities adjacent to the port are plagued by severe acute (short-term) and chronic (long-term) respiratory illnesses and suffer from some of the highest levels of cancer risk in the region.[65] Until the port fully implements the recommended programs in the following discussion and incorporates sufficient, meaningful mitigation for all expansion projects, a higher grade will not be warranted.

More than a third of all goods shipped to the U.S. pass through the ports of Los Angeles and Long Beach, and are stacked in containers.

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Cleaner Yard Equipment and Cranes

Using $1 million of its own funds and a $1 million grant from the California Air Resources Board, the port has installed 285 of 590 ordered diesel oxidation catalysts (DOCs) on yard equipment at its seven major container terminals.[66,67,68] In addition, the port has secured commitments from the seven terminals to use DOCs in conjunction with emulsified diesel fuel. Currently, two of the seven terminals are running the majority of their yard equipment on the cleaner-burning emulsified diesel fuel.[69] PM and NOx emissions from diesel engines using emulsified diesel fuel and DOCs can be reduced by 50 percent and 20 percent, respectively.[70] Additionally, all of the port's gantry cranes are electrified.[71]

Reduced Emissions from Marine Vessels

With the assistance of California's Carl Moyer program, the majority of the 45 tugboats operating at the ports of Long Beach and Los Angeles have been retrofitted with cleaner diesel engines, helping to reduce aggregate NOx emissions from tugs in the South Coast Air Basin by roughly 80 tons per year.[72,73,74] The port also authorized a year-long feasibility study, expected to be completed in early 2004, to explore the potential for ships to turn off their auxiliary engines and plug into dockside power while at berth.[75,76] However, comments by port staff suggest that there is some doubt about whether the port is serious about electric power in the near future.[77]

The port has assisted the SCAQMD's enforcement of regulations minimizing ship smokestack emissions by encouraging proper maintenance, operational controls, and cleaner burning fuels.[78] Finally, along with local, state, and federal environmental regulatory agencies, the Long Beach Board of Harbor Commissioners and individual shipping associations signed a MOU calling for a voluntary vessel speed-reduction program that has the potential to reduce smog-forming NOx emissions up to approximately three tons per day.[79] However, because the program is not enforced, emission reduction benefits are questionable.

Reduced Truck Emissions

Under a new California law, truck idling is to be reduced by new appointment or queuing systems.[80] The port also has partnered with the Gateway Cities' Council of Governments (COG) to modernize the independently-owned trucks servicing the port, thereby reducing pollution from older trucks.

Other Programs

In response to a SCAQMD rule, and a lawsuit filed by NRDC and the Santa Monica Baykeeper, the port has attempted to prevent petroleum coke dust from blowing into

communities by covering stockpiles, trucks, and conveyor belts.[81] During the summer of 2003, the Port of Long Beach approved construction of a new covered petroleum coke storage barn as part of a compliance program to further control coal and petroleum coke dust in the area.

Recently, the Port of Long Beach entered into a preliminary agreement with a subsidiary of Mitsubishi Corporation to construct and operate a 28-acre liquefied natural gas (LNG) receiving and gasification terminal facility. The terminal would receive and process LNG for vehicle fuel and distribution to the local natural gas infrastructure.[82,83] The port also uses on-dock rail at five of its seven container terminals. Unfortunately, the $2.5 billion Alameda Corridor railway project continues to operate at less than half of capacity, and so has not helped alleviate freeway congestion as anticipated.[84]

AIR QUALITY ▶ IMPROVEMENTS REQUIRED

Most of these programs are relatively recent or still in the planning stages, so their benefits cannot be measured. That said, the Port of Long Beach should move more quickly to improve air quality further by requiring new yard tractor purchases to run on alternative fuel; completing its initiative to equip existing yard equipment with after treatments; expanding funding for retrofits or repowers of all existing, dirty diesel trucks; continuing the transition to cleaner fuels and pollution controls in tugboats and other harbor ships; offering incentives for cleaner locomotives serving the port; capitalizing on existing rail capacity to alleviate the need to further expand highways in disproportionately effected communities; requiring ships to use the lowest sulfur content fuel possible (15–2,000 parts per million sulfur) while hoteling and cruising in coastal waters; addressing traffic congestion; implementing electrification strategies for diesel trucks to end engine idling; and implementing a program to allow docked oceangoing ships and tugboats to shut engines down and plug into dockside power while at port.

Fifteen percent of children age 17 and under in Long Beach have been diagnosed with asthma. The national average is eight percent.

WATER QUALITY

The port's mixed track record on water quality issues earned it a "C+" grade. The port has actively tried to coordinate port-wide stormwater controls and conducted successful habitat-mitigation projects. However, the port does not treat stormwater, does not have its own oil spill response program, does not test for toxic contaminants, and has not addressed the link between toxic pollutants in stormwater runoff and airborne pollutants and their impact on sediment and water quality.[85,86]

To its credit, the port monitors and oversees the stormwater pollution prevention programs (SWPPPs) of its tenants, which ultimately results in reduced pollutant loading and cost savings for the port. Although much of its current program was prompted by an NRDC, Heal the Bay, and Santa Monica Baykeeper lawsuit over former deficiencies, the port now coordinates to ensure that its tenants comply with NPDES industrial stormwater permits, construction permits, and city permits.[87,88] The port's program now includes a SWPPP that goes beyond the original template

provided by the EPA—a rarity among ports. The port actively gathers information on operations, potential pollutants, spills, and control measures from each of the facilities, helping identify areas for improvement. The port also now conducts random sampling at its major discharge locations to the bay three times per year as required under its industrial permit.[89] The port also periodically conducts extensive aquatic biological resources studies.

In an effort to mitigate expansion project effects on harbor marine life, the port successfully relocated the native habitat of the black-crowned night heron rookery.[90] The port has also worked to restore degraded coastal wetlands, although only a project at Anaheim Bay has directly benefited local communities.[91]

Further, despite its participation in the recently created Contaminated Sediments Task Force, the port only characterizes sediments during necessary dredging activities and routine ship lane maintenance. Additionally, similar to the Port of Los Angeles, the Port of Long Beach has not made a commitment to beneficial reuse of dredged materials instead of in-bay or ocean disposal.[92]

WATER QUALITY IMPROVEMENTS REQUIRED ▶

The Port of Long Beach should improve water quality by conducting a complete characterization of its sediments, prioritizing areas for cleanup, and committing to mitigate contaminated sediments; cleaning up toxic hot spots; implementing stormwater treatment requirements at all facilities; employing beneficial reuse in its dredging practices; limiting further dredging projects that adversely affect San Pedro Bay ecosystems; and enforcing best practices in its stormwater pollution prevention plan.

Growth forecasts predict a tripling in truck traffic and container throughput in the next 20 years.

LAND USE

The Port of Long Beach earned a "C–" for its land use practices. Although the port has demonstrated effective work at brownfields sites and used innovative land use techniques, expansion, dredging, and landfilling continue unabated.

As part of an expansion plan in 1994, instead of selecting a previously undeveloped site, the Port of Long Beach purchased 725 acres of brownfields land, used as an oil and gas production field and a former disposal area for contaminated materials. The port remediated a portion of this contaminated brownfields site containing oil and gas drilling wastes. No contaminants were carried off-site or required off-site disposal.[93]

In 2000, the port was recognized by the EPA for employing an innovative, ecologically safe technique to utilize nearly 1 million cubic yards of contaminated sediments from three marine locations in the greater Los Angeles area. Used as structural fill, the sediment was safely placed between layers of clean sand and beneath a concrete cap to create a 30-acre landfill at the port's California United terminals.[94,95]

In addition, the Port of Long Beach has the best land use efficiency of the 10 largest ports in the United States. That said, the port is still four times less efficient than the Port of Singapore and takes almost twice as long to unload and reload container ships

as its Asian counterparts.[96] Furthermore, the port's facilities master plan predicts the need for 1,100 acres of new container cargo space and 400 acres of other types of terminal space to accommodate cargo volumes projected for 2020.[97]

Unfortunately, the Army Corps of Engineers and the City of Long Beach are currently working to create a multiuse confined aquatic disposal (CAD) site in San Pedro Bay that would essentially serve as an underwater landfill. A CAD site would serve as an inexpensive way for both ports to dispose of contaminated sediments, but a CAD site could result in future leaching of contaminants into the bay and could jeopardize deep-burrowing marine life.[98]

In sum, despite a number of project successes, the port has been rightly criticized for not conducting its mitigation restoration projects in areas that directly benefit the communities most affected by its operations. These off-site mitigation projects continue to earn the Port of Long Beach environmental credits that it uses to expand into San Pedro Bay, thus destroying additional soft-bottom marine habitat.[99]

COMMUNITY RELATIONS

The Port of Long Beach earned a community relations "D" grade, reflecting its failure to establish a positive working relationship with Long Beach and Wilmington residents. These communities have long suffered from exposure to air pollution from the Port of Long Beach operations, and their concerns extend beyond toxic air emissions to include noise, vehicle traffic, aesthetics, and ecological and property-value effects. A growing concern among residents is the absence of a community advisory committee equivalent to the PCAC at the Port of Los Angeles. Some residents assert that such a committee would allow them to have formal input, open a direct, regular communication with the port, and stay abreast of developments.[100]

Residents also complained that port staff never conducted a presentation to the community explaining the public scoping or environmental impact review processes. Additionally, residents have expressed concern that elected officials should be better represented at key hearings and committee meetings. Finally, residents express the view that the port's method of announcing upcoming hearings and meetings are inadequate; sending a mailing to its mailing list and running a single classified ad is insufficient for notifying appropriate numbers of affected residents.[101]

Recently, as a result of the Port of Los Angeles' China Shipping lawsuit, the port recalled a few environmental impact reports for pending expansion projects in order to incorporate health-risk assessments. Despite these first signs of meaningful community dialogue, the president of California Earth Corps Don May expresses deep concern: "There has not yet been a demonstrable change. The port still regards the greening of their logo as their proudest achievement."[102]

"There has not yet been a demonstrable change [by the port to reduce pollution]. The port still regards the greening of their logo as their proudest achievement."

Port of New York & New Jersey

REPORT CARD	Total Grade: C+
Air Quality	C
Water Quality	D+
Land Use	B–
Community Relations	C+

The Port of New York & New Jersey stretches around the Hudson raritan estuary, with facilities stretching from Brooklyn, New York, to Newark, New Jersey. With more than 4,500 ships calling in 2000, it is the largest port complex on the East Coast.[103,104] In 2002, the Port of New York & New Jersey traded more than 2.2 million containers, handling 21.6 million tons of general cargo. The port is reputed to be a leader in the United States for automobile imports and exports, importing more than 553,000 cars in 2002.[105] The Brooklyn terminal boasts that more bags of cocoa pass through it than any other port in the United States, just one of many products traded there.[106] The Port Authority of New York & New Jersey operates seven major marine cargo terminals, in addition to major area airports, bridges, and tunnels.

Summary of Findings

The port has recently made progress in making its operations more environmentally friendly, commissioning studies to evaluate its emissions inventory, analyzing environmental measures at other ports in the United States and abroad, and exploring pollution prevention and reduction techniques that can be employed at the various terminals. The port has developed an environmental management system (EMS), an environmental awareness training program for terminal operators, a green ports program encouraging voluntary measures and evaluating successful environmental measures at other ports, an energy-efficient buildings program, and extensive recycling programs. Despite efforts, however, the Port of New York & New Jersey earns a "C+" overall because some fundamental air quality, water quality, and land use problems remain to be overcome.

While the port harbor-deepening project is speeding plans for many of these measures forward, it is unclear whether the port will implement all of the promised measures once federal and state requirements surrounding the channel-deepening project are met. Moreover, the harbor deepening and associated projects will themselves have detrimental impacts. And while we commend the port for its significant efforts to study measures to reduce environmental and health effects from its operations, we encourage the port to implement these best practices as quickly as possible.

Finally, we encourage the port to work together with local groups to improve water quality programs, efficiency, and land use management, and to refrain from filling the harbor further to accommodate new commerce. If all of these initiatives are fully realized, the Port of New York & New Jersey could become a more environmentally friendly port.

AIR QUALITY

Current practices at the Port Authority of New York & New Jersey earn a "C." The area violates federal standards for ozone and is in violation (although less severely

so) of particulate matter standards, thus the motivation for improved air quality measures. Although the port does much to encourage environmental measures at the various terminals, it does not take an active role in implementing them.[107] Therefore, measures vary considerably among the different terminals.

Cleaner Yard Equipment and Cranes

The port is slowly converting the large gantry cranes that load and unload ships from diesel to electric power. Some have already been converted, including those at the Red Hook terminal. New purchases will be electric, and the port has installed electric power infrastructure at two other terminals to allow the use of electric cranes, accounting for $112 million worth of investments to date.[108] One terminal plugs its rubber-tired gantry cranes (RTGs or yard cranes) into electric power while stored, instead of using auxiliary diesel engines.[109] Another terminal has installed idling controls on its yard tractors that automatically shut off the engines after a specified amount of idling.[110] Finally, smaller equipment, including forklifts at many of the terminals, runs on propane or electric power instead of diesel.[111]

Reduced Emissions from Marine Vessels

The port is in the process of repowering two tugboats with new, cleaner engines, and plans to repower two to four more tugs as part of mitigation for its harbor expansion project.[112] The port is also a partner in a project to retrofit ferries throughout New York Harbor as a way to reduce NOx and PM emissions.[113,114]

Reduced Truck Emissions

Efforts are under way to improve infrastructure and traffic flow, including $3 million worth of investments in Brooklyn.[115] Several terminals have made improvements to gates and automated truck processing, and implemented other measures to reduce truck idling.[116,117] Most notably, the port is developing an inland distribution network of rail and barge service to relieve road congestion that will, when implemented, eliminate 20 million truck miles, save 230,000 gallons of fuel, and avoid 88 tons of toxic emissions per year.[118]

Rail Improvements

The port is investing $500 million to improve freight rail service to its terminals and develop new on-dock rail facilities. Investments will also be applied to the creation of a new intermodal facility in Newark and to the expansion of existing on-dock rail facilities in Elizabeth, New Jersey. The new on-dock rail facility at Howland Hook, alone, is expected to save 55,000 truck trips annually.[119] The port also connected the Staten Island Rail Road to rail facilities servicing the Chemical Coast Line in New Jersey as an alternative to trucking containers across the already congested Goethals Bridge.[120] It is unclear to what extent the port supports a cross-harbor rail system that would go the farthest in reducing truck traffic, especially through Brooklyn.

Other Programs

The terrorist attacks of September 11, 2001, claimed most or all of the port's employee vehicles, which were parked in the garage below the World Trade Center. These lost vehicles are being replaced with alternative-fuel or hybrid vehicles.[121] Despite the list of air quality programs, however, the Port of New York & New Jersey remains a major regional polluter. Many more substantive programs need to move beyond research into implementation in order to reduce port-related air pollution in significant amounts.

AIR QUALITY IMPROVEMENTS REQUIRED

The port should improve air quality with the following measures: converting yard tractors to alternative fuel and/or installing pollution controls on all yard equipment; funding retrofits or retirement of all existing, dirty diesel trucks serving the port; implementing electrification strategies for diesel trucks to end engine idling, promoting the use of cleaner fuels and pollution controls in tugboats and other harbor ships; offering incentives for cleaner locomotives that serve the port; continuing to expand the use of barge and rail to alleviate truck traffic to and from the port; requiring ships to use the lowest sulfur content fuel possible (15–2,000 parts per million sulfur) while hoteling and cruising in coastal waters; and requiring docked oceangoing ships and tugboats to shut engines down and plug into dockside power.

WATER QUALITY

The port earned only a "D+" grade for its water quality management, in part because it has not taken an active role coordinating and requiring water quality protections from terminals. Each individual terminal is responsible for its own stormwater permit, and the port does not oversee or assist with the permits or water quality monitoring. It appears that terminals lack oil spill response programs and appropriate water quality monitoring. Left to individual terminal operators, the port simply retains contractors on call, in case a large spill occurs. Stormwater treatment at the terminals appears to employ little more than oil/water separators. One facility, however, in Hoboken, New Jersey, employs a Stormceptor stormwater treatment system.[122] Notably, the port is moving forward at one terminal with a test of porous pavement, an innovative technology that reduces stormwater runoff.[123] Despite these few innovations, local environmental groups have found it difficult to obtain responses to Freedom of Information Act requests for water quality information, and are therefore unable to determine whether or not the port will be subject to New York or New Jersey stormwater regulations.

Because New York Harbor is naturally only 15 feet deep—too shallow for most large ships—the port must constantly dredge channels, creating mountains of sediment requiring disposal. The port dredges 3 to 5 million cubic yards of sediment from harbor channels each year for maintenance. Roughly three-quarters of these sediments are too contaminated for ocean or bay disposal.[124,125] While much of the contamination in New York Harbor comes from historic industrial activity, the metals, poly-aromatic hydrocarbons (PAHs), poly-chlorinated biphenyls (PCBs),

and dioxins are still a major cause for concern because they persist in the environment. High levels of dioxin in sediments in and around Newark Bay pose a particular hazard to local communities and the regional ecosystem.

To make matters worse, plans are currently under way to deepen channels from current depths to between 45 and 50 feet, in order to accommodate the newest generation of large ships.[126] Many groups are opposed to the dredging, citing its negative impact on wildlife, the increased disturbance of contaminated sediment, and concerns about the likely dumping of dredge spoils off the coast of New Jersey. The port established a stakeholder committee on toxic dredge spoils and has attempted to find creative ways to properly dispose of the dredged sediments. However, it is unclear how beneficial or safe the reuse of these dredged sediments are as construction fill or capping materials for brownfields.

Finally, channel dredging to service the port's facilities, as well as water pollution from such facilities, are contributing to the precipitous decline of the Jamaica Bay wetlands, one of the Eastern Seaboard's ecological gems.

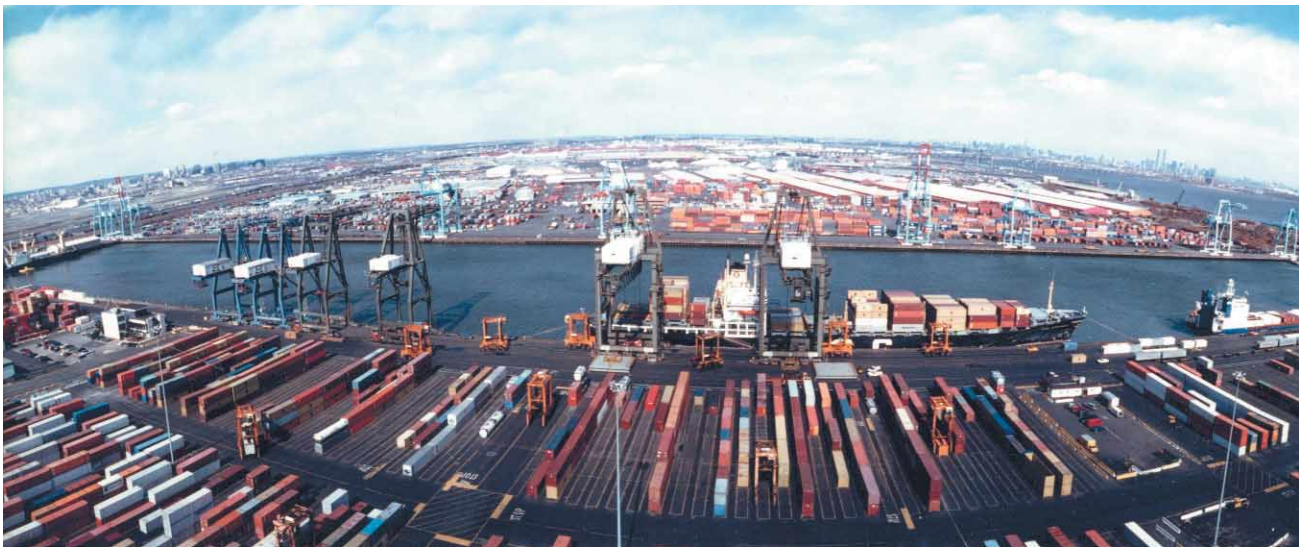
WATER QUALITY ▶ IMPROVEMENTS REQUIRED

The port should focus more energy on improving and preserving water quality by coordinating the implementation by its tenants of stormwater control, treatment, and monitoring practices; exert leadership by committing the resources necessary to ensure Jamaica Bay's decline is halted and reversed; and make actions affecting water quality, dredging, and dredge-material disposal more transparent to local stakeholders through timely responses to Freedom of Information Act requests.

LAND USE

The Port of New York & New Jersey earned a "B–" for some positive land use practices. Most terminals, excluding those in Brooklyn, are in primarily industrial

The unabated expansion of already bustling ports, like the Port of New York & New Jersey, threaten responsible and efficient use of land.



areas, away from residential communities. The port has a somewhat progressive approach to brownfield or industrial land reuse and has successfully avoided major land expansions in recent history. In fact, the port has partnered with the New Jersey Economic Development Authority and others to identify brownfield sites close to the port that can be used as relocation sites for nonessential port-related activities that can be moved off the waterfront instead of expanding terminals. An ongoing facility redevelopment effort with port tenants is geared towards enhancing capacity and productivity. For example, instead of expanding into the harbor with fill, the port authority has reoriented terminal footprints and gates to reduce truck delays, in addition to the rail improvements and barge project noted above. Finally, the port has set aside $60 million for a land acquisition program to preserve waterfront areas both for wildlife and for public use.[127]

Environmentalists and community members contend that not all of the port land use practices are commendable. Despite efforts to avoid expansion when possible and to reuse industrial land, most of the container operations occur on the shallower New Jersey side of the harbor, creating the need for excessive dredging. Proposed new developments will only exacerbate this problem. Several communities on the New Jersey side, particularly the Port of Elizabeth community, are heavily affected by the truck traffic headed to the terminals. These communities have called for new rail service to replace the truck traffic, but it is unclear whether the rail improvement and expansion plans will address this problem. Finally, the port wastes considerable land storing empty containers, and does not manage operations efficiently enough.

COMMUNITY RELATIONS

The port earned a grade of "C+" for its efforts to minimize the impact of its operations on local residents. The port insulated dredges to mitigate noise and timed rock blasting (during channel deepening) to minimize effects on residents. It also invested $3 million into a streetscape program to improve security, waterfront access, and aesthetics at the perimeter of Brooklyn terminals.[128] While some stakeholders are unhappy with the port's public process, it has reportedly improved with the hiring of a public relations firm to handle public outreach for the new "Comprehensive Port Improvement Plan." Despite all these positive efforts, considerable frustration has been expressed by the public because they feel that the port does not actually consider their concerns.

Port of Charleston

REPORT CARD	Total Grade: D+
Air Quality	F
Water Quality	B
Land Use	C–
Community Relations	F

Run by the South Carolina State Ports Authority (SPA), the Port of Charleston is the busiest container port in the Southeast.[129] The SPA has been aggressively competing with nearby ports for the future business of the new, larger generation of ships and, toward that end, has worked for five years to expand its facilities to "megaport" status and sought approval to dredge deeper shipping channels. The Charleston customs district ranks as the nation's sixth-largest in dollar value of international shipments, with cargo valued at more than $33 billion annually.[130] The port handled 10 million tons of cargo in 2002.[131]

Summary of Findings

The Port of Charleston earns an overall grade of "D+," which reflects its poor air quality and community relations. The port needs to take significant steps to heal community relations and minimize environmental problems. As a terminal at the former naval shipyard is built, the SPA should employ every measure possible to reduce environmental and social effects on the surrounding community. A large buffer strip must be created around the new terminal along any residential areas.

AIR QUALITY

The Charleston area currently meets all federal air quality standards,[132] and the SPA asserts that air pollution has not increased around its terminals.[133] Nevertheless, Charleston County is among the dirtiest 30 percent of counties in the country when it comes to such hazardous air pollutants as diesel exhaust.[134] The port received a grade of "F" for air quality because it has made virtually no effort to reduce air pollution from its operations. The only substantial emission-reduction measure taken by the port was to electrify its large container cranes, something most ports have either already done or are in the process of doing, in part for cost reasons.[135]

Over the past few years, the port has made efficiency improvements that have resulted in some emissions reductions. Turnaround times (the time it takes for trucks to pick up or drop off containers) have been reduced by gate and traffic-handling improvements, reducing pollution from unnecessary idling. However, claims from the SPA that it is 50 percent more efficient than the typical U.S. port[136] are overstated. Among the 10 ports reviewed in this report, the port's efficiency is only slightly better than average. Simply put, the Port of Charleston has much room to improve with respect to reducing its air quality impacts.

Diesel engines at ports that power trucks, trains, ships and cargo-handling equipment generate vast amounts of air pollution that affect the public's health.

© Diane Bailey

AIR QUALITY IMPROVEMENTS REQUIRED ▶

Air pollution in Charleston should be abated by the following measures to reduce diesel exhaust and other hazardous air pollutants: purchasing the cleanest possible yard equipment and installing pollution controls on remaining equipment; funding retrofits or retirement of all existing, dirty diesel trucks serving the port; implementing electrification strategies for diesel trucks to end engine idling; promoting the use of cleaner fuels and pollution controls in tugboats and other harbor ships; offering incentives for cleaner locomotives that serve the port; increasing landside transport of containers via barge and rail to alleviate truck traffic; requiring ships to use the lowest sulfur content fuel possible (15–2,000 parts per million sulfur) while hoteling and cruising in coastal waters; and requiring docked oceangoing ships and tugboats to shut engines down and plug into dockside power.

WATER QUALITY

"When the containers are dropped, my desk and chair and china in the cabinet move. We don't only hear it, we feel it. Our entire quality of life has changed."

The Port of Charleston has taken some initiative in protecting water quality, earning a grade of "B." The port's largest container terminal has a modern stormwater treatment system in place, added during recent redevelopment efforts. The system includes cloth and sand filters, a 17-acre detention pond, formal spill response training of employees, and routine inspections of yards.[137] Additionally, 15 years of monthly testing of Wando River water in front of the terminal has shown improvements in water quality. The river's status has been upgraded, and shellfish harvesting is now allowed.[138]

While the port asserts that it has an excellent response time to spills,[139] preventing them from spreading quickly, training for spill and pollution *prevention* seem lacking. Additionally, local groups are frustrated by the port's inability to deter leaks and spills from shipping companies.[140] In September 2002, an estimated 12,500 gallons of fuel oil were spilled from a container ship as it steamed through the harbor.[141] While port staff have been careful to contain spills at terminals before they enter the water,[142] oil spills in Charleston Harbor remain a problem and have seriously effected habitat and wildlife.

WATER QUALITY IMPROVEMENTS REQUIRED ▶

The Port of Charleston should institute several measures to improve water quality: stormwater-treatment practices at older terminals should be upgraded; pollution prevention should be made a priority; and the SPA should implement fines for oil spills.

LAND USE

While the port has made some efforts to avoid expansion through improved efficiency, the port's unsound expansion efforts of the late 1990s earn it a grade of "C–" for land use. One resident noted that the state legislature, "had to hog tie the port management into using an old site, the Navy base, to expand," instead of the SPA's preferred expansion site, Daniel Island (see *Megaport Expansion Plans*, page 31).[143] As a result,

MEGAPORT EXPANSION PLANS

After a three-year battle and $8 million worth of studies over the SPA's "Global Gateway" megaport expansion plan proposed on Daniel Island, the state General Assembly directed the SPA to select a suitable site elsewhere, namely at the site of a former naval shipyard on the Cooper River. The proposed megaport would have generated more than 20,000 truck trips per day in North Charleston; required a circuitous 50-mile rail track merely to cross a river, dredging through 35 acres of harbor; and destruction of prime habitat for the federally endangered red-cockaded woodpecker. Furthermore, Daniel Island is a rural community that is nearly 80 percent African-American, with a higher percentage of the population below poverty levels than anywhere else in the region. Critics contend that in order to obtain property and rail rights-of-way for the proposed development, the SPA first negotiated acceptable terms with white property owners and then made underpriced offers to long-standing African-American residents to purchase their property, followed up by condemnation summonses. The port condemned many homes, and now that the Daniel Island expansion plan has been blocked, it's unclear whether former property owners will be allowed back or not.

Source: Ron Menchaca, "Port takes step toward expansion," *The Post and Courier,* May 15, 2003. Senator Glenn F. McConnell, "State acted wisely on port expansion," *The Post & Courier,* June 2, 2002. Southern Environmental Law Center, *Charleston Harbor,* and *Comments on the Draft EIS for Proposed Daniel Island Marine Terminal,* both available at www.selcga.org.

the port is now moving forward on development plans for a new site at the former Charleston naval shipyard, taking advantage of existing transportation infrastructure and reclaiming a former dredge-disposal area.[144] The port's major efforts to expand now appear truly ill-advised in the face of a 21 percent berth-occupancy rate at its terminals during the past year.[145]

COMMUNITY RELATIONS

The Port of Charleston earned a grade of "F" for its community relations, reflecting its severe need of improved relations with surrounding communities. According to residents and community organizations, the port's public input processes are notoriously inadequate. The long fight to develop a megaport on Daniel Island only exacerbated the port's troubled community relations. Port conduct has hardly been exemplary with communities surrounding existing terminals, either. The port has yet to make an effort to address noise nuisances to Wando Welch terminal neighbors, despite several days of testing in February 2000 that documented noise levels above Charleston County regulations.[146] In October 2001, one subdivision sued the port over the noise nuisance; more than two years later, the port still has not built the sound berm for which the community is asking.[147]

Port of Oakland

REPORT CARD	Total Grade: B–
Air Quality	B–
Water Quality	B
Land Use	C
Community Relations	C+

Ships pass under San Francisco's historic Golden Gate Bridge and travel a little more than 10 miles southeast before reaching the heart of the Port of Oakland. With 19 miles of waterfront on the mainland shore of San Francisco Bay, the port covers 1,210 acres of marine terminals, intermodal rail facilities, and maritime support areas. Agricultural commodities, including wine, are the top exports, and were loaded onto the 1,730 ships calling in 2002.[148] Oakland's 11 container terminals handled more than 22.5 million tons of cargo in 2000.[149] Like many of the major container ports in the United States, Oakland also had plans for expansion and increased capacity. Its Vision 2000 plan included the construction of two new marine terminals and a new intermodal rail facility.

Summary of Findings

The Port of Oakland earned an overall grade of "B–" for its many measures to limit the environmental effects of its operations. These efforts leave room for improvement in several areas, namely improving rail infrastructure and increasing buffer space between operations and the community. However, the port's initiatives have gone a long way toward mitigating environmental effects, and the port appears to be committed to continuing along this path. Other ports can look to Oakland as an example for positive programs to mitigate environmental impacts.

The Port of Oakland has implemented numerous environmental measures since a 1998 lawsuit by Oakland residents (see *Oakland Residents Rise Up with a Different Vision,* page 33). However, with recent terminal developments and increasing trade demands on West Coast ports, container throughput is expected to double by 2010.[150] Despite mitigation efforts, this sharp growth will come at a hefty environmental price.

AIR QUALITY

The Port of Oakland is within the San Francisco Bay Area Air Shed, which is out of attainment with both state and federal standards for ozone and with state standards for particulate matter.[151] Due in part to concerns of the nearby West Oakland community, the port has focused much effort on reducing air pollution, earning a "B–" for its air quality program.

Cleaner Yard Equipment and Cranes

The Port of Oakland is roughly halfway through an ambitious $5 million incentive program to clean up cargo-handling equipment at its six container terminals. Under the program, four terminals have begun using low sulfur diesel fuel (50 parts per million sulfur), at least 39 pieces of equipment have been repowered with cleaner new engines, and at least 76 diesel oxidation catalysts (DOCs) have been installed. One terminal

operator has also agreed to demonstrate a new technology called diesel particulate filters (DPFs).[152] Although testing has revealed several challenges related to the use of DPFs on yard equipment, we remain optimistic that this much more efficient control technology may eventually be adapted for use by terminal equipment. Finally, all of the large cranes used to load and unload ships are electric rather than diesel.

Reduced Emissions from Marine Vessels

The Port of Oakland provided a 50-percent subsidy ($500,000) to a local towing company to repower two main engines on a tugboat with cleaner new engines. The company has also obtained funding under California's Carl Moyer program to repower the auxiliary engines of the tug. The project, originally slated for completion in spring 2003 (but not yet finished), is expected to reduce PM emissions by nearly one ton per year, and NOx emissions by almost 26 tons per year. In an effort to reduce emissions from dredging, the port installed an electric connection at one of its new berths for use by dredging vessels.[153]

Reduced Truck Emissions

Plans are currently under way for a $2 million incentive program for off-site trucks serving the Port of Oakland. The port is already pursuing a demonstration project with a local trucking firm, subsidizing its use of a cleaner diesel fuel, emulsified diesel, by almost $100,000. The company volunteering for the demonstration will also retrofit some of its trucks with DOCs.

Emissions from trucks serving the port are a major concern among West Oakland residents, despite Port of Oakland data showing that 75 percent of trucks are 1990 or newer models.[154] Truck traffic is expected to double to 22,000 trucks per day with the

OAKLAND RESIDENTS RISE UP WITH A DIFFERENT VISION

Most of the air quality programs at the Port of Oakland stem from a 1998 legal settlement involving the Port's Vision 2000 expansion plan. Nearby West Oakland residents were concerned about air pollution from the proposed expansion. Noting that roughly 20 percent of children in West Oakland suffer from asthma, one local activist alleged that the port's activities were "literally killing us." The Golden Gate Environmental Law and Justice Clinic took the port to court on behalf of West Oakland neighbors. The port settled with a $9 million air quality mitigation plan, the most stringent diesel exhaust mitigation plan of any port to that point.

The air quality plan includes nine measures, discussed in the *Air Quality* section, some of which reduce pollution from nonport-related sources in the community to make up for increased emissions from port activities. The implementation of the measures is guided by a technical review panel that is composed of representatives from regulatory agencies, community, and environmental groups. To date, most of the measures have moved forward, and several are complete.

It should also be noted that shortly after the air quality settlement, the Port of Oakland signed an employment agreement committing to substantial local training and hiring.

Sources: "Port of Oakland Works to Clear the Air," *Bay Area Monitor*, Sep/Oct 1999. Summary Report #7, Vision 2000 Air Quality Mitigation Program, Feb 2003, Port of Oakland.

full build-out of the Vision 2000 Plan. Some residents estimate that 5 percent of trucks take shortcuts through the neighborhood to reach the port, and many complain about trucks idling for long periods in the neighborhood and even parking on neighborhood streets. In the summer of 2003, residents took to the streets to count the number of passing trucks. Shortly thereafter, signs were posted advising trucks not to enter neighborhood streets.

The Port of Oakland has done little to address the problems outlined above. They have implemented several small measures, such as providing some parking for trucks throughout the day and night and providing plenty of "reefer" electrical hook-ups for refrigerated containers. A truckers' guide suggesting maintenance and outlining the proper local trucking routes has been promised, but has yet to materialize. The port has begun implementation of California's port-idling limits and appointment systems, which will presumably reduce truck idling. However, while the backups of trucks outside the gates are now less severe, truckers report long lines inside the terminals. The benefits of this appointment system are questionable, since idling appears not to have been reduced, just moved from one side of the terminal gates to the other.

"Black soot covers my window sills, my blinds, and my heating vents. It is a constant cleaning dance to even control it. No wonder that my four grandchildren, my son, and myself have asthma. There is also a Head Start and three child care centers in my building where many of the children also suffer from asthma."

Finally, the port has entered into an agreement with a software firm to develop an innovative tracking system that will coordinate the transfer of empty containers between trucking firms to avoid wasted trips. The system, launched in June 2003, is expected to reduce empty truck trips to and from the port by 10 to 20 percent.[155]

Rail Improvements

The Port of Oakland has done little to clean or improve their rail system, designating only $10,000 of the almost $9 million settlement to rail—not enough money to do more than study options. As part of its expansion, however, the port built a joint intermodal terminal, which, when fully utilized, will eliminate hundreds of 12-mile truck trips to the main rail yard in the neighboring city of Richmond. The port is beginning to develop a short-haul rail service that would deliver containers to California's Central Valley cities with major distribution centers.[156] If fully implemented, this project would significantly reduce port-related truck traffic.

Other Programs

Many other programs are under way, some as part of the Port of Oakland's settlement agreement, some added more recently. As part of the settlement, the port funded the repower of 28 transit buses with routes in the West Oakland community. Aside from settlement-related projects, the port purchased 15 neighborhood electric vehicles for employee operations. Finally, and significantly, the port runs an air quality monitor in West Oakland, measuring PM levels downwind of port operations.[157]

AIR QUALITY ▶ IMPROVEMENTS REQUIRED

While the Port of Oakland has done many things to improve air quality, the following measures should also be implemented: requiring new yard tractor purchases to be alternative fuel; expanding funding of retrofits or retirement of existing, dirty diesel trucks serving the port; implementing electrification strategies for diesel trucks

to end engine idling; promoting the use of cleaner fuels and pollution controls in tugboats and other ships, offering incentives for cleaner locomotives that serve the port, expanding on-dock rail, shifting a significant portion of container traffic serving the port from truck to rail and requiring ships to use the lowest sulfur content fuel possible (15–2,000 parts per million sulfur) while hoteling and cruising in coastal waters; and requiring docked ships and tugs to shut engines down and plug into dockside power.

WATER QUALITY

The Port of Oakland received a grade of "B" for water quality, reflecting its robust program. Although the port does not maintain the stormwater pollution prevention program (SWPPP) for all of its terminals, it appears to follow some best practices of stormwater management.[158] The port spends $50,000 each year to monitor water quality, maintains contracts with cleanup specialists in case spills occur, provides spill cleanup kits at each terminal, inspects terminals annually, provides pollution prevention training, and has oil/water separators at its newer terminals.[159] The port is currently exploring stormwater treatment options, including porous pavement.

Over the years, San Francisco Bay has lost more than 90 percent of its historic tidal wetlands to filling and development.[160] The Port of Oakland is responsible for some of these wetlands losses, but has conducted several restoration projects in an attempt to mitigate the damage. One significant restoration project involved the reuse of dredge materials from a channel-deepening project to create a 320-acre tidal wetland, known as the Sonoma Baylands. It is unclear, however, to what extent the dredged material may have been contaminated and whether it was treated or cleaned in any way. Other water quality protection programs include a water recycling project, annual contributions of $10,000 to a dioxin task force, and a program to explore new treatment methods for ballast water.[161]

A MODEL FOR COMMUNITY ACTION

Several West Oakland community groups have combined forces to reduce diesel pollution in their neighborhood. The groups produced a report to highlight the extent of the problem, finding that

- Residents face dangerous levels of diesel particulate in the air (according to monitoring performed by NRDC), pollution sufficient to produce an estimated increased cancer risk of one extra case per 1,000 residents
- Diesel particulate levels were found to be roughly five times the levels found in other areas of Oakland
- West Oakland bears a disproportionate burden of diesel pollution within the region and the state, with per capita amounts of pollution seven times the county average

The report documents truck traffic through the neighborhood and presents a list of potential measures, or goals, to address the truck traffic as well as the pollution. The community is now rallying behind the report findings to accomplish those goals.

Source: "Clearing the Air: Reducing Diesel Pollution in West Oakland," A West Oakland Environmental Indicators Project Report by the Pacific Institute in conjunction with the Coalition for West Oakland Revitalization, November 2003, available at www.pacinst.org/diesel/.

WATER QUALITY IMPROVEMENTS REQUIRED

The Port of Oakland should improve its water quality program by taking a more active role in coordinating stormwater permits for tenants, and by requiring stormwater treatment measures at each terminal.

LAND USE

The Port of Oakland earned a grade of "C" for its land use planning, in part because the port's proximity to residential areas counterbalances some positive land use practices. With many homes in West Oakland overshadowed by the port's large container cranes and enveloped in air pollution from various port activities, the proximity of the container terminal at the Port of Oakland to community residents constitutes a major flaw in the port's land use. The port has, however, taken a few small land use steps that are beneficial. More than 70 acres were donated to a shoreline park, and more significantly, some port offices were developed on contaminated land that the port remediated within the Inner Harbor Complex.

COMMUNITY RELATIONS

The Port of Oakland has greatly improved its community relations, earning a grade of "C+" for its efforts to lessen the impact of its operations on the community. While the buffer space between terminals and community residents is still inadequate, and while residents still have complaints about truck traffic, truck idling and pollution, much has been done to reduce impacts. In addition to the programs noted earlier, the port has a Dark Skies project to minimize nighttime lights and glare. The port appears to make more of an effort to obtain public input now than it did in the days before the settlement agreement over the Vision 2000 expansion plan. Port staff attend local meetings at which they appear to treat community members with respect.

People living close to the Port of Oakland complain about trucks taking shortcuts, idling for long periods of time—and even parking—in their neighborhood.

© Diane Bailey

Many other small programs run by the port benefit the public and the local environment. The port runs an Environmental Management System, a sustainability program, extensive recycling, and a native landscaping and green building program. The port sponsors community shoreline cleanups, one of which removed more than two tons of garbage from the shoreline of the estuary. The port also offers shoreline access and bike trails.

Port of Hampton Roads

REPORT CARD	Total Grade: C+
Air Quality	F
Water Quality	B
Land Use	B–
Community Relations	C+

Nearly 400 years ago, the first English colonists on the North American continent helped lay the foundation for port development in what is still a strong port economy in Hampton Roads, Virginia.[162] Hampton Roads has a naturally deep harbor and is home to significant military activities, sitting 18 miles from open sea. Indeed, it has the largest concentration of military personnel in the United States, and is the site of several major naval bases, army forts, an Air Force base, and several Coast Guard commands.[163] The Virginia Port Authority (VPA) operates three major marine terminals in Newport News, Norfolk, and Portsmouth—collectively called the Port of Hampton Roads. These three terminals are located on the banks of the James and Elizabeth rivers, which feed into the southern mouth of the Chesapeake Bay. Because of the sizes and strategic locations of the terminals, they receive a growing number of container vessels each year, or 1,557 in 2000. The port processed more than 800,000 container units and nearly 13 million tons of general cargo in 2002.[164]

Summary of Findings

The Port of Hampton Roads earns an overall grade of "C+," despite significant water quality conservation efforts. Stronger efforts are called for on air quality, and several land use and community relations concerns remain. We commend the port for its water quality protection efforts, but urge strong caution in future development, including proposals on or near Craney Island (see *Code Name Donna,* page 39).

Habitat restoration projects, like planting native wetland grasses, can help alleviate damage to the environment caused by years of dredging, silting, and chemical contamination.

AIR QUALITY

The Port of Hampton Roads earned a grade of "F" for air quality because of the absence of any substantial effort to reduce air pollution from operations. The brown haze hanging over Hampton Roads is readily apparent when sailing from the open ocean into the Chesapeake Bay. While the area is currently in attainment with federal air quality standards, it is expected to fall out of attainment soon when new, more health-protective smog standards are implemented. In the meantime, the port apparently lacks the commitment to clean up its air pollution, in the absence of regulatory pressure.

Several small programs have led to air quality benefits; however, the port's sole interest appears to be improving operations. Container cranes are all electric, as is now common at major ports. Notably, one of the terminals is testing a hybrid electric straddle carrier,[165] a piece of cargo equipment

used to move containers around. Lastly, the port provides rail service directly to terminals, presumably relieving the need for some truck traffic, although it is unclear whether significant truck traffic is in fact avoided.

AIR QUALITY IMPROVEMENTS REQUIRED ▶

The Port of Hampton Roads is in need of significant improvement in its air pollution programs. We suggest that the port focus on implementing the following measures: using alternative fuel or cleaner yard equipment; funding retrofits or retirement of all existing, dirty diesel trucks serving the port; implementing electrification strategies for diesel trucks to end engine idling; promoting the use of cleaner fuels and pollution controls in tugboats and other ships; offering incentives for cleaner locomotives serving the port; increasing land-side transport of containers via barge and rail to alleviate truck traffic; requiring ships to use the lowest sulfur content fuel possible (15–2,000 parts per million sulfur) while hoteling and cruising in coastal waters; and requiring docked oceangoing ships and tugboats to shut engines down and plug into dockside power.

WATER QUALITY

In contrast to the lack of an air quality program, the Port of Hampton Roads appears to take water quality protection seriously, earning a "B" grade. The port has stormwater pollution prevention plans (SWPPPs) for each of its tenants.[166,167] It maintains spill prevention plans, in which all employees are trained. Spill kits are attached to cranes and light poles at one terminal, and are planned for installation at the other two. All terminals are inspected quarterly, and water quality monitoring is performed regularly, according to permit requirements. Several structural best management practices are also in place, including drop inlet catch filters at all terminals and a Vortechs™ stormwater treatment system at two terminals, with a reported 20-percent reduction in pollutant effluent concentrations. Construction is under way at one terminal for an under-wharf stormwater detention basin, capable of treating approximately 108 acres.

The Chesapeake Bay is seriously degraded from years of dredging, silting, and chemical contamination from both past industrial activity and current pollution sources.[168] The Port of Hampton Roads, however, has been recognized with a River Star Award from the Elizabeth River Project for its conservation efforts. In addition to stormwater pollution prevention and treatment methods mentioned above, the port has planted native wetland grasses, created oyster reef habitat (as mitigation for subaqueous wetland impacts), and rehabilitated a small wetland area.[169] Additionally, several years ago, 22 old PCB-containing transformers were replaced and a state of the art oil/water separator was installed at an on-site maintenance facility.

WATER QUALITY IMPROVEMENTS REQUIRED ▶

The Port of Hampton Roads should improve its water quality program by performing more extensive water quality monitoring, installing more effective stormwater treatment controls, and providing more buffer space around its terminals.

LAND USE

The Port of Hampton Roads earns a grade of "B–" for land use, reflecting the port's adequate performance. While the port has conducted a number of small conservation projects, they appear to be aimed at doing no more than meeting mitigation requirements. Projects include a butterfly garden, a two-acre "no-mow" forested riparian buffer habitat, and a public park.[170] The port facilities are relatively close to the mouth of the Chesapeake Bay, compared to Baltimore and other facilities, and make use of deep shipping channels that also serve the nearby naval installations. However, several terminals are quite close to residential areas, and transportation infrastructure serving the terminals is inadequate. While some efforts are under way to alleviate traffic congestion, there is room for improvement.

With limited room for on-site expansion of facilities, future growth is likely to result in significant community and environmental impacts. The Virginia Port Authority (VPA) has been trying for several years to develop a fourth container terminal on Craney Island, a dredge-disposal area. The U.S. Army Corps of Engineers recently announced that it would not support the project, on grounds of, "financial, environmental, and navigational safety concerns,"[171] including the filling of more than 600 acres of shallow water habitat and the significant narrowing of the mouth of the Elizabeth River. Interestingly, the Corps recently issued a permit for a private container terminal development less than one mile from Craney Island that results in only a modestly reduced environmental and community impact (See *Code Name Donna,* below). This lesser-of-evils development will at least alleviate the need for new terminal development as the private company vacates its VPA-hosted terminal for its new facilities. Additionally, local environmentalists feel that the new development, which is on the Elizabeth River, is better than other potential sites, including those on the less-degraded James River.

CODE NAME DONNA

In Portsmouth, "Donna" is a code name used by officials to refer to a recently announced Maersk container terminal development next to Craney Island at the mouth of the Elizabeth River. Government officials, intent on protecting the development and associated future tax dollars, kept Portsmouth residents in the dark about the terminal for two years while it was designed. Residents from the heavily affected West Norfolk neighborhood finally caught wind of what is dubbed the "worst kept secret of Hampton Roads," at a community meeting in July 2003. There they learned that the 600-acre terminal would draw 1,500 trucks and three to four half-mile-long trains daily.

While the "Donna" project is a private venture (i.e., unrelated to the public Virginia Port Authority), it illustrates the lack of adequate public outreach and community involvement surrounding new marine terminal developments around the country. Particularly where private developments occur, there appears to be a severe lack of accountability to the public.

Sources:
Louis Hansen, "Portsmouth residents wary of plan for terminal," *The Virginian Pilot,* Jul 22, 2003.
Maersk,"City should seek input from residents," *The Virginian Pilot,* Jul 25, 2003.

COMMUNITY RELATIONS

The Port of Hampton Roads appears to have demonstrated a moderate commitment to community outreach and consideration, thus earning a "C+" in this area. The port reports holding regular meetings with civic associations of neighborhoods adjacent to port facilities, to keep residents apprised of proposed construction and other activities at the port. For example, the port recently installed a sound wall at the Norfolk terminal after consulting with neighborhood residents on design. The same terminal has a two-acre natural land buffer separating it from the community.[172]

A 600-acre terminal proposed in Portsmouth would draw 1,500 trucks and three to four half-mile-long trains daily.

The port appears to meet with large stakeholder groups to discuss mitigation projects for existing and proposed development; however, these meetings tend to be more heavily attended by U.S. Army Corp of Engineers staff rather than by community members. One member of an environmental group has expressed concerns about the lack of unbiased representation on her subcommittee to discuss aquatic mitigation and was uncomfortable with the overly simplified ranking process for projects. A member of one environmental group suggested that the original Craney Island expansion plans called for development on the west side of the island, an affluent area. After residents there objected, citing concerns about obstructed ocean views, the plans were revised so that construction would take place on the less-affluent east side of the island—although the plans are now on indefinite hold.

While the communities surrounding port terminals appear to be quite heavily affected by traffic, noise, and pollution, we are unable to find any record of community protest. Two very large rail terminals for coal in Norfolk and Newport News foul the air with soot that blows off the massive uncovered bulk piles. The coal dust from the rail terminals competes with soot from marine port activities to cover local porches year-round.

Port of Seattle

REPORT CARD	Total Grade: C+
Air Quality	C–
Water Quality	B–
Land Use	A–
Community Relations	D

The Marine Port of Seattle takes up almost 900 acres[173] along Elliott Bay and the Duwamish River, with marine terminals and warehouses dotting the 5.5-mile coastline from north to south Seattle. As the closest U.S. container port to Asia, the Port of Seattle's most valuable trade region is Pacific-Asia, including Japan, China, Taiwan, and South Korea. In 2002, 853 container ships, representing 86 percent of total vessel calls, imported tons of items, including wearing apparel, office, and data-processing machines, and automotive parts.[174] As with many large port cities, while the port is vital to the economic base of the city, the marine trade has left a scarred landscape behind. Only two percent[175] of the original tidal wetlands remain, and the Duwamish River has been designated by the EPA as one of the worst toxic waste sites in the country.[176]

Summary of Findings

While the Port of Seattle has made some efforts to lessen the environmental harm from its facilities, much room for improvement in protecting air and water quality remains. In addition, the port's community relations clearly need improvement, as is evidenced by a controversy over a cruise terminal. The Port of Seattle earned an overall grade of "C+" as an environmentally aware port that needs to scale environmental protections up to match its growth in activity.

AIR QUALITY

The Seattle-Tacoma area was out of compliance with federal air quality standards for ozone and carbon monoxide until 1996, and only reached attainment for particulate matter in 2001.[177] Because the area is now officially in attainment with federal standards, programs to reduce air pollution at the port are primarily voluntary. However, port operations emitting particulates, toxins, and other pollutants have significant localized effects on air quality, and consequently, to public health.

The port received a grade of "C–" for air quality because it has initiated only minor programs to reduce air pollution, and because many pollution sources have not been addressed at all. As is typical of many ports, cranes that unload ships have been repowered by electricity, converted from diesel engines.[178] When the port sought approval for the development of new facilities for cruise ships at Terminal 30, it initially committed to requiring cruise ships to use a cleaner fuel (on-road grade diesel), with more than 70 times less sulfur than regular marine fuel, while at the terminal.[179] This commitment could have led to significant reductions in pollution from the cruise terminal, but unfortunately has gone unfulfilled (see *Cruise Terminal Controversy*, page 45).[180]

The port has improved cargo and traffic handling, and replaced a significant amount of truck transport with increased rail transport during recent redevelopment

at Harbor Island and Terminal 5, the two largest container facilities. The Terminal 5 development added overpasses to reduce traffic congestion and made improvements at the gate to prevent trucks from backing up traffic onto nearby streets. A computer-automated cargo-handling system also reduces unnecessary idling. Both major container terminals have on-site rail yards, which handle roughly 70 percent of container cargo, avoiding 200,000 miles of truck trips in Seattle each year.

The port has several other minor programs to reduce air pollution. It helped fund a shuttle bus for employees, it subsidizes alternative commuting options, including carpools; it posts signs to reduce bus idling at the cruise terminal; and it offers a slightly cleaner fuel—B20, made of 20 percent biofuel—at its Shilshole Bay Marina.[181] Permits are pending for the port to sell pure biodiesel, a much cleaner fuel, at Shilshole Bay Marina soon.[182]

AIR QUALITY IMPROVEMENTS REQUIRED ▶

The Port of Seattle should improve air quality further by using yard equipment powered by alternative fuel or retrofitted with controls; funding retrofits or retirement of older dirty diesel trucks serving the port; implementing electrification strategies for diesel trucks to end engine idling; promoting the use of cleaner fuels and pollution controls in tugboats and other ships; offering incentives for cleaner locomotives serving the port; increasing land-side transport of containers via barge and rail to alleviate truck traffic; requiring ships to use the lowest sulfur content fuel possible (15–2,000 parts per million sulfur) while hoteling and cruising in coastal waters; and requiring docked oceangoing ships and tugboats to shut engines down and plug into dockside power.

WATER QUALITY

The Port of Seattle earns a grade of "B–" in water quality protection, reflecting its significant effort to restore marine habitat and its mediocre prevention of water quality degradation. The port manages roughly 1.2 billion gallons of surface water runoff every year from paved portions of its property, which spans an area twice the size of New York's Central Park. As terminals and property have been redeveloped, the port has upgraded stormwater management systems, installing piping and catch basins. The port works with the state Department of Ecology to comply with stormwater permits, encourages tenants to use Best Management Practices for stormwater control, and fulfills quarterly sampling and monitoring requirements.[183] Still, pollution prevention does not appear to be a priority, and stormwater from port terminals is essentially untreated. It should also be noted that the Port of Seattle has an extremely inadequate stormwater program for the SeaTac International Airport.

Notably, however, more than 70,000 pilings treated with creosote—a toxic chemical—have been replaced with fewer untreated concrete and steel pilings that let more sunlight through for marine life. Additional work to improve marine habitat includes: removing barriers to migrating juvenile fish; contributing funding to study

DUMPING IN THE DUWAMISH

Over the past century, the Duwamish River has been drastically altered. The river was once the lifeline of the Duwamish Tribe. Now, more than 1,000 miles of rivers and streams have been diverted. In 2001, the Duwamish was finally added to the EPA's Superfund list of contaminated sites because of a toxic brew of chemicals that have persisted after a century of industrial dumping and other pollution. The Port of Seattle is one of four responsible parties now beginning to clean up the site.

Untreated sewage and stormwater still drain into the river at the rate of roughly 300 million gallons per year. Despite pollution levels hundreds of times greater than state standards permit, the river supports birds, fish, and other wildlife, and attracts fisherman and children looking for a place to play. Signs warning residents not to swim or fish were not posted until the river was officially designated a Superfund site, and were first published only in English, even though local residents include the Muckleshoot and Suquamish Indian tribes, Latinos, and Southeast Asians. Some people still swim and fish in the Duwamish.

Sources:
People for Puget Sound, Sound Stewardship Program, Duwamish Estuary Restoration, available at www.putgetsound.org/vshrmp/King/index.
Duwamish River Cleanup Coalition, Duwamish River Superfund Fact Sheet, available at www.duwamishcleanup.org.
NPL Site Narrative for Lower Duwamish Waterway, Seattle, Washington, Federal Register Notice: September 13, 2001, available at www.epa.gov/superfund/sites/npl/nar1622.htm.
Kevin Fullerton, "Duwamish Showdown: Citizen's Group Is Keeping a Wary Eye on the River's Cleanup," *Seattle Weekly*, May 2–8, 2002.
Cari Simpson, "Down on the Duwamish: The effort to end the toxic pollution killing West Seattle's waterways," *TABLET* July 25–August 7, 2002.

juvenile salmon habits; reshaping portions of the shoreline to improve aquatic habitat; restoring degraded habitat areas; cleaning up contaminated sediments; and specifying the use of safer nonpetroleum-based hydraulic fluids for pile-driving.[184] Over the past decade, the port has restored seven sites along the Duwamish River for fish and wildlife habitat.[185]

WATER QUALITY ▶ IMPROVEMENTS REQUIRED

The Port of Seattle could further improve its water quality efforts by upgrading stormwater treatment practices.

LAND USE

The Port of Seattle earned a grade of "A–" for its land use because it has reclaimed large areas of contaminated land. Harbor Island, the largest container terminal at the port,[186] recently underwent a major expansion on former Superfund property, requiring the excavation and removal of 8,000 tons of highly contaminated soils from past industrial uses.[187] The site was capped and drainage improvements were added to prevent contamination of groundwater. Redevelopment of the site also included a shoreline park in West Seattle and new bicycle paths. Redevelopment of Terminal 5, another container terminal, also involved the cleanup of a Superfund

site and other vacant properties acquired by the port. The project included creation of a shoreline park with a bikeway and restoration of more than five acres of intertidal habitat.

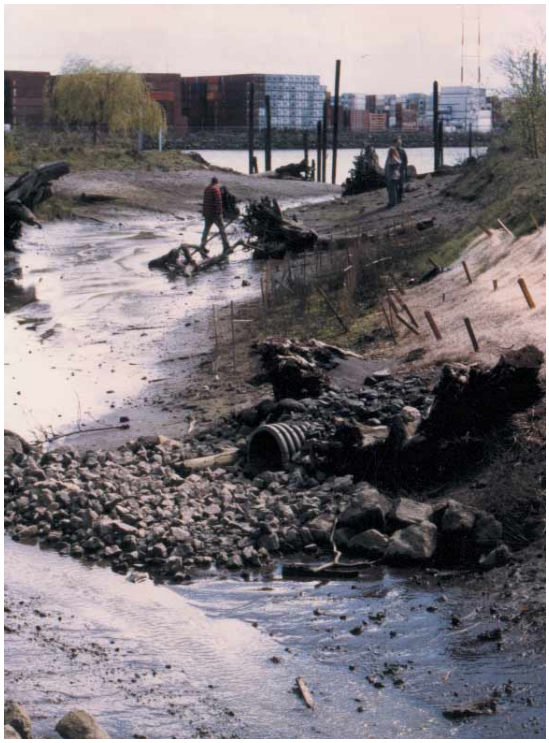
Through the reuse of brownfields and former industrial sites, the port has taken advantage of existing transportation infrastructure at redeveloped terminals. Additionally, the port has stepped up as a responsible party in the cleanup of the Duwamish River Superfund site (see *Dumping in the Duwamish,* page 43), even though its role related to the site was primarily as landlord to several local industries.

COMMUNITY RELATIONS

The Port of Seattle earned a grade of "D" for its community relations. While it has made considerable efforts in this area, the community still offers much criticism, and the recent cruise terminal controversy (see *Cruise Terminal Controversy,* page 45) seems to support that criticism. To the port's credit, notification and collection of comments from the public on proposed developments have been extensive, as evidenced by the more than 250 meetings and workshops throughout the area to date.[188] The port appears to have attempted to address some community concerns about terminals near residential areas. Terminal 5, near some West Seattle communities, has more than 13 acres of a landscaped buffer zone surrounding three sides of the terminal. During recent redevelopment, lighting was improved to reduce off-site glare, walls were added and design features included to control noise, and several traffic control measures were implemented.

Some community residents, however, describe the port as arrogant and unresponsive to community concerns, charging that pollution is rampant and that most of the port's attempts to address environmental issues are propaganda. Credit for habitat restoration projects is given cautiously, as the estuary has been completely filled and altered sufficiently that it now

Community organizations and concerned citizens can play a critical role in cleaning up environmental damage caused by ports, like this habitat restoration project of Puget Creek near the Port of Seattle. Left: before (1998). Right: after (2001).



CRUISE TERMINAL CONTROVERSY

This year, half a million passengers are expected to pass through the Port of Seattle, more than double the volume last year. This increase is due to the latest cruise terminal development, which has created a controversy over the public's ability to comment on projects. The recent development was originally planned for piers 90 and 91, next to the Queen Anne and Magnolia neighborhoods. Although that site would have required less construction and would have cost half as much to build, the port instead decided to move the new cruise terminal to Pier 30. This new location did not require an environmental review and accompanying public input process.

The controversy has continued with the news that the port is reneging on its requirement for cruise ships using the facility to run on cleaner fuel. While multiple records show that the port promised to require the use of lower sulfur fuel by cruise ships, the ships never complied. Furthermore, were it not for the efforts of local environmentalists in bringing this news to light, the public would not have been informed. Representatives of the cruise lines cite safety concerns over cleaner fuels and deny any agreements with the port to use cleaner fuel.

Sources:
Eric Scigliano, "Cruising Is Bruising: As the Port seeks more cruise ships, critics decry inconsistent environmental regs," *Seattle Weekly*, Nov 27–Dec 3, 2002. Fred McCague, "Seattle's Second Cruise Terminal—A moveable feast," *Marine Digest*, Oct 2002.
Comments submitted by Smith & Lowney, p.l.l. on behalf of several environmental groups, addressed to Colonel Graves and Chief Walker, U.S. Army Corps of Engineers, Jan 9, 2003.

bears little resemblance to its original form. Much of the development advertised as beneficial to the community actually seems to be thin on wildlife benefits and heavy on new marinas and waterfront commercial developments, which are significant streams of revenue to the port. Grades from community members range from "B" to "C" on habitat restoration and "D" to "F" on community relations.

The Port of Seattle has many other minor programs that are beneficial to the environment and community. It maintains 19 different public access sites along the waterfront, and more than 70 acres of parks, bike trails, and public areas, all of which are landscaped organically with native vegetation. The port's Shilshole Bay Marina has earned a five-star rating in the King County Envirostar program for pollution prevention and reduction of hazardous waste. Additionally, the port promotes an energy conservation program and runs an extensive recycling program.

Port of Savannah

REPORT CARD	Total Grade: D+
Air Quality	D
Water Quality	F
Land Use	C–
Community Relations	B–

The Port of Savannah is the larger of two ports run by the Georgia Ports Authority (GPA).[189] Its Garden City container terminal, located more than 20 miles up the Savannah River from the harbor,[190] boasts the largest single-terminal complex on the East Coast.[191] Similar to the Port of Charleston, and just 75 miles south of it,[192] the Port of Savannah is expanding to compete with other East Coast ports for business with the new generation of deep draft container ships. Container cargo represented 76 percent of the total cargo mix in the Port of Savannah in 2001.[193] In 2002, container throughput weighed in at 8.6 million tons, approximately 80 percent of the total tonnage at the Port of Savannah.[194] The GPA hailed 2,180 vessels through its facilities in its 2002 fiscal year, and reported $104.4 million in revenue.[195]

Summary of Findings

The Port of Savannah earned an overall environmental grade of "D+" for its virtually nonexistent efforts to protect air and water quality. Though the port seems to have turned over a new leaf in terms of community involvement and a willingness to explore the ecological impact of proposed expansions, much ecological damage has already been done. We strongly recommend that the port retain flexibility in its placement of future expansions, making proximity to the harbor entrance and minimization of ecological effects a priority.

AIR QUALITY

The Port of Savannah earned a grade of "D" for air quality because it has done little to address air pollution from port sources. While the GPA claims its facilities do not contribute significantly to air pollution, the community has expressed concern over the port's effect on air quality—concerns lent credibility by the sheer magnitude of the GPA's container operations.[196] While the area is currently in compliance with federal air quality standards, new, more health-protective standards coming into place by the end of 2004 are likely to push the region out of compliance.[197]

The port has taken several very small steps to improve air quality, most notably investing almost $5 million on new, electrified container cranes.[198,199] Rules are apparently in place prohibiting the discharge of "excessive smoke" from marine vessels, although it is difficult to determine whether these rules are enforced or what is deemed excessive.[200] Finally, emissions from off-site trucks have been reduced as a result of two measures to improve efficiency: first, idling has been reduced through implementation of a new streamlined cargo-handling system, and second, truck traffic has been reduced through the increased availability of rail on the docks and in the large intermodal container-transfer facility nearby.[201,202] These steps have been positive for air

quality; however, the emission reductions are not impressive when one considers all that the port could be doing to clean up air pollution from the rest of its operations.

AIR QUALITY IMPROVEMENTS REQUIRED ▶

The Port of Savannah should improve air quality with the following measures: employing alternative fuel-powered or cleaner yard equipment; funding retrofits or retirement of older dirty diesel trucks serving the port; implementing electrification strategies for diesel trucks to end engine idling; promoting the use of cleaner fuels and pollution controls in tugboats and other ships; offering incentives for cleaner locomotives serving the port; increasing land-side transport of containers via barge and rail to alleviate truck traffic; requiring ships to use the lowest sulfur content fuel possible (15–2,000 parts per million sulfur) while hoteling and cruising in coastal waters; and requiring docked oceangoing ships and tugboats to shut engines down and plug into dockside power.

The Savannah National Wildlife Refuge, one of the East Coast's most important habitats for migrating birds, has lost more than half of its original 6,000 acres of freshwater marsh to the cumulative effects of harbor deepening.

WATER QUALITY

The Port of Savannah scored an "F" on water quality protection for making little or no effort in this area at all. While the GPA asserts that it prohibits discharges of "rubbish or dunnage" and ballast water from ships, we were not able to identify any steps the GPA is taking to treat or prevent stormwater discharges or monitor water quality.[203] The GPA asserts that it has an oil spill-prevention program; has done "extensive" wetlands mitigation, including the creation of least tern nesting sites; and uses a special silt suspension system to minimize dredging needs in certain areas.[204,205] The GPA's stated efforts to minimize dredging and create new wetlands, however, do not make up for the acres of prime wetlands lost and the important habitats that have been destroyed (see *Dredging Upstream,* page 48).

WATER QUALITY IMPROVEMENTS REQUIRED ▶

The Port of Savannah should focus more on improving and preserving water quality by implementing stormwater control, treatment, and monitoring practices, and, most important, improving and limiting dredging practices at the direction of the Stakeholder Evaluation Group.

LAND USE

The Port of Savannah has taken a few positive steps in its land use practices. Dredge spoils have been reused for such beneficial projects as beach erosion control, dikes, and roadways.[206] The port is actively remediating four sites on the Georgia Hazardous Sites Inventory List, and is purchasing two brownfield sites for future expansion capability.[207] Finally, the port has made significant efforts to improve efficiency at terminals, as noted earlier.

In December 2002, the GPA placed roughly 1,000 acres of freshwater tidal hardwood swamp and upland buffer bordering the swamps under a restrictive

covenant, protecting the property from future development.[208] However, some local activists allege that the GPA has not been a responsible land steward, allowing the looting of artifacts and paving certain areas of historical and ecological significance. The GPA is currently planning to develop commercial distribution areas on half of the historical Mulberry Grove Plantation, where Eli Whitney invented the cotton gin.[209] While they are considering a land swap with the U.S. Fish and Wildlife Service (FWS) for the other half of the plantation, environmentalists urge

DREDGING UPSTREAM

Even though nine other harbor expansion projects are being considered along the East Coast, the GPA wants to deepen the 36-mile channel to its Garden City terminal to allow the largest container vessels to call. According to the Southern Environmental Law Center (SELC), "Of all the harbor expansion projects planned or under way on the East Coast, the Savannah Harbor deepening looks to have the highest financial and environmental costs."

Routine agitation dredging alone adds more than 1.5 million cubic yards of untested and "probably contaminated" sediments to the Savannah River every year, according to dredge reports. Close by, the Savannah National Wildlife Refuge, one of the East Coast's most important habitats for migrating birds, has lost more than half its original 6,000 acres of freshwater marsh to the cumulative effects of harbor deepening over the years. Channel deepening has taken a significant toll on both river and refuge habitats, increasing salinity, decreasing life-supporting oxygen in the water, devastating a striped bass fishery, damaging habitat of the endangered shortnosed sturgeon, and erasing vast areas of freshwater marsh. Not only does the newly proposed channel deepening pose the same threat as past projects, but digging deeper also poses the additional threat of contaminating the Floridan aquifer, a principal drinking water supply and the largest source of freshwater in the coastal area. In fact, recent testing shows saltwater intrusion in at least one area of the aquifer.

In 1997, the GPA rushed to get a permit from the U.S. Army Corps of Engineers to dredge a deeper ship channel to accommodate huge new container ships longer than three football fields and taller than a 10-story building. The U.S. Fish and Wildlife Service, the EPA, and several conservation groups voiced concern that the proposed mitigation plans were unacceptable, and SELC finally filed suit several years later, frustrated that the Corps had, "bulldozed the Savannah Harbor project through on the promise it would study the environmental impacts later."

Although the SELC lawsuit was dismissed as premature in March 2001, a federal court ordered the Corps to consider all of the issues raised in the suit before making any final decisions on channel deepening. The GPA is currently coordinating new studies and reviews of ecological impacts with a broad stakeholder group, and final action on the harbor-deepening project is not expected before 2006.

Sources:
Southern Environmental Law Center, *Comments on the Draft Feasibility Report and Draft Environmental Impact Statement for Savannah Harbor Navigation Project,* July 7, 1998, available at www.selcga.org/Cases/savannah_riv/savannah_riv.shtml.
James C. Trammell, "Letter to the Editor on the Toxic Waste Debate," *Atlanta Constitution,* March 16, 1995.
Charles Seabrook, "Savannah Harbor deepening opposed," *The Atlanta Journal,* Feb. 12, 1999, and, "A proposal to deepen Savannah's port could imperil the wetland of the wildlife refuge," *The Atlanta Constitution,* Nov. 22, 1998.

the GPA to transfer all 2,200 acres of the historically significant site to the FWS, instead of paving and developing it.

Though some of the efforts outlined above are commendable, others are quite problematic. Most problematic is that its large Garden City terminal is located 36 miles—much too far away—from the open ocean, a fundamental land use flaw that creates the need for excessive dredging. The GPA reportedly is unwilling to consider the development of a deepwater terminal on the South Carolina side of the Savannah River, which is much closer to the open ocean. The port, therefore, earns a "C–" for land use.

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Numerous studies have found that soot emitted from diesel engines, like those used by ships, impairs lung function, aggravates respiratory and cardiac illnesses, and is associated with premature death.

COMMUNITY RELATIONS

The Port of Savannah earned a grade of "B–" for its relations with the community. Initially, the GPA's public process for the proposed 1997 harbor expansion project was woefully inadequate. Attempts to solicit public comment included two public meetings scheduled on the same day, for which notice was posted less than a week in advance, in one newspaper, the day before the Fourth of July holiday.[210] Eventually, the GPA created a special Stakeholder Evaluation Group (SEG) in response to perceived congressional concerns over the efficacy of the Environmental Impact Statement (EIS) and a resulting conditional funding authorization for the harbor expansion project in 1999.[211] The purpose of the SEG is to identify scientific studies to be used in the next phase of EIS filings related to the expansion. The SEG acts as an advisory body to the port, making sure concerns are identified, discussed, and studied adequately.[212] With approximately 50 members representing state and federal agencies, local government, environmental organizations, and other interested parties, the SEG is a model for public involvement.[213] For all of the port's efforts with the SEG, however, it was the slowest to respond to our survey questions, requiring prompting more than 10 times, and then ultimately failing to provide adequate information.

PORT OF HOUSTON

REPORT CARD	Total Grade: F
Air Quality	D
Water Quality	C+
Land Use	F
Community Relations	F

The eighth-largest port in the world, the Port of Houston comprises 11 terminals dotting the ship channel from downtown Houston to the mouth of Galveston Bay, 50 miles southeast of the city.[214] Approximately 175 million tons of cargo moved through the Port of Houston in 2002, with top import and export commodities, including petroleum and petroleum products, crude fertilizers and minerals, and organic chemicals. Top trading partners by dollar include Mexico, Germany, Brazil, United Kingdom, and Venezuela.[215] The second-largest petrochemical complex in the world shares this ship channel. Together with the port, it brought more than 7,000 ships through Galveston Bay in 2000.[216] The port is administered by the Port of Houston Authority (PHA).

Summary of Findings

The Port of Houston earns an overall grade of "F," which is the product of its deplorable treatment of local residents and its few noteworthy programs to reduce the effects of its operations on air and water quality. The port boasts that it is the first U.S. port to reach ISO 14001 certification, an international standard for Environmental Management Systems (EMS). Despite the port's intricate EMS, it is unclear how much pollution from port operations has actually been prevented or reduced. Further, the Port of Houston Authority has questionable land use practices and community relations. We recommend that the Port of Houston reassess alternative container terminal development sites in more suitable areas and that the port work toward restoring relations with the community.

The PHA has made several significant environmental improvements over the past few years, especially in air quality and overall environmental management. Much room for improvement remains, however, particularly in the areas of land use and community relations.

AIR QUALITY

Air pollution in the Houston-Galveston area, particularly ozone smog, rivals that of the Los Angeles area in severity. The area is classified as severely out of attainment with federal standards for ozone. High levels of smog in the area have resulted in pressure on the PHA to reduce its emissions. The PHA has a strong program to reduce emissions from yard equipment; however, other sources, including trucks, tugboats, and other ships, have gone virtually uncontrolled, earning the port a "D" grade.

The PHA was the first in the United States to test yard equipment with diesel emulsions, a cleaner blend of diesel that reduces both NOx and PM by 20 to 30 percent.[217] The PHA now runs a total of 39 yard hostlers and rubber tire gantry cranes on the cleaner fuel.[218] The diesel emulsions were also tested successfully in one of the

port's tour boats, but the PHA elected not to continue the project, citing concerns over safety and power loss.[219] A demonstration of another technology, selective catalytic reduction (SCR) on a rubber tire gantry crane, was also discontinued. Though the control technology reduced NOx and PM by more than 80 percent and 20 percent respectively, the PHA claimed that it was too expensive and unreliable to continue.[220]

Most major ports are expanding to accommodate even greater cargo volumes, yet marine ports are now among the most poorly regulated sources of pollution in the United States.

Other common measures employed by the PHA include electrified wharf cranes, and a program for such smaller equipment as forklifts and support vehicles running on propane or using other clean technologies.[221] Additionally, the PHA has repowered one of five fire boats (similar in size to a tugboat) with a new, cleaner engine.

Several minor efforts are under way to reduce off-site truck emissions. The PHA has posted signs and distributed flyers in English and Spanish alerting drivers to new state rules limiting idling to five minutes during the ozone season—April to November. Also on tap is a new automated gate system to take effect in the next year or two, which will reduce processing times from approximately 20 to 3 minutes. Other noteworthy items include the creation of an emission inventory specific to port operations, and a selection process favoring cleaner contractors for a major planned expansion.[222]

AIR QUALITY ▶ IMPROVEMENTS REQUIRED

The Port of Houston should improve air quality by employing the following measures: increasing the use of alternative fuel-powered or cleaner yard equipment; funding retrofits or retirement of older dirty diesel trucks serving the port; implementing electrification strategies for diesel trucks to end engine idling; promoting the use of cleaner fuels and pollution controls in tugboats and other ships; offering incentives for cleaner locomotives serving the port; increasing land-side transport of containers via barge and rail to alleviate truck traffic; requiring ships to use the lowest sulfur content fuel possible (15–2,000 parts per million sulfur) while hoteling and cruising in coastal waters; and requiring docked oceangoing ships and tugboats to shut engines down and plug into dockside power.

WATER QUALITY

The Port of Houston earned a grade of "C+" on water quality for focusing on little more than mere compliance with stormwater management and water quality protection rules. The PHA appears to follow some best practices of stormwater

management, at least according to its stormwater pollution prevention program (SWPPP), although it is difficult to determine whether all of the practices documented in this voluntary program are actually carried out because the SWPPP follows the generic template originally supplied by the EPA. The program includes pollution-prevention training, quarterly water quality monitoring, spill response and prevention, and many other elements.[223] Stormwater controls at the facilities include manual shut-off valves within the stormwater drainage system and an oil/water separator at one terminal. Other terminals have secondary containment systems to catch spills, and the central maintenance facility has a Stormceptor treatment system in the storm sewer.

"[The Citizens Advisory Group] is a sham. It is no longer a community advisory group at all but an industry task force," said resident Dru Dickson. "Far from genuinely considering community interests in relation to port activity, the port authority is instead using this group for the limited purpose of improving its chances of building [the Bayport Complex]."

The PHA has carried out some substantial wetlands mitigation projects in Galveston Bay, undertaking what is reportedly the largest wetlands creation of its kind in the nation.[224] A 1989 channel expansion project led the PHA to partner with the U.S. Army Corps of Engineers to form the Beneficial Uses Group (BUG) to improve disposal methods of dredge material. A coalition of eight government agencies, BUG appears to have little if any representation of community or environmental groups. Nevertheless, it has accomplished much to improve local wetlands. So far, more than 4,000 acres of salt marshes, using dredge materials, and six 20-acre oyster reefs have been created.

WATER QUALITY IMPROVEMENTS REQUIRED ▶

The Port of Houston should improve its water quality program by monitoring water quality more frequently and measuring for a wider array of pollutants, and by following all best practices for stormwater management.

LAND USE

The Port of Houston earns a grade of "F" for its overall lack of responsible land use planning. The PHA has repeatedly built container terminals on previously undeveloped land instead of reusing available industrialized property. Both the existing Barbours Cut container terminal and the proposed Bayport container terminal expansion are on previously undeveloped land in residential areas. In the case of Barbours Cut, the terminal displaced part of the residential community, devastating the town of Morgan's Point (see *Expansion at Great Expense to the Community,* page 53).[225] Neither terminal was planned in a location with adequate access to existing rail and highway infrastructure. They are also far from the mouth of the bay, creating the need for extensive additional dredging that disturbs wildlife and recreation in upper Galveston Bay.

COMMUNITY RELATIONS

The Port of Houston also earns a grade of "F" for community relations, reflecting its past and present practice of disregarding the effect on local communities of expansion projects (see *Expansion at Great Expense to the Community,* page 53). While

the PHA attempts to offer some mitigation measures for its proposed Bayport development, many of the measures are either barely compliant with current rules and regulations, or extensions of existing programs. These sparse measures fail to mitigate the full effect of port development. It is questionable whether the buffers, modified lights, noise mitigation, and roadway upgrades will make a measurable difference to local residents, who feel that their community will be destroyed by the

EXPANSION AT GREAT EXPENSE TO THE COMMUNITY

The PHA has a history of dividing and devastating communities with its expansions. In 1972, La Porte was a relaxing and picturesque seaside resort town, before the Barbours Cut industrial container terminal moved in next door. The port used its power of eminent domain to take over almost one-third of the homes in neighboring Morgan's Point for more terminal land. One port official scoffed at community concerns, "They've just fabricated something to fuss about." The official then later denied residents' relocation funds. Despite widespread opposition from community members, the PHA pushed the Barbours Cut development through, and in the end, the PHA promises of parks and beautification never materialized.

The proposed Bayport container terminal expansion project appears to be repeating the same disregard for the interests of nearby residents. More than 5,000 people live within one mile of the proposed Bayport facilities. As soon as the PHA proposed the development in 1998, residents voiced opposition to anticipated problems with pollution, traffic, impacts on wildlife, noise, light, and general disturbance to established communities. After a majority of the Seabrook city government attempted to make a deal with the port, exchanging the use of city property for money, residents responded by recalling the mayor and three city council members. Seabrook later joined numerous other local towns passing resolutions opposing the development and banding together to fund studies on the issues of concern for the residents.

Four regulatory agencies—the EPA, U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), and Texas Parks and Wildlife Commission (TPWC)—have all asked the U.S. Army Corps of Engineers to deny the PHA's construction permit, citing concerns about severe environmental damage. TPWC commented that the Environmental Impact Statement (EIS) was riddled with "discrepancies and inaccuracies" and did not appear to be in compliance with the requirements of the National Environmental Policy Act (NEPA). The FWS asserted that the Bayport site, "appears to be the most environmentally damaging alternative because of the extensive loss of wildlife habitat, including the wetlands scattered with this habitat." The agency also questioned why less damaging alternatives were not more adequately considered, as did many residents.

The final EIS for Bayport fails to mention that one of the alternatives sites included, Shoal Point, was recently permitted by the Corps to be developed as a container port by an entity unrelated to the Port of Houston. The need for two new mega-container terminals serving the same region is questionable; however, the Galveston district of the Corps continues to exhibit bias toward the Bayport development despite widespread opposition. The Corps granted the Bayport expansion permit in December 2003.

Source: Ester Heyne, "Morgans Point Residents Worried by Acquisitions," *Houston Chronicle,* June 15, 1972. Judy Hurry, "Port Officials Plan Park as 'Buffer Zone'" and "Port Alters Barbour's Cut Boundaries Bayshore Sun," *Bayshore Sun,* June 8, 1972. Comments on the Bayport Draft Environmental Impact Statement, submitted by Robert Spain, Assistant Director of the Resource Protection Division, Texas Parks & Wildlife, addressed to Kerry Stanley, US Army Corps of Engineers, and Mark Fisher, TNRCC, March 8, 2002.

development. Further, the PHA does not have a good record of following through on its mitigation commitments to communities.

Residents feel that the PHA is hostile toward them. According to some, the PHA-formed Citizens Advisory Group (CAG) consists mostly of business and port interests with few environmental or community members, and that it meets behind closed doors. Most community representatives quickly became disenchanted with the CAG and stopped participating.

Port of Miami

REPORT CARD	Total Grade: C–
Air Quality	F
Water Quality	D+
Land Use	C
Community Relations	C

Located in Miami's Biscayne Bay, between some of Miami's most exclusive island neighborhoods and downtown, the Port of Miami inhabits its own two islands, Dodge and Lummus. Both islands were created by the disposal of dredge "spoils" (dredged material from ship channel bottoms), and since their construction, merged into one continuous island as more dredge spoils were added. While Miami is known as the "Cruise Capital," the port is also home to the tenth largest container cargo operation in the United States, with total cargo volume of 8.7 million tons.[226] Like many other Eastern Seaboard ports, the Port of Miami is now pursuing a major expansion.

Summary of Findings

The Port of Miami earns an overall grade of "C–," with much room for improvement on both environmental protection and community relations. As both the cruise and cargo industries grow, air, water, land use, and other impacts will need to be more adequately addressed. We recommend that the port commit to more extensive and protective mitigation measures before embarking on any future projects, including the currently proposed channel deepening. Further, it appears inherently unsustainable for the port to continue to dredge and increase operations in so fragile a marine environment as Biscayne Bay. Therefore, we recommend that the port cease all plans to expand operations, deepen channels, or otherwise increase industrial burdens on the already overstressed Biscayne Bay.

AIR QUALITY

The Miami-Dade Metropolitan area currently meets all federal air quality standards.[227] However, the port only earned a grade of "F" for air quality because of its minimal proactive efforts to control major sources of air pollution from port-related activities. For example, the 10 massive container cranes that sit just across a shipping channel from the community on Fisher Island continue to run on diesel fuel even after most ports in the United States have switched to electric cranes. While the port has finally committed to the electrification of its cranes by 2004, this positive change was made only under substantial pressure from Fisher Island residents, who continue to live downwind from the port's diesel operations.[228,229]

The port claims to have future plans to reduce truck traffic, congestion, and the associated pollution. Port truck traffic increased by approximately 50 percent from 1996 to 2000, significantly affecting downtown Miami traffic.[230] Several projects are under way, in collaboration with the Florida Department of Transportation (FDOT), to improve roadways and reduce congestion.[231] However, it is questionable whether the proposed traffic improvements would be sufficient to accommodate the proposed

expansion that is projected to bring three million containers through the port each year.

Functional improvements of the existing rail system are also planned, including long-term plans to upgrade intermodal rail both inside and outside the port, thereby reducing truck traffic and associated pollution. Overall, most of these plans are of relatively recent vintage and have not moved beyond the planning stage. Meanwhile, the Port of Miami continues to grow as a major source of air pollution in the area.

AIR QUALITY IMPROVEMENTS REQUIRED ▶

The Port of Miami needs to improve air quality by using alternative-fuel or cleaner yard equipment; funding retrofits or retirement of dirty diesel trucks serving the port; implementing electrification strategies for diesel trucks to end engine idling; promoting the use of cleaner fuels and pollution controls in tugboats and other ships; offering incentives for cleaner locomotives serving the port; increasing land-side transport of containers via barge and rail to alleviate truck traffic; requiring ships to use the lowest sulfur content fuel possible (15–2,000 parts per million sulfur) while hoteling and cruising in coastal waters; and requiring docked oceangoing ships and tugboats to shut engines down and plug into dockside power.

WATER QUALITY

The port earned a grade of "D+" on water quality for its modest efforts to prevent spills and control stormwater in order to protect the fragile marine ecosystem of Biscayne Bay.

A GOUGE TOO DEEP TO HIDE

In 1999, a biologist at Miami-Dade's Department of Environmental Resources Management (DERM) discovered a five-acre gouge in the sea floor of Biscayne Bay while doing a routine review of aerial photographs of the bay. A 1994 decision to allow deepening, but not widening, of a turning basin was apparently ignored by the port. Illegal dredging removed several football fields worth of sea-grass and coral rock, prime habitat for manatees and other marine life. Remarkably, the port sought approval to widen the area again several years later, even though it had already performed the illegal widening. Instead of acquiring legal permits for the dredging, documents related to the project mysteriously disappeared. To make matters worse, the excavation, funded by taxpayers, led to illegal dumping of the coral rock and dredge materials.

The Port of Miami continues to pursue an ill-conceived harbor expansion plan, that would destroy acres of valuable habitat and cause massive fish kills due to the blasting necessary for channel-deepening. Even the Department of Environmental Resources Management, a fellow department of the Port of Miami within Miami-Dade County, has voiced serious reservations over this project.

Source: Kirk Nielsen, "A Hole So Foul: Somehow no one noticed that a monstrous gash was illegally being dug into the bottom of Biscayne Bay," *Miami New Times,* Sep 9, 2000.

Biscayne Bay is a shallow, subtropical lagoon with diverse habitat, including mangroves, seagrass beds, and coral reefs.[232] Manatees, crocodiles, sea turtles, and many important fish species also share the immediate marine environment with the port.[233] Despite this rich marine habitat, the port has continued to dig ever deeper into the bay.

The port began with an 18-foot deep channel in 1902, and has gradually expanded it, sometimes with illegal dredging (see *A Gouge Too Deep to Hide,* page 56).[234,235] This past year's request to deepen the channel to 50 feet is particularly controversial, because it is likely to require blasting through hard coral rock, an approach that could severely harm, if not kill, dolphins, manatees, turtles, and other sea creatures nearby.[236] The port has, however, attempted to mitigate the effects of past dredging by creating several artificial reefs of quarried rock and by restoring other marine habitat, at a cost of nearly $5 million. A $2.5 million mangrove restoration project is planned for a nearby park, and the latest channel deepening proposal commits the port to additional restoration projects.

© Port of Georgia

Specialized yard equipment that shuttle containers around at ports are at least 15 times more polluting than trucks driven on the road.

The cruise business in Miami has suffered large-scale scandals, affecting marine life through illicit dumping of waste. Miami, the world's largest cruise ship homeport, headquarters the three largest cruise line operations and hosts the largest cruise ship in the world.[237,238] Hundreds of thousands of gallons of waste have been dumped into Miami waters for years, including oily bilge water, raw sewage, and hazardous dry-cleaning and photo development chemicals.[239,240]

The port asserts that it meets government requirements for various stormwater treatment and control methods. Notably, it offers pollution prevention training to terminal operators and uses deep injection wells and "baffle boxes" to collect and treat stormwater runoff from paved areas.[241] The port also has implemented oil spill prevention and control plans that include monthly meetings with the Coast Guard and other stakeholders.

WATER QUALITY ▶ IMPROVEMENTS REQUIRED

The Port of Miami should improve water quality by limiting further dredging and channel deepening in the fragile Biscayne Bay, more actively working with the Coast Guard to prevent the dumping of waste by cruise ships, and by improving stormwater management.

LAND USE

The Port of Miami earned a grade of "C" for land use because it is situated on a former dredge-disposal area, yet the surrounding marine ecosystem is fragile. In 1963, the port shifted its operations from the mainland to the Dodge Island facility,

expanding in 1981 to Lummus Island, a neighboring (and now connected) dredge disposal site.[242] The port has remained on dredge-disposal areas without having to expand beyond those islands for the past 40 years, however the current expansion proposal would be severely detrimental to the local marine habitat, if implemented. Additionally, current transportation infrastructure is inadequate, and the situation would be exacerbated by the proposed expansion. Because the site is an island, residential-proximity problems are limited. However, one small community, Fisher Island, sits just across the channel from some container docks, less than 1,000 feet away, and therefore, some residents are severely affected by port operations.

"Could this asthma with which I've been diagnosed since moving to this Fisher Island apartment be due to the port? Is my snowbird neighbor's persistent winter hacking (cough) due to the oily fumes?"

COMMUNITY RELATIONS

The Port of Miami earns a grade of "C" for its seemingly mediocre approach to community relations and its weak record of soliciting public input.[243,244] The port merely states that it follows Miami-Dade County guidelines for its public input process. During the proposed expansion process, however, the port has reportedly been quite inaccessible.

While the terminals are situated on an island, residents still suffer from substantial noise and soot nuisances produced by the port.[245] Notably, the Port of Miami conducted a noise study that found noise levels affecting the northwest tip of Fisher Island were above the limit for acceptable housing, especially due to intermittent noises from sirens and heavy objects dropping.[246] The port is beginning to address community concerns about air pollution from the large container cranes, as mentioned earlier; however, progress has been slow. We recommend that the port expedite the process and move forward quickly with the proposed noise mitigation measures.

RECOMMENDATIONS

The fact-finding for this report revealed untenable situations in many communities near ports: freeways and neighborhood streets overloaded with trucks, homes coated with soot, soaring asthma rates, containers stacked high enough to create significant neighborhood blight, piles of dredged sludge forming toxic islands, and prime marine animal habitats gouged by channeling. Something must be done to clean up underregulated and overgrown marine ports. The following are recommendations to port operators and policy makers for how to clean up port operations. A subsequent report, to be issued in summer 2004, will include more detailed descriptions of these recommendations.

RECOMMENDATIONS FOR PORTS

Ports must commit to protect local communities and the environment, not only during expansions but also during regular operations. Below are measures used throughout the world to successfully decrease impacts on local communities and ecosystems. These measures should be employed at all container ports to clean up their operations, and local activists should be aware of these options to advocate for their implementation.

Cargo Handling Equipment

▶ Retire equipment that is 10 or more years old and replace it with the cleanest available equipment and fuel choices, preferably alternative fuels

▶ Retrofit existing equipment less than 10 years old to run on the best available control technology, including diesel particulate filters (DPFs) with lean NOx catalysts (LNCs) and, if not feasible, with oxidation catalysts (OCs)

▶ Switch to cleaner diesel fuels, such as low-sulfur fuel, with sulfur content less than 15 parts per million and diesel emulsions

On-Road Trucks

▶ Create incentive programs that encourage fleet modernization, the retirement of older trucks, and their replacement with modern lower-emitting trucks

▶ Offer incentives for the installation of pollution controls, including DPFs with LNCs or, if not feasible, with OC

▶ Make cleaner fuels, such as diesel emulsions or low-sulfur diesel, available to off-site trucks

▶ Minimize truck idling by enforcing idling limits or by installing idle shut-off controls

Marine Vessels

▸ Clean up harbor craft, such as tugboats, through engine repower and retrofit programs
▸ Limit idling of oceangoing vessels and tugboats by providing electric power at docks so ships and tugboats can "plug in" to electric power while at berth
▸ Require ships, including oceangoing vessels, to use the cleanest grade of diesel fuel possible, with a sulfur content of 15 to 2,000 parts per million
▸ Where possible, create incentives for, or otherwise promote the use of, emission controls on ocean-going vessels

Locomotives

▸ Repower or replace all switching locomotives that do not meet standards established by the Environmental Protection Agency with electric hybrid or alternative-fuel engines
▸ Install engine emissions controls where possible
▸ Require automatic engine shut-off controls to minimize unnecessary idling
▸ Commit to using cleaner fuels, such as on-road grade diesel

Stormwater Management

▸ Take principal responsibility, as the general permittee, for preparing a stormwater pollution prevention plan for all terminals
▸ Provide guidance to all port tenants for development of model stormwater programs, oversight of individual terminal programs, inspections of individual terminals to confirm implementation of an acceptable program, and education and training of terminal staff
▸ Carefully document and analyze potential water pollution problems, water quality monitoring, and best management practices for the prevention, control, and treatment of stormwater runoff

Other measures recommended include water quality programs; traffic mitigation; land use, light and noise abatement; improved aesthetics; and other terminal design features.

RECOMMENDATIONS FOR POLICY MAKERS

In addition to the mitigation measures ports should implement, a number of policy and regulatory actions are needed to protect human health and the environment from the large, industrial, and high-polluting operations at marine ports. Ordinarily, such activities would be subject to stringent regulation, but oversight of ports falls between the regulatory cracks, defeated by confusion over jurisdictional authority and the ongoing efforts of a strong industry lobby. While a patchwork of international, federal, state, and local rules apply to various pollution sources at ports, most are weak and poorly enforced.

On-Road and Non-Road Vehicles

▸ The EPA should move forward with its proposed non-road rule as quickly as possible

► The EPA should follow through with full implementation of its 2007 emissions standards for on-road, heavy-duty trucks
► The EPA should adopt a series of diesel retrofit rules, similar to those proposed in the California risk reduction program, to establish a cleanup schedule for existing polluting diesel engines, in the absence of federal action, states, or local authorities should adopt these programs
► The EPA should set uniform federal idling limits for all diesel engines, in the absence of federal action, states or local authorities should require idling limits
► Regional authorities should adopt fleet rules to clean up and require new, cleaner purchases of all heavy-duty engines, similar to those in place in the Los Angeles area
► States should provide incentive programs to reduce pollution from heavy-duty diesel engines, similar to programs such as California's Carl Moyer and Gateway Cities, in the absence of state action, regional authorities should sponsor such programs

Inland Cargo Transport

► The EPA and individual states should consider fees on each container entering a port to provide funding for mitigating environmental impacts of moving those containers
► The U.S. government should adopt and support a sustainable transportation system program, similar to the European Union program, facilitating the shift of cargo transport from more polluting modes (like trucking) to cleaner locomotive and barge transport

Locomotives

► The EPA should include locomotives in its low-sulfur diesel (15 ppm) requirement in the proposed non-road rule that will set standards for vehicles and equipment that operate off public roads, and should advance this rule as quickly as possible
► The EPA should implement stricter emission standards for locomotives within one year
► States and regional authorities should also create financial incentives for the cleanup and replacement of older locomotives

Marine Vessels

► The EPA should include marine vessels in its low-sulfur diesel (15 ppm) requirement in the proposed non-road rule that will set standards for vehicles and equipment that operate off public roads, and should advance this rule as quickly as possible
► The U.S. government should officially ratify MARPOL Annexes IV (an international treaty that prevents sewage pollution from ships) and VI (an international treaty that sets emissions standards for ships), and the Antifouling Systems Convention, which bans toxic chemical coatings on ship hulls
► The EPA should expedite efforts to establish the entire East, West and Gulf coasts as control zones subject to stricter emission standards
► The EPA should implement a graduated harbor fee system similar to a program in Sweden that requires more polluting ships to pay higher fees upon entering a port
► The EPA should expedite implementation of stricter emission standards for all marine vessels within two years

▸ Regional authorities should monitor and enforce ship speed limits
▸ States and regional authorities should also create financial incentives for the cleanup and replacement of older marine vessels
▸ States and regional authorities should require ships to plug in to shoreside power while docked
▸ States should require that ships use low-sulfur diesel while in coastal waters and at berth (until electric power is made available). In the absence of state action, regional authorities should require this

Land Use

▸ Regional authorities should improve efforts to protect marine habitats from further infill due to port developments
▸ Regional authorities should work together with local communities and marine terminals to improve efficiency and land use, and to minimize impacts of terminals on local communities

Community Relations

▸ Neighboring states should work together in coastal alliances to protect their marine natural resources, to share information on programs and technologies, and to jointly shoulder the neglected responsibility to neighboring communities and their surrounding environment

Stormwater

▸ The EPA should issue effluent guidelines to require a general baseline level of pollutant reduction for port facilities, or for those pollutants typically found in port runoff
▸ States should assure that anti-degradation provisions of federal and state law are fully implemented in stormwater permits
▸ States should give special attention to the development of total maximum daily loads (TMDLs) for impaired waters around many ports
▸ Local governments should make port facilities a priority when designing inspection protocols in conjunction with local regulatory programs and implementation of municipal stormwater permits

Oil Spills

▸ Congress should pass the "Stop Oil Spills Act" (H.R. 880) to accelerate the phase-in of double-hulled tankers in U.S. waters by 2007
▸ Regional authorities should require ports to take steps to ensure that oil pollution does not become part of runoff and that port-wide oil-recycling programs are in place

Ballast Water

▸ The U.S. Coast Guard should finalize mandatory national ballast water regulations as quickly as possible, or no later than the expected summer 2004 completion date
▸ States should adopt ballast water regulations similar to those in place in California and Washington that ensure a 200-mile buffer from the U.S. coast

Waste Discharge

▶ The EPA must consider more stringent requirements on the dumping of wastes containing oxygen-depleting nitrogen and phosphorous, as well as toxic inorganic compounds that continue to threaten marine life.

CONCLUSION

Based on this survey of 10 of the largest container ports in the U.S., not nearly enough is being done to alleviate the severe impacts of the highly polluting shipping industry, despite real and significant environmental and health impacts associated with marine port operations. Ports should develop and implement internal measures to reduce pollution caused by port activities. Likewise, regulatory agencies at the federal, state, and local levels must provide long overdue safeguards. Furthermore, if port expansions are to continue, all projects must be mitigated to the maximum extent possible, efficiency must be improved, and current operations need to be cleaned up.

APPENDIX

Port Grading Methodology

Ports were assessed grades for four separate categories: air quality, water quality, land use, and community relations, as described in the body of this report. Contributions of each category that factored into a port's overall grade are discussed below.

AIR QUALITY

Air quality grades were assessed based on the following criteria:

- *Cleaner yard equipment and cranes:* alternative fuel use, cleaner fuels and emission controls, electrified gantry cranes, new technology demonstrations
- *Reduced emissions from ships and harbor craft:* alternative power for docked ships, tugboat repowers, cleaner ships and marine fuel, ship speed limits, opacity enforcement on smokestacks
- *Reduced truck emissions:* incentive funding programs, programs to reduce traffic including mode shifts to barge and rail, idling reduction efforts
- *Locomotive/rail improvements:* cleaner locomotives and fuel, on-dock rail, freight rail improvements, intermodal terminal on-site

Performance on these criteria, yard equipment, ships, trucks, and locomotives, was evenly factored into the air quality score.

Other activities counted as extra credit towards an air quality grade. These activities include air monitoring, alternative fuel programs, PM control from dry bulk cargo, funding for off-site air quality improvements, emissions inventory and pollution reduction studies, and carpool programs. Credit for any of these activities was awarded based on the extent of the impact on pollution reductions (e.g., a large carpooling program did not get much credit, while a small tugboat repower did due to the relative emissions); breadth of the measure (e.g., retrofitting a few pieces of yard equipment (as opposed to retrofitting all yard equipment) scored fewer points; degree of completion (e.g., a measure in the planning stages got much less credit than one that was fully implemented; how advanced the measure is (e.g., a measure demonstrating new technology, or that has never been implemented in that type of setting before, earned more credit than measures that are commonly in place elsewhere.

WATER QUALITY

Water quality grades were assessed based on the port's initiative with regard to the following criteria:

- *Water quality monitoring:* frequent monitoring, extensive monitoring for toxics, targeted monitoring after storm events, monitoring by independent party
- *Oil spill prevention:* personnel trained in spill response, maintenance of spill kits at terminals, awareness and prevention programs, frequent inspections on fuel-related facilities, recurring safety meetings with the Coast Guard, prohibited waterside refueling (bunkering)
- *Stormwater control/treatment:* SWPPP in place, pollution prevention training, reductions in stormwater runoff, stormwater retention, stormwater treatment, terminal inspections, annual site evaluations
- *Other:* progressive dredging practices and safe-dredge disposal, wetlands and habitat restoration above mitigation requirements, well-planned ship waste disposal policy, toxics reduction program (or financial support for one), progressive ballast water policies, water recycling, use of nontoxic pile-driving lubricants

In this case, credit for stormwater control and treatment counted for twice as much as that for oil spill prevention and water quality monitoring, due to the relative importance and impacts of stormwater management. Very little credit was given for mere compliance with rules and regulations governing stormwater and water quality. Credit was not given for a port's reliance on other entities to protect water quality or to ensure proper stormwater management. Again, the "other" category was used to award extra credit to ports. However, some ports received negative credit due to egregious acts, such as illegal dredging. We would have liked to compare dredging practices among all ports as a direct part of the water quality grading, but we were unable to do so due to varying amounts and quality of information.

LAND USE

Land use grades were assessed by starting each port with a "C" grade, and then adding or subtracting credit based on the following criteria:

- Efficiency defined as maximum use of existing space resources before expanding
- Reuse of industrial and/or unwanted property
- Avoid expansion on greenfield or otherwise inappropriate sites
- Proximity to residential and sensitive areas
- Terminals located near transportation infrastructure
- Terminals located in naturally deep harbor or close to entrance of shallow harbor
- Proper disposal, storage, and cleanup of toxic materials

All of the ports we reviewed had a much lower land use efficiency than the Port of Singapore, which is considered a model for land use efficiency; however, we saw considerable variation among U.S. ports. Many earned better grades for taking the initiative to clean up and reuse contaminated and/or vacant industrial properties.

Other ports were downgraded for choosing pristine undeveloped areas to build terminals, or continuously filling in water bodies in order to expand. Condemning homes and encroaching on residential areas were major negative factors in land use scores for a number of ports. Terminal location, in terms of proximity to transportation and ocean shipping lanes, factored slightly less than residential proximity. However, at least one port was situated so far from ocean shipping lanes—up a river and inland—that it was significantly downgraded. Finally, where we found evidence of positive actions, such as cleanup of toxic materials like transformers or other noteworthy land-based actions, ports were given more credit.

COMMUNITY RELATIONS

Community relations grades were assessed based on the following criteria:

- Community outreach, opportunity for public input, and public access to information
- Buffering for residential areas, including actions taken to minimize impacts to residential neighbors
- Avoiding development against public sentiment or with disproportionate impacts on low-income communities of color
- Incorporating meaningful mitigation measures presented during the public input process on proposed expansion projects

We relied on considerable input from local residents and community activists. Grades reflect both the sentiments of residents and activists, as well as the conduct of the port as evidenced by its actions. Several ports exhibited deplorable behavior toward local communities, and therefore simply failed this category. Others had mistreated locals in the past, but had since attempted to improve relations, thereby earning better grades based on current conduct with less influence from past incidents.

OTHER ACTIVITIES

Other activities undertaken by the ports did not fit into the above categories, but were sufficiently relevant to the overall grade to warrant small amounts of extra credit. These activities and measures include

- Green port or sustainability programs
- ISO 14001 (an international environmental standard) certification or environmental management systems
- Environmental awareness training
- Energy efficiency
- Public access, parks, bikeways, and boat moorings
- Recycling programs
- Organic and native landscaping programs
- Attention to historic preservation

In all cases, grades were not assessed or viewed until all credit was compiled into a numeric score, matching the 4.0 academic grading system. Authors then reviewed and compared all grades for consistency.

In order to start all ports on a level playing field, employees of each port were asked to describe activities in all four categories, with examples of subcategories articulated clearly in a survey. Surveys were administered by e-mail, over the phone, or in person, and in most cases required additional follow-up for clarification. Respondents were made aware of the purpose of our research. In some cases, respondents either ignored repeated requests (more than a dozen in one case) or chose not to respond to certain questions. In those cases, we assumed that no programs were in place. In other cases, respondents overstated actions and scores that were later corrected based on news reports or other factual accounts that disputed port assertions.

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238 Marilyn Adams, "Cruise-ship dumping poisons seas, frustrates U.S. enforcers; operator's $1million fine called inadequate," *USA Today*, Nov 10, 2002.

239 Ibid.

240 Note that this dumping of waste constitutes illicit activity on the part of the cruise ship operators, which are independent of the Port of Miami. It is unclear what if anything the Port of Miami has done to address these problems.

241 Note that the practice of deep well injection to dispose of wastewater may lead to contamination of drinking water aquifers; it is unclear whether the Port of Miami practices are detrimental or not.

242 Port of Miami: www.co.miami-dade.fl.us/portofmiami/au_historical_tour4.asp.

243 Kirk Nielsen, Dredge Dirge: Authorities are in a pickle over where to dump the toxic sludge soon to be scraped from the Miami River," *Miami New Times*, Jun 22, 2000.

244 Kirk Nielsen, "Spoiled Island: With no public input whatsoever, Miami officials have put together a deal to trade waterfront park land for massive cruise ship terminals and a lovely parking garage," *Miami New Times*, Sep 21, 2000.

245 Personal conversation with Fisher Island resident who wishes to remain unidentified, Apr 11, 2003.

246 Harris Miller Miller & Hanson Inc., technical memorandum to Kunde, Sprecher & Associates, Inc and the Port of Miami, Fisher Island Noise Study, Mar 25, 2002. Note that the limit of "unacceptable" noise is as determined by the U.S. Department of Housing and Urban Development (HUD), and that the port activities were ongoing at that location for many years prior to the condominiums on Fisher Island being built.