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All wildlife and environmental photographs featured in this report were taken at the Port of Long Beach, with the exception of the photograph of the Bolsa Chica Wetlands at the top of Page 2.
The Green Port Policy

The Port of Long Beach is committed to improving the environment, as demonstrated by its 20-year record of environmental protection programs. With the Port's rapid trade growth in recent years—cargo has nearly quadrupled in the past 15 years and is projected to nearly triple in the next 15 years (Figure 1)—the Port recognizes the need for a more aggressive, comprehensive and coordinated approach to reduce the negative impacts of Port operations.

In 2002 the Port established its Healthy Harbor program to manage its various environmental programs and practices. The Port has since recognized that the Healthy Harbor program, while significant, lacked a unified policy and a clear statement of the environmental ethic needed to guide Port development and operations. In November 2004 the Board of Harbor Commissioners (Board) directed the Port to develop a new, improved policy that would encompass wide-ranging environmental goals. This Green Port Policy, which the Board adopted in January 2005, serves as a guide for decision making and established a framework for environmentally friendly Port operations. The policy's five guiding principles are:

1. Protect the community from harmful environmental impacts of Port operations
2. Distinguish the Port as a leader in environmental stewardship and compliance
3. Promote sustainability
4. Employ best available technology to avoid or reduce environmental impacts
5. Engage and educate the community

In addition to the Green Port Policy's overall principles and the goals for each component, the policy includes metrics (scientific measurements of the Port's environmental progress) and a commitment to regular reporting. The Port has been developing appropriate metrics for the various elements; those that have been developed are presented in this report. Future reports will present additional metrics.

Three quarterly reports were submitted to the Board during 2005. The latest can be found in the Environment section of the Port's website, www.polb.com. This report is the first annual report on the achievements, progress and upcoming activities of the Green Port Policy in each of its six basic areas.

![Contaminated Soil Removed or Treated](attachment:image)

**Figure 1:** Cargo volume at the Ports of Long Beach and Los Angeles have nearly tripled in the last decade.
WILDLIFE

As maritime trade increases, wildlife in the harbor is forced to share habitat with more ships, trucks and trains. The Port’s challenge, as a steward of the natural resources in the harbor, is to ensure that wildlife continues to thrive and that the quality of wildlife habitats is not only maintained but improved wherever possible. The Green Port wildlife programs work in conjunction with federal and state wildlife programs to meet that challenge.
Program Goal

* **Protect, maintain or restore aquatic ecosystems and marine habitats**

The Port monitors wildlife by tracking several indicators of habitat quality, including the abundance of birds and the number of fish species found in the harbor during periodic biological surveys (Figures 2 and 3). For more information on wildlife issues, the Green Port wildlife programs, and other aspects of the Green Port Program, visit the Environment section of the Port’s website www.polb.com.

2005 Accomplishments

* Funded a Sea Grant publication that describes the harbor environment and documents the improvements in habitat quality and enhancement of wildlife, including the number of fish species in the harbor, in the past 30 years.

* Completed the seventh year of monitoring the results of the Port’s relocation of a large black-crowned night heron colony from the former Naval Station to the Navy Mole in 1998.

* Provided an additional $11.4 million towards the Bolsa Chica wetlands restoration project, which will allow the creation of more high-quality wetlands habitat in one of the last Southern California coastal salt marshes.

In Progress

* Monitoring protected species that could be affected by Port projects, including peregrine falcons, least terns, and black-crowned night herons.

* Providing educational materials concerning ballast water regulations and practices to vessel captains in support of the state and federal invasive species prevention programs.

Upcoming Activities

* The next harbor-wide biological survey to document the numbers and kinds of marine organisms inhabiting harbor habitats will be conducted in 2006 and 2007.

* The Port, working with Long Beach city officials, local citizens’ groups and resource agencies, will examine possible restoration projects at Long Beach’s Colorado Lagoon and Rainbow Lagoon.

* The Port will help fund a program by the Long Beach Aquarium of the Pacific to develop an exhibit that will highlight the harbor habitat and show how human activities affect its inhabitants.

**Figure 2:** Biological surveys have shown improvement in the diversity of fish in Long Beach harbor.

**Figure 3:** The average number of birds at the harbor has more than doubled since the 1970s.
AIR QUALITY

The movement of goods and other trade-related activities at the Port accounts for about 10% of the total emissions of diesel particulate matter (diesel PM) in the South Coast Air Basin, and a similar proportion of the nitrogen oxides (NOx) (Figure 4). Reducing those emissions is a top priority for the Port. Ships, trucks, trains and cargo-handling equipment in the Port of Long Beach emit about 48 tons of NOx and 2.5 tons of diesel PM per day, as well as other pollutants. NOx is a key contributor to smog formation in the region and diesel PM has been identified as containing air contaminants that are harmful to human health.

As cargo volumes continue to increase, the Port, along with the goods movement industry and local, state and federal government agencies, must determine how to keep the amount of air pollutants from growing at the same pace. The Port’s Green Port air quality projects, which have already won awards from the U.S. Environmental Protection Agency and the State of California, will be a part of the solution.
Program Goal

- Reduce air pollution from Port activities
The Port has several methods of measuring progress toward the goals of its air quality projects. These metrics include the amount of pollution emitted by each source category (e.g., ships, trucks, trains, equipment) per unit of cargo handled and the reductions in those emissions. The Port has calculated that metric for cargo-handling equipment and future reports will include all other sources as well. For some programs, specific metrics are not appropriate. For those, the Port will report new developments and activities as they occur.

Accomplishments in 2005

- Marine vessels
The Port initiated the Green Flag Incentive Program and dedicated as much as $2.2 million a year toward financial incentives to improve compliance. Identified 333 vessels—more than one-third of the vessels that came to Long Beach in 2005—as having complied with the speed limit on 100% of their trips, making them eligible for a Green Flag (Figure 5).
  Goal: 100% of vessels in compliance with the voluntary Vessel Speed Reduction Program by the end of 2006.

- Coal-ironing
With British Petroleum (BP), initiated a voluntary project to install shore-side electrical power at Berth T-121 and wiring and plugs on two BP tankers, which will cold-iron whenever they call Long Beach. This project is projected to reduce emissions by at least 22 tons of NOx and 0.8 tons of diesel PM per year. Initiated a master plan for upgrading the Port’s electrical infrastructure to accommodate cold-ironing throughout the Port; the plan will be completed in 2006.
  Goal: To provide electrical infrastructure for shore-side power (cold-ironing) at 100% of container terminals and at other major facilities as appropriate.

- Cargo-handling equipment
The Port and its tenants have reduced emissions from terminal equipment by nearly 600 tons of NOx and more than 70 tons of diesel PM a year compared to 2002, which represent reductions of 24% and 50%, respectively (FIGURES 6 AND 7). This has been accomplished through 1) the Diesel Emissions Reduction Program and 2) accelerated replacement (modernization) of the equipment fleets, and has occurred even while cargo tonnage has increased by 30%. In the emission reduction program, the Port, EPA and the California Air Resources Board spent more than $2 million to retrofit more than 600 pieces of cargo-handling equipment with diesel oxidation catalysts; half of those are using clean diesel fuel.
  Goal: To reduce, by 2010, the emissions per ton of cargo from terminal cargo-handling equipment by 90% compared to 2002 levels. Note: This program has achieved its goal of 100% participation by the major terminals.

- Locomotives
Committed $5 million (toward a total shared project cost of $23 million) to replace all Pacifié Harbor Lines locomotives with cleaner units by 2008, use emulsified diesel and idling controls, and test diesel hybrid and liquefied natural gas locomotives.
  Goal: By 2010, to reduce locomotive emissions by 66% for NOx and 79% for diesel PM per year (corresponding to 226 tons and 5.9 tons, respectively).

PHOTOGRAPHS: (Left circle) The Port’s new street sweepers run on clean liquefied propane gas; (Bottom left) The Green Goat, a new diesel-electric hybrid locomotive; (Top right) The captain and crew of the COSCO Long Beach accept a Green Flag for environmental achievement.

FIGURE 4: Port-related sources contribute about 10 percent of the region’s pollutants, with ships responsible for the majority of Port emissions.
**Port Vehicles**
Retrofitted the Port’s diesel-powered maintenance equipment to diesel oxidation catalysts and a clean diesel fuel mixed with ethanol, purchased three liquefied petroleum gas (propane)-fueled sweepers, and began replacement of the gasoline-powered fleet with compressed natural gas-powered and hybrid vehicles.

*Goal: To convert 100% of the Port’s fleet to cleaner vehicles.*

**Air Monitoring Stations**
Authorized $1.1 million to install and operate two air monitoring stations to sample and report via the Port website on air quality, including concentrations of key pollutants; and approved an agreement with the Port of Los Angeles to ensure consistent monitoring throughout San Pedro Bay.

*Goal: To collect and report to the public real-time air-quality data by the end of 2006.*

**Coke Dust Fallout**
The installation of $34 million worth of new equipment and technology has reduced the proportion of petroleum coke dust in particulate fallout from 21 percent in 1996 to 4 percent in 2005, a reduction of more than 80% (Figure 8).

*Goal: To minimize or eliminate petroleum coke fallout from transport, storage and handling operations.*

**In Progress**

**Vessel Stack Blows**
Harbor Patrol cites vessels emitting excessive smoke. With the adoption of the Green Port Policy, increased enforcement has resulted in increased compliance.

*Goal: To minimize or eliminate incidences of excessive smoke from vessels at berth.*

**Green Port Lease Requirements**
The Port has developed, and will incorporate into new and renegotiated leases, new environmental language that will require selected vessels to use shore-side power, exhaust control technology and cleaner fuels at berth. The Port will require terminals to use clean diesel fuel and replace cargo-handling equipment to meet EPA’s tougher Tier 4 standards for diesel engines. Negotiations on the first lease incorporating Green Port program elements will be concluded in 2006.

*Goal: To incorporate environmental measures into all new leases.*

**LNG-Powered Cargo-Handling Equipment**
The Port, the U.S. EPA, Long Beach Container Terminal, CALSTART and Sound Energy Solutions have started a project to evaluate the feasibility of LNG-powered terminal equipment, beginning with yard hostlers or tractors. The hostlers have been delivered and the fueling equipment has been installed; the test will be completed in 2006.

*Goal: To determine the operational feasibility of LNG as a fuel for cargo-handling equipment.*

**Clean Construction Program**
The Port is requiring contractors to use ultra-low-sulfur diesel in construction equipment and to use electric-powered dredges, and will require cleaner engines, oxidation catalysts, alternative fuels and electric equipment wherever feasible.

*Goal: To maximize the use of clean fuels and low-emission engines in construction equipment.*

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Photographs: (Left) Diesel oxidation catalysts have been installed on all Port yard hostlers; (Right) Yard tractors fueled by LNG are being tested.

![Green Flag Compliant Vessels](image)

**Figure 5:** More than one-third of the vessels that called Long Beach in 2005 were compliant under Green Flag speed reduction guidelines.
Upcoming Activities

* **Vessel Main Engine Retrofit**
The Port is funding and working with an interagency group that is testing emission control technologies for oceangoing vessel main engines, with the goal of reducing the largest source of diesel PM.

* **Port-Wide Emission Inventory**
The Port will complete the metrics for the 2002 emission inventory and the 2005 update, as well as the report of the full 2005 update, in 2006. This inventory will allow the Port, the community and regulators to assess the progress of clean air projects and determine the best use of resources to address air quality problems.

* **Regional Planning**
As a member of an Air Quality Management District Advisory Committee, the Port is helping to develop the region’s Air Quality Management Plan.

![Graphs showing pollution reduction](image)

**Figures 6 & 7:** The Port’s pollution control measures have dramatically cut PM and NOx emissions from cargo-handling equipment.

![Graph showing petroleum coke dust reduction](image)

**Figure 8:** The Port has reduced airborne petroleum coke dust by more than 80 percent.
WATER QUALITY

Since most of the Port’s 3,200 acres of land are paved, storm water drains into the harbor, carrying with it pollutants from terminals, roads and construction sites. In addition, vessel traffic and dredging stir up sediments, some of which may contain pollutants. The Green Port water quality projects protect and improve water quality by managing the activities that can cause water pollution.
Program Goal

- **Improve the quality of Long Beach Harbor waters**
  The metric for this program is dissolved oxygen concentrations and water clarity in harbor waters—two key indicators of the quality of the harbor water as a habitat for sea life. While there is no state standard for water clarity, concentrations of dissolved oxygen in the Port have consistently stayed well above 5 mg/L, the minimum that the state’s Water Resources Board has deemed healthful for marine waters (Figure 9). Port water quality programs are designed to maintain the high quality of harbor waters, and the Port is proud of its award-winning efforts.

2005 Accomplishments

- Committed $4.5 million to long-term storm water management and dust control on undeveloped Port properties, and spent $1 million in 2005 installing protection for 87 acres. These controls will minimize runoff into the harbor.

- Removed 400 cubic yards of trash from Port streets and waterways, thereby preventing trash from entering the harbor through the Port’s storm drains.

- Began development of a storm water permit compliance tracking system for construction sites.

- Conducted 82 facility inspections under the Master Storm Water Program to verify storm water compliance and management practices by the Port and its tenants.

- Tested automatic remote sampling devices to improve storm runoff sampling and monitoring.

In Progress

- Incorporating storm water management features, such as the treatment of water flows from industrial areas into new terminals.

- Conducting regular inspections of all Port facilities to ensure compliance with storm water regulations and employ best management practices for minimizing storm water pollution.

- Monitoring water quality around dredging projects to ensure that contaminants do not exceed water quality standards.

Upcoming Activities

- A Port-funded sampling and monitoring program to support the development of Total Maximum Daily Load pollution limits for the harbor area by the federal EPA and the state Water Board will begin in 2006.

- Automatic storm water sampling devices will be installed at hard-to-sample sites around the Port.

- Application of long-term storm water controls on undeveloped sites will continue in 2006.

- The first of the storm water treatment devices at major Port facilities will be installed in 2006.

![Water Quality Graph](image)

**Figure 9:** Oxygen concentrations, a key measurement of water quality, have remained consistently high in harbor waters.
SOILS AND SEDIMENTS

Soils and sediments in the Port have been contaminated by past industrial uses, illegal dumping, oil production and pollution entering the harbor through storm drains and rivers. The Port must manage any polluted material on land and in harbor sediments so as to protect site workers, the community and the environment, and to ensure that the pollution is not simply shifted elsewhere. The Port’s projects return contaminated areas to productive use in a safe, responsible manner—a process of beneficial re-use known as “brownfield redevelopment.”

In the past 10 years the Port, working closely with state and local regulatory agencies, has removed nearly 200,000 tons of contaminated soils and sediments from the environment and disposed of them in approved landfills and recycling facilities. Several million more tons of soils and sediments have been treated on-site and isolated deep inside Port lands, in accordance with state and federal standards, to remove them from contact with air, water and people.
Program Goal

- **Remove, treat and render suitable for beneficial reuse contaminated soils and sediments in the Harbor District.**

  The Port’s goal is to remove all of the contamination that has been identified in the Port’s land and sediments by 2010 and at the same time protect workers, the public and ecosystems in the Port. Our metric to measure progress will be the cumulative total removed to date, which will be reported every year (Figures 10 and 11). Hazardous material abatement does not have a numerical goal because those materials are addressed as they are encountered.

2005 Accomplishments

- **Soil Remediation**

  Completed the action plan for the clean-up of the Pier A West oil field property and signed an agreement with the Department of Toxic Substances Control (DTSC) to fund preparation of the environmental review document.

  **Goal:** To remove 100% of identified contaminated soils by 2010.

- **Sediment Remediation**

  Disposed of 6,000 tons of sediment (undersea soil) and debris from maintenance dredging in the Back Channel, bringing the total of contaminated sediments safely re-used or disposed of to nearly half the amount known to exist in harbor waters; signed an agreement with the state Department of Toxic Substances Control (DTSC) and started the design and environmental analysis for the cleanup of the last of the Navy’s West Basin contaminated sediments. **Goal:** To remove 100% of identified contaminated sediments by 2010.

- **Hazardous Materials Abatement**

  Completed an assessment of asbestos in an old warehouse and initiated the abatement; the Port will removed hundreds of tons of asbestos and dispose of it safely.

In Progress

- Institutional controls such as deed restrictions are being implemented to protect the public from contact with contaminants left in place by the Navy, energy companies and approved by the DTSC.

- Contaminated sediments from the West Basin are being reused as structural material underneath the new Pier T terminal, thereby isolating contaminants from the environment.

  - Contaminated ground water is being monitored at sites around the Port to ensure it does not migrate to harbor waters.
  
  - Pre-construction surveys of land, sediments and buildings are being conducted to ensure that hazardous wastes are identified and managed appropriately.

Upcoming Activities

- Complete conceptual design of the West Basin sediment cleanup project and begin preparation of the environmental document; this project represents the final step in the cleanup of contamination left behind on the former Naval Complex.

- Complete the design of Pier A West remediation; the Department of Toxic Substances Control will oversee cleanup.

![Contaminated Soil Removed or Treated](image1)

**Figure 10:** The Port has removed from contact with the environment more than half of all known contaminated soil.

![Contaminated Sediment Removed from the Marine Environment](image2)

**Figure 11:** The Port expects to finish removing or treating all known contaminated sediment (undersea soil) by 2010.

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**Photographs:** (Top left) Vessel traffic (Pier A) can stir up sediments, some of which may contain pollutants from past industrial activity; (Circle left) The Port’s EPA award-winning Slip 2 Fill project reclaimed 1 million cubic yards of contaminated sediments; (Bottom left) Healthy soil supports a variety of sea plants.
COMMUNITY ENGAGEMENT

As the Port of Long Beach continues to develop its environmental protection and enhancement programs, the Port needs to increase the community’s understanding of the Green Port programs, and to help raise the overall level of environmental awareness and involvement among the residents of Long Beach and surrounding communities.
Program Goal

- Interact with and educate the community regarding Port operations and environmental programs.
Numerical goals and metrics are not applicable to the Community Outreach element; instead, the Green Port program will report on community outreach activities as they occur.

2005 Accomplishments

- Held the first Green Port Open House, attended by more than 2,000 members of the public, at which the Port, its customers and local agencies highlighted how Green Port projects are addressing the Port’s goals.

- Designed and produced a Green Port brochure describing the program's structure and goals, which was distributed at the Open House.

- Harbor Arbor Program—Interviewed City Council and community leaders to identify candidate projects; selected two as initial projects. Goal: To beautify Long Beach and provide an air quality benefit through the planting of trees at strategic locations.

- Began production of a cable television program “Pulse of the Port,” which aired its first show on the Green Port Open House. The program now airs regularly on Long Beach Channel 8, Charter Communications.

- Expanded the circulation of the Re:Port quarterly community newsletter from 50,000 to 170,000 households.

In Progress

- Evaluating a goods movement component to the City’s upcoming youth employment enhancement program.

- Meeting with Long Beach Unified School District to consider a Goods Movement Academy in Long Beach high schools.

Upcoming Activities

- The Communications Division will report on the Green Port Program as part of the Re:Port publication and other communications media.

- Two initial Harbor Arbor projects will begin spring 2006.

- The Communications Division will complete its survey of existing education-related programs and activities and will prepare a list of recommended activities for implementation by the Port.
SUSTAINABILITY

The Green Port Policy directs the Port to integrate sustainable practices into Port development and operations by actively promoting an organizational culture of environmental protection and enhancement. This culture extends to Port staff as well as the Port’s customers. Benefits will include preservation of natural resources, reduction of pollution, conservation of energy and curtailment of waste, increases in the use of renewable and recyclable materials, and overall reduction of the Port’s impact on the environment.
Program Goal

- **Implement sustainable practices in design and construction, operations and administrative practices throughout the Port.**

In achieving this goal, Port staff will develop policies and procedures that will promote long-term ecological health, economic vitality and community integrity. The Sustainability element of the Green Port program does not have numerical goals or metrics; instead, progress will be reported as it occurs.

2005 Accomplishments

- Formed the Sustainability Task Force, consisting of Port staff, to examine all aspects of Port operations and improve environmental performance; authorized $874,000 to fund the task force’s activities in 2006.

- Applied for the American Association of Port Authority’s Environmental Management System, which will help establish sustainable practices in Port purchasing and maintenance functions.

- Established in-house teams to evaluate landscaping, water conservation, recycling and disposal practices for sustainability principles.

- Developed a draft Action Plan for incorporating sustainability principles into Port development and operations.

- Helped bring into operation the PierPASS OffPeak truck gate program, which has reduced peak-hour truck traffic by nearly 35%.

In Progress

- Management teams are producing a training video and training program for Port staff, developing a tenant education and outreach program, and producing an in-house newsletter on sustainability.

- The Task Force action teams evaluate all Port activities to identify opportunities for the Port to reduce waste, curtail consumption and increase recycling.

- The Engineering Division incorporates Green Building principles into new building design through its Leadership in Energy and Environmental Design (LEED) certification program.

Upcoming Activities

- The Sustainability Task Force will complete the Action Plan and begin implementation of the Plan throughout the Port.

- The Port will support the start-up of the Virtual Container Yard program in 2006, so that empty containers can be exchanged on-line, outside the Port.

- The Port’s Environmental Control Program, a requirement for companies leasing land in the Harbor District, will be expanded and refined to ensure that it incorporates Green Port Program principles.

Looking Ahead

The Port of Long Beach has a long history of undertaking environmental programs in fulfillment of its responsibilities as a steward of the natural resources in the Harbor District. The Green Port Program has established the framework on which the Port will continue to refine and expand its environmental and community outreach programs. Because these programs will be a multi-year effort, the Port will continue to report the results to the Board of Harbor Commissioners, Long Beach City Council and the public.

"With the Green Port Program we have embarked upon a new course, driven by the ethics of sustainability and community responsibility, to bring our environmental protection and enhancement efforts to a new level. I am proud of what we have already accomplished and I know I will be proud of what we will accomplish in the future through the Green Port Program."

—ROBERT KANTER, PH.D.
PORT OF LONG BEACH
DIRECTOR OF PLANNING AND ENVIRONMENTAL AFFAIRS
SUSTAINABLE PRINTING

The Long Beach Board of Harbor Commissioners has adopted a Green Port Policy that calls for the Port of Long Beach to promote "sustainability"—the idea that we will meet current needs without compromising the ability of future generations to meet their needs.

This year, the inside pages of the Green Port Annual Report were printed on Forest Stewardship Council-certified Mohawk Options White Smooth text—a 100 percent post-consumer recycled paper manufactured entirely with wind energy. This paper made entirely of recycled papers and other products that have already been used by consumers. This paper is also Green Seal certified.

The cover is printed on Fraser Genesis Snow Smooth cover, which is made from 100 percent de-inked post consumer waste and exceeds all guidelines for recycled fiber and post-consumer content as set forth by the U.S. Environmental Protection Agency and each of the 50 states.

We printed the Annual Report with sustainable soy ink made from non-toxic soybean oil rather than standard petroleum-based inks.

We are proud that this is an environmentally friendly Annual Report.
ANNUAL REPORT STAFF

The 2005 Green Port Annual Report was produced under the direction of Dr. Robert Kanter, the Port Director of Planning and Environmental Affairs.

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Thanks to the entire Port staff for their contributions to the Green Port programs.