

4.1 Introduction

4.1.1 WRAP Framework

One of the driving forces in the formulation of the WRAP is the imminent promulgation of TMDLs for harbor waters. As summarized in Section 2.1.1, TMDLs will provide the framework for establishing load allocations for discharges of each pollutant for which an impairment has been established, so that, over time, the water body can recover and its beneficial uses can be enjoyed. The TMDLs will be translated into pollutant allocations for the various sources that discharge to the water body.

The TMDLS for LA-LB Harbor are being established by the US Environmental Protection Agency (US EPA) and the Los Angeles Regional Water Quality Control Board (Water Board). Key issues in TMDL development include a reasonably accurate inventory of pollutant discharges to the water body, a good understanding of the fate and transport of those pollutants, and a realistic allocation, among the various sources, of the total load that the water body can sustain. The lack of any one of those elements will lead to a TMDL that does not achieve water quality standards and/or places an undue burden on cities and industries.

The allocations established by the TMDL process will be translated into discharge limits that will be incorporated into the NPDES discharge permits that the Water Board issues periodically to the municipalities and industries under its jurisdiction. Each permittee must develop and implement a strategy for complying with its permit(s); the WRAP is intended to provide the framework and mechanisms for the Ports to achieve the goals and targets that will be established in the relevant TMDLs and to comply with the Industrial Activities, Construction Activities, and MS4 permits issued to the Ports and their respective Cities and tenants. For this WRAP to be effective, the regulatory agencies – the Water Board and the EPA —have the responsibility to promulgate applicable TMDLs and to incorporate those TMDLs into permits in a clear, enforceable, and implementable manner.

It is important to note that, at this point, there are no discharge limits for most of the sources that the WRAP addresses, nor is there an accurate pollutant inventory for the discharges from those sources. These are sources for which discharge limits have not been established (e.g., storm water runoff), or mobile, small-scale sources that have not been included in NPDES permits (e.g., recreational vessels). Furthermore, with the exception of the POLA Main Channel/Cabrillo Beach bacterial TMDL, no TMDL load allocations have been developed for the Dominguez watershed. Finally, fate and transport in the LA-LB Harbor and Dominguez Channel have not yet been fully described.

Accordingly, this WRAP has been developed without numeric goals for pollution reduction; these will be established through the TMDL process. Instead, it assumes that achieving pollution reductions of any magnitude will be beneficial to water and sediment quality and will contribute to the achievement of any water quality standards that are established through the TMDL process. Once TMDLs have been established and translated into NPDES permits, the Ports expect to be able to focus the programs developed in the WRAP on compliance with those permits. The control measures in the WRAP have been formulated under the assumption that the Ports and their Cities will soon receive new industrial and municipal permits that will be substantially modified from those now in effect.

The metrics for the control measures in this WRAP focus on development and/or enhancement, and implementation of water quality programs. Once numeric pollutant limits have been established, performance-based metrics that track pollutant reductions can be established for WRAP control measures.

4.1.2 Assumptions Concerning Future Permit Structure

TBD

4.1.3 Sources and Control Measures

The new permits described above will be implemented through existing and new programs at the two Ports and their respective cities. The existing programs include the various control measures that are part of the municipal, industrial, and construction storm water permits, the Ports' normal operational controls (e.g., infrastructure maintenance, tariff and lease requirements), and the special programs the Ports have already instituted. The following sections describe new controls that the Ports expect they will need in order to respond to the new permits and TMDL requirements, and to perceived deficiencies in existing measures and programs. An important element of the WRAP is the incorporation of metrics by which the Ports' progress in implementing the control measures are measured. The metrics in this WRAP are mostly whether or not the Ports have taken the actions set forth in the measures. Pollutant reductions will be measured in future WRAP updates in the context of limits set by TMDLs.

Water and sediment quality control measures must be developed in the context of the pathways, or conveyances, by which water pollutants reach the harbor (see section 1.2), and must focus on the major conveyances for pollutants of concern. Control measures are typically developed to address sources, rather than specific pollutants, since a given measure is likely to be effective for more than one pollutant.

Four basic types of sources are addressed by the WRAP through existing and proposed programs.

- **Land Use Discharges:** These are discharges from the various land uses in the harbors, including industrial uses such as cargo and passenger terminals, port-related industrial facilities, and roads and rail lines, related activities such as equipment maintenance, and non-industrial uses such as shops and restaurants, fishing piers, beaches, and marinas.
- **On-Water Discharges:** Vessels discharge fishing wastes, trash, and cooling water, and may, despite laws to the contrary, discharge bilge water, black water, and gray water. Leaching from bottom paint and corrosion also releases contaminants from vessels. Leaks and spills from on-water vessel fueling activities also occur.
- **Sediments:** Whether resuspended into the water column or in place on the bottom, sediments are a repository and potential source of contaminants into the water.
- **Watershed Discharges:** Watershed discharges originate outside the harbors (and beyond the jurisdiction of the Ports), and are conveyed into the harbors by larger inputs, such as the Dominguez Channel and the Los Angeles River, and by storm drains that drain areas outside the harbors and discharge into the harbors.

In each of these source categories, any of the four conveyances described in Section 2 (landside runoff, aerial deposition, direct discharge, and advection) may be at work. The various activities in each of these sources that could generate pollutants are discussed in the following sections.

The objective of the WRAP is to identify for which of these sources the current programs are or may be ineffective and to establish measures that will remedy the deficiencies. Control measures consist of both improvements on current control measures (see Section 2.3) and the addition of new measures. Control measures for these sources that could be implemented by the Ports fall into three broad categories:

- **Housekeeping Practices** (e.g., street sweeping, inspections, waste minimization procedures, waste collection points)
- **Structural Controls** (e.g., storm drain inserts, containment berms, slot drains, clarifiers, wind screens, covers, trash cans)
- **Outreach/Education** (e.g., training programs, storm drain stenciling, signage, public service messages)

The non-structural categories essentially consist of operational controls, most of which target activities rather than specific conveyances or pollutants. Some of these operational controls are proactive, in the sense that they are aimed at preventing pollutants from being generated, or at least from entering the environment. The structural controls and some of the operational controls (e.g., street sweeping and trash collection) tend to be reactive, in the sense that they are aimed at

dealing with pollutants that have already been generated and could enter (or have already entered) harbor waters.

4.2 Land Use Discharges

4.2.1 Sources and Activities

Port land uses include a variety of cargo terminals, two cruise terminals, roads, rail lines, port-related uses such as warehouses, ancillary uses (e.g., support facilities, maintenance and service companies, commercial fishing), light industrial operations, visitor-serving facilities (e.g., restaurants, commercial establishments, fishing piers, beaches, boat ramps, marinas), and port administration facilities.

Many of these uses have in common certain types of activities that generate similar pollutants. As an example, many uses include maintenance facilities that conduct vehicle and equipment maintenance and vehicle fueling activities, regardless of whether those uses are cargo terminals, oilfield facilities, warehouse operations, or port administration facilities. These types of activities are called "Port-Wide Sources". Other potential sources are limited to certain types of uses; for example, cargo-handling areas are a potential source limited to marine terminals and restaurants are limited to the visitor-serving land use. These form the categories of "Other Non-Public Facilities" and "Visitor-Serving Sources." The Ports have identified nine of those potential sources (Table 4-1) as being of concern, and have focused the WRAP on addressing discharges from those sources. This list does not, of course, include all possible landside sources of pollution to the harbors, but rather those that represent significant potential threats to harbor water quality.

Although the sources and activities vary, most discharge a common suite of pollutants (Table 4-1): metals, organics, total suspended solids (TSS), and trash. Additional pollutants that the ports have identified as being of concern include pesticides and herbicides from landscaping and nutrients and pathogens (bacteria) from certain other activities.

4.2.2 Control Measures for Land Use Sources

Landside sources are currently addressed through the various storm water management programs and other pollution control programs currently implemented by the two ports and their respective city agencies (See Section 2.3.2). As Table 4-1 shows, the Ports have identified additional control measures for the landside activities identified as priority uses. The additional control measures being proposed would be incorporated into the existing programs.

Many of the control measures are the same, or essentially the same, across several sources (e.g., enhance and expand housekeeping BMPs). This WRAP identifies eight control measures that need to be implemented in order to address the known or suspected deficiencies in controlling pollutant discharges from land uses in the harbor districts (Table 4-1).

Table 4-1. Water Quality – Land-Use Sources, Activities, and Control Measures

SOURCES	ACTIVITIES	KEY POLLUTANTS	MEASURES (*)
PORT-WIDE SOURCES			
Vehicle & Equipment Maintenance and Landside Fueling	<ul style="list-style-type: none"> Maintenance areas in terminals, other tenant facilities, and POLA/POLB maintenance yards Hazardous materials storage and use, outdoor parts storage Land-based mobile fueling operations 	Metals, organics, TSS, trash	LU-1, LU-2, LU-3, LU-5
Grounds and Facility Maintenance	<ul style="list-style-type: none"> Landscape, building exteriors, and miscellaneous structures in terminals and other leased areas Vacant/unleased areas and natural areas Parks, beaches, promenades, marinas, research facilities, aquaculture, other uses Landscaping along roads and other ROWs 	Pesticides/herbicides, nutrients, metals, organics, TSS, trash, pathogens	LU-1, LU-2, LU-3, LU-4, LU-5, LU-6
Roads and Parking Lots	<ul style="list-style-type: none"> Designated parking areas in tenant facilities (longshore, staff, visitor) Public roads 	TSS, trash, metals, organics	LU-5, LU-6
Construction Sites	<ul style="list-style-type: none"> Materials storage Ground disturbance 	TSS, metals, organics, trash	LU-7
OTHER NON-PUBLIC FACILITIES			
Cargo Handling Areas	<ul style="list-style-type: none"> Paved areas for storage of packaged cargo (including containers, break bulk, and vehicles) and use of cargo-handling equipment Tank farms, piping, loading/unloading points for petroleum, fuels, petroleum-based products, chemicals, rocket fuels, and other oils and liquids Conveyors, barns and silos, paved areas, and truck and rail loading/unloading points for coke, sulfur, salt, gypsum, cement, recycled metals, aggregate, etc. 	Metals, organics, TSS, trash	LU-1, LU-2, LU-3, LU-5
Commercial Fish Market/Fish Processing Facilities	<ul style="list-style-type: none"> Packing, canning, and marketing facilities Landside support areas (e.g., outside net storage) 	Pathogens, TSS, trash, nutrients	LU-2, LU-3
Rail Facilities	<ul style="list-style-type: none"> Locomotive and railcar maintenance ROW maintenance 	TSS, trash, metals, organics	LU-1, LU-2, LU-5
Auto Repair/Dismantling & Boat Repair	<ul style="list-style-type: none"> Commercial facilities within the harbor districts Sandblast grit, hazardous materials storage and use, outdoor parts storage 	Metals, organics, TSS, trash	LU-1, LU-2
VISITOR-SERVING SOURCES			
Restaurants, Boat Launches	<ul style="list-style-type: none"> Various locations throughout both harbors under city and county jurisdiction Washdown discharges 	Pathogens, nutrients, TSS, trash, metals, organics	LU-2, LU-5

*: Land-use control measures described in detail below

LU-1. Enhance and expand housekeeping BMPs in maintenance and fueling areas, cargo handling areas, dry bulk cargo, auto dismantling/boat repair facilities, and building maintenance and landscaping areas

LU-2. Develop port-wide guidance manual for design of new and redeveloped facilities, including design criteria and operational BMPs

LU-3. Install structural BMPs for key discharges and targeted pollutants at existing facilities

LU-4. Continue and expand upon existing storm water/dust control programs for vacant/undeveloped property

LU-5. Enhance/expand litter control programs

LU-6. Enhance/expand street and parking area sweeping and cleaning programs

LU-7. Evaluate existing construction permit compliance procedures and enhance as necessary.

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4.2.3 Description of Control Measures

For each of the control measures, this WRAP describes the necessity for the proposed measure, the nature of the measure, how the measure will be implemented, including schedule and costs, and how the progress in implementing the measure will be monitored and evaluated (the metrics).

Control Measure LU-1: Enhance and expand housekeeping BMPs in maintenance and fueling areas, general cargo handling areas, certain dry-bulk cargo handling areas, automobile dismantling and boat repair facilities, maintenance and landscaping areas.

The enhancement or addition of housekeeping BMPs in areas with demonstrated deficiencies in existing BMPs or a high probability of contributing to storm water pollution will reduce overall pollutant loading from port activities into harbor waters.

Current Status: Vehicle maintenance facilities in cargo terminals, other tenant facilities, and the port authority maintenance divisions handle hazardous materials such as solvents, lubricants, fuels, and paints and other coatings, and generate wastes such as spent solvents, oily rags, used sorbent, and other expendables. In addition to fixed maintenance facilities, some cargo terminals conduct mobile fueling and maintenance of terminal equipment in areas outside the fixed fueling facilities. Potential pollutants from these facilities include organics from fuels, lubricants and solvents; metals from cutting, leaking batteries, and corrosion; TSS; and trash.

Certain general terminal activities are also of concern. For example, truck queuing lanes inside container terminals and terminal parking lots are sources of trash and oil and grease. In the Port of Los Angeles, sweeping in terminals is conducted by tenants and private property owners in accordance with their NPDES permits. The Port of Long Beach is involved with tenant and private property sweeping activities through the Storm Water Program, and has the authority to require additional sweeping in problem areas.

The cargo-handling areas in terminals include the dock-side areas where vessels are loaded and unloaded, which experience cargo spillage and releases from cargo handling equipment, and outside cargo storage areas. Storm water issues associated with most cargos are concentrated in the storage areas because that is where leakage, leaching, and corrosion are most likely, but dockside areas also require storm water controls. Typical cargos that may be stored outside include containers, automobiles, lumber, heavy equipment, certain dry bulk products (e.g., salt, recyclable metals, and aggregates), raw and finished metals, and a number of miscellaneous products. Potential pollutants include metals, TSS, organics, and trash. Cargos that are stored inside (e.g., liquid bulk; most dry bulk such as cement, petroleum coke, sulfur, soda ash, and gypsum; and high-value, refrigerated, or bagged/drummed products) present a negligible storm water threat.

Dry-bulk cargos that arrive at and depart from terminals by vessel, truck, and train have a particular potential for leaks and spills. At-risk areas include conveyor belt systems, truck and railcar dumps and loading points, and rail yards where loaded railcars sit awaiting unloading. Cargoes that may escape to the environment at these points and that could enter storm water include soda ash, which is known to escape from loaded railcars; petroleum coke, which escapes from conveyors, railcars, and trucks; gypsum and sulfur, which escape from conveyors; and cement, which escapes from conveyors and truck loading facilities.

In accordance with the General Industrial and Municipal Storm Water Permit programs at the two ports (see Section 2.3.2), tenants and the ports implement a variety of housekeeping BMPs aimed at reducing the exposure of non-point source runoff to the pollutants generated by their maintenance and fueling activities. Typical housekeeping BMPs currently in place at most facilities include inspections, periodic area sweeping and pavement cleaning, materials and waste storage and handling procedures (e.g., spill and drip prevention, oily rag and solvent storage, use of containment structures for toxic chemicals, lubricants and solvents, fertilizers, and paint and cleaning wastes), portable berming, control of washdown activities, collection of errant product and cargo-related debris, regular inspections of cargo handling equipment, litter control, and inspection and adjustment of irrigation systems.

Required Actions: This control measure will, as necessary, increase the scope of housekeeping BMP application and improve and add BMPs. For example, BMPs already being used could be more

uniformly applied to facilities port-wide and especially in high-priority areas, and new BMPs could be instituted where appropriate.

Individual facility SWPPPs and recent inspection/audit and annual reports need to be reviewed in the normal course of program management to determine where improvements in existing housekeeping BMPs are needed and which facilities would benefit from additional BMPs.

Enhancements to existing BMPs could include:

- more frequent/extensive sweeping (see Control Measure LU-6 for more detail)
- more rigorous spill prevention procedures for mobile fueling operations, equipment maintenance and storage procedures, cargo, and hazardous materials storage
- improved hazardous materials management procedures
- enhanced dust and runoff control at recyclable metal terminals (see Control Measure LU-4 for more detail)
- more frequent trash collection (see Control Measure LU-5 for more detail).

Additional BMPs could include:

- requiring periodic zero-discharge pavement cleaning in key areas (see Control Measure LU-6)
- prohibiting uncovered storage of materials and idle equipment
- instituting operational controls such as modified cargo storage, cargo loading/unloading, and materials handling and storage protocols
- employment of dust and runoff controls at auto dismantling and boat yards where they are not already employed (see Control Measure LU-4 for more detail)
- employment of sustainable landscaping materials and practices to reduce water, fertilizer, and pesticide use
- introduction of sustainable materials and practices in building and structure maintenance.

Implementation: Port initiatives. POLB will implement this measure through modifications of facility SWPPPs and the Master Storm Water Program. POLA will implement this control measure by working with the City's WPD for critical source facilities, and working with its tenants through the ECA, NPDES MS4 Permit, and tenant outreach programs to improve facility SWPPPs.

Schedule: TBD

Monitoring and Metrics: The metric for this measure is the implementation of required program changes. The Ports' progress in instituting the changes will be monitored and reported annually. Once the changes are in place, and TMDLs and the new permits have been approved, the Ports will develop new metrics.

Control Measure LU-2: Develop a port-wide guidance manual for design of new and redeveloped facilities, including design criteria and operational BMPs.

The identification of port-specific and -appropriate development/redevelopment criteria and operational BMPs will reduce overall pollutant loading from port activities into the harbor.

Current Status: The City of Los Angeles's municipal storm water program contains provisions to follow Standard Urban Storm water Management Plan (SUSMP) requirements for new development and significant redevelopment projects. These requirements, which the Port follows, include capturing and/or treating runoff from a 0.75" or greater storm event through provisions such as encouraging the reduction of impervious cover and installing catch basin inserts and mechanical separation units. Examples of BMPs to accomplish this include stormceptors, detention basins, bioretention devices,, and infiltration trenches.

The City of Los Angeles has infiltration guidelines and currently prioritizes SUSMP BMP selection as follows:

1. Infiltration Systems
2. Biofiltration/Bioretention Systems
3. Storm water Capture and Re-Use
4. Mechanical/Hydrodynamic Units
5. Combination of Any of the Above

SUSMP guidelines include infiltration restrictions such as locations consisting of heavy industrial uses and a minimum depth to high groundwater level (10 ft). This latter requirement is problematic in the low-lying port environment, where depth to groundwater is more often than not less than ten feet.

The Port of Long Beach currently imposes SUSMP storm water design criteria through the Harbor Development Permit process, using guidance from the City's MS4 permit.

Required Actions: The Ports are unique environments due to their location immediately adjacent to a receiving water body, the associated high water table underlying port land, and the requirement for port land to be used as efficiently as possible for maritime commerce, navigation and fisheries. As a result, many of the provisions established further up the watershed, often focusing on residential or commercial development, are not applicable or appropriate in a port setting. Development of a port-wide guidance manual, in coordination with the Water Board and city building and safety and watershed protection divisions, will ensure that appropriate and effective measures are instituted on Port property.

The guidance manual will take into account current and upcoming permit requirements and port-specific conditions, then recommend design criteria for structural BMPs appropriate for the land uses and potential contaminants of concern. Responsibility for on-going maintenance of structural BMPs and for implementation of operational BMPs will be clearly designated in leases.

Implementation: Port initiatives and lease requirements. The Ports will form a joint task force to develop the guidance manual, then establish internal procedures for ensuring that the guidance manual is incorporated into port and city development permit processes. New developments will be designed and constructed in accordance with the guidance, and new and renegotiated leases will specify clear responsibility for the operation and maintenance of the facilities.

Schedule: TBD

Monitoring and Metrics: The initial metric for this control measure is completion of the guidance manual. Subsequent metrics will track the incorporation of the guidance into Port developments. Ports will report annually on progress towards completing and incorporating the manual. Implementation of the controls specified in the manual will be reported as it occurs, and the Ports will report periodically on the effectiveness of the BMPs. BMP effectiveness will be evaluated on the extent to which on-site inspections indicate that the BMPs have resolved the issues they targeted.

Control Measure LU-3: Install structural BMPs for key discharges and targeted pollutants at existing facilities.

The modification, enhancement, and/or installation of structural BMPs in areas with a high probability of contributing to storm water pollution, and a demonstrated deficiency in current housekeeping, operational and/or structural BMPs, will reduce overall pollutant loading from port activities into the harbor.

Current Status: In most areas of the Ports, housekeeping BMPs are the principal means of preventing or minimizing discharges of contaminated storm water. Contained and covered storage, regular sweeping, appropriate waste management practices, and personnel training are key measures for preventing contaminated runoff. In some instances, however, structural BMPs such as containment, oil/water separators, and covers are needed, and they are key control measures that are incorporated into the General Industrial and Municipal storm water permits under which most facilities at the two Ports operate. In the two ports, housekeeping and structural BMPs are implemented through each Port's respective storm water program and individual facility permits (see Section 2.4.2 for more detail on the structure of the Ports' storm water programs).

Required Actions: If the housekeeping improvements implemented through Control Measure LU-1 cannot adequately address the issue, the need for new or additional structural BMPs will be evaluated. This evaluation will be made in the normal course of the storm water program management on a case by case basis. In each case, the facility's SWPPP, recent inspection reports, current site conditions, storm water monitoring results, and recent annual reports will be evaluated to determine whether the facility would benefit from the addition of structural BMPs where none exist, improvements in existing structural BMPs, or the installation of additional structural BMPs beyond those already present.

The evaluation will rely heavily on the types of structural BMPs that have already proven to be effective in use at various Port facilities, including:

- Secondary containment berms
- Oil water separators
- Contained hazardous material storage areas
- Awnings or roofs
- Hydrodynamic separation-type storm water treatment units
- Valve controlled storm drains
- Process water or maintenance area drainage diverted to the sanitary sewer system
- Non-discharge areas equipped with storm water retention tanks which recycle storm water for re-use in facility processes
- Capped storm drains prohibiting discharge from high-risk areas.

In addition, new storm water control technology will be considered as it is proven effective through experience elsewhere.

Structural BMPs currently not in use at port facilities, such as catch basin inserts, filtration devices or pervious pavement, would be evaluated and selected for designated areas based on targeted pollutants and proven effectiveness at comparable facilities. Additional BMPs selected will be quantified and recorded in facility SWPPPs.

Implementation: Port initiatives and leases. POLB will implement this measure through modifications of facility SWPPPs and the Master Storm Water Program. POLA will implement this control measure by working with the City's WPD for critical source facilities and with its other tenants and its own operations through the ECA, NPDES MS4 Permit, and tenant outreach programs to modify facility SWPPPs. Lease requirements may be necessary to ensure long-term maintenance of structural BMPs.

Schedule: TBD

Monitoring and Metrics: The overall metric for this measure is the implementation of required program changes. The initial metric will be the Ports' progress in identifying needed structural BMPs. The subsequent metric will be the Ports' progress in installing those BMPs.

Control Measure LU4: Continue and expand upon existing storm water/dust control programs for vacant/undeveloped property.

Through the continuation and expansion of existing storm water and dust control measures for vacant and/or undeveloped property within the ports, runoff containing high levels of suspended solids and other pollutants would be reduced. Potential measures may include the introduction of sustainable landscaping or the use of swales, berms, or re-grading.

Current Status: Vacant and undeveloped land can be found throughout both ports. Such land can be located near roadways and freeway ramps, between existing facilities, and on a number of intermittently-leased or undeveloped areas within the ports. Vacant land that is unsupported by vegetation or erosion control structures can be a significant source of fugitive dust and other pollutants through erosion and other natural weather conditions. Fugitive dust can escape these areas and enter harbor waters during rain events or as the result of wind. Trash and other pollutants that accumulate in vacant areas can enter storm drains as a result of rain or wind.

In 2005, the POLB initiated a Port-wide Storm water Pollution Prevention and Dust Control Program to implement storm water and fugitive dust control programs for land identified as vacant and/or undeveloped. The program identifies both short-term and long-term measures to reduce runoff from over 100 acres of vacant or undeveloped land. Short-term measures, considered to be temporary, have been applied to previously identified areas within the POLB and include such BMPs as silt fences. Long-term measures include clearing debris and other obstructions located on vacant lots, along with rough re-grading for storm water control and hydroseeding of expansive areas to reduce erosion. Currently, POLB has identified over 100 acres of vacant and undeveloped land that is covered by the Program.

POLA has addressed vacant and undeveloped property on a case-by-case basis, as the need has arisen. Storm water controls such as berms and sandbags have been installed at several sites at which runoff was observed to convey material off site or to storm drains.

Required Actions: While the POLB has been successful in reducing fugitive dust and runoff from high-risk vacant and undeveloped lots, lower-risk sites need to be incorporated into the program. The introduction of sustainable landscaping, appropriate re-grading, and the use of swales and berms could reduce erosion and result in a reduction of fugitive dust. Despite the success of POLB's program, there are a number of other locations within POLB, as well as areas within POLA, that could benefit from additional runoff control measures. An inventory of all vacant and undeveloped areas within both ports is required to determine areas of highest priority for runoff and pollutant control measures. For those areas deemed highest priority, temporary measures shall be put in place to await long-term solutions.

Implementation: Port initiatives. POLB will continue its existing Port-wide Storm Water Pollution Plan and Dust Control Program. POLA will implement this control measure by establishing a similar program for vacant and undeveloped land.

Schedule: TBD

Monitoring and Metrics: The initial metric for POLA will be to establish a program to implement this measure on Port lands. Subsequently, both Ports will continue to monitor and report on their progress in addressing all identified sites.

Control Measure LU5: Enhance and expand litter control programs and implement relevant elements of those programs in specific sources.

The enhancement, modification, or addition of both structural and housekeeping BMPs targeting trash and litter, coupled with a comprehensive education and outreach program targeting relevant industry groups including the ILWU, port tenants, and trucking firms, will reduce loading of trash and litter from port activities into harbor waters.

Current Status: Housekeeping BMPs such as street sweeping, hand sweeping, and litter removal from the harbor via specialized water craft are currently enacted by the maintenance divisions of the two Ports in areas under the Ports' jurisdiction such as public roads, harbor waters, and unleased sites. In leased areas litter control is the responsibility of the tenant, and they utilize mainly street sweeping and hand sweeping to remove accumulated trash and litter from their leaseholds. Structural BMPs currently utilized include trash cans strategically placed to accommodate the needs of truckers and longshoremen, and fencing that acts as a barrier to prevent trash from being windblown off site.

Required Actions: This control measure will review all facilities, including SWPPPs, recent inspection/audit reports, and annual reports, to determine where the scope of existing housekeeping and structural BMP application needs to be increased and where additional BMPs are necessary. For example, BMPs already being used could be more uniformly applied to facilities port-wide and especially in high-priority areas, and new BMPs could be instituted where appropriate.

Some key elements of this control measure could include:

1. Identification of key spots where litter accumulates;
2. More frequent or extensive litter collection activities by both Port maintenance and tenant facility operators;
3. Modern and effective litter removal watercraft with greater capabilities than the existing vessels;
4. Structural BMPs installed on catch basins to block trash from entering the storm drain system;
5. Additional strategically placed trash receptacles placed at heights for easy trucker/ILWU access;
6. More wind screens to prevent wind from blowing trash from facilities into off-site areas such as railroad right-of-ways;
7. Enforcement activities involving fines or other penalties; and
8. An anti-litter campaign that includes a comprehensive education/outreach program to target relevant industry groups such as Port tenants, truckers, and the ILWU with the objective of changing behavior patterns and attitudes towards littering. This outreach program could be multi-media and bi-lingual in nature, utilizing signs, radio, the internet, television and other media to educate the targeted groups about the importance of keeping the harbor free of trash and litter.

Implementation: Port initiatives and leases. POLB will implement this measure by forming a litter control task force (composed of the Engineering, Maintenance, and Communications divisions) that will oversee implementation of the measure. POLA will implement this control measure by working with the City's WPD for critical source facilities and with its tenants and its own operations through the ECA, NPDES MS4 Permit, and tenant outreach programs to modify facility SWPPPs. Both ports will revise their tariffs as necessary to incorporate changes in storm water permit compliance requirements. Lease requirements may be used to enlist tenant participation.

Schedule: TBD

Monitoring and Metrics: The initial metric for this measure is the Ports' progress in developing their litter control programs. Once the Ports have developed their programs they will monitor and report on their progress in applying program elements throughout the harbors.

Control Measure LU-6: Enhance and expand street and public parking area sweeping/cleaning programs.

Debris and other pollutants from vehicle traffic, surrounding uses, and air deposition can accumulate on streets and parking lots, and be carried into the harbor with storm water flows. The enhancement and/or expansion of street and parking area sweeping and cleaning programs will reduce overall pollutant loading into harbor waters from these activities.

Current Status: Both Ports conduct street and parking lot sweeping throughout their harbor districts. However, debris is still present, particularly in certain problem areas where trash and other pollutants accumulate. Furthermore, it is not clear whether sweeping in public parking areas, where oil, grease, and fine particulate debris (TSS) can accumulate, is effective.

Per the requirements in the Los Angeles County-wide municipal storm water permit, public streets are swept on a schedule by the Port of Los Angeles's Construction and Maintenance Division, the Los Angeles City Bureau of Street Services, and the Port of Long Beach's Maintenance Division. The municipal permit also requires the Port of Los Angeles to conduct focused pre- and post-event cleaning in conjunction with special events (e.g., Lobsterfest, held in the Ports 'O Call parking lot). In addition, Long Beach has a joint Port-tenant sweeping program focused on removing track-out petroleum coke from streets on and near Pier G.

Required Actions: The Ports will evaluate current sweeping/cleaning activities and inspect all sites to assess debris levels and problem areas. Areas that are of particular concern in both ports include streets leading to and from dry bulk and recycled metals terminals, truck queuing lanes outside container terminals, and public access parking lots such as at restaurants and fishing piers. Based on the results of the evaluation, revised sweeping/cleaning schedules will be developed as needed. The Ports will also evaluate existing street sweeping/cleaning equipment to determine if more efficient technology is available and required. Recommendations to upgrade equipment will be made if warranted.

Possible enhancements and additions could include establishing more joint port-city sweeping programs to increase sweeping frequency and coverage, substituting more effective sweeping equipment such as HEPA-capable vacuum sweepers, and developing programs for routine, zero-discharge pavement cleaning at priority parking areas.

Implementation: Port initiatives, leases, and possibly incentives. Multiple divisions at the both ports and their respective cities will need to be actively involved in enhancing the sweeping and cleaning programs. Port and City departments include, but are not limited to, POLA Environmental Management, Construction & Maintenance, and Real Estate, POLB Environmental Planning, Maintenance, and Real Estate, City of Los Angeles Bureau of Sanitation Watershed Protection Division, and City of Long Beach Public Works Department.

Monitoring and Metrics: The initial metric is completing the evaluation of the existing sweeping programs at the two Ports, including developing recommendations for changes. The subsequent metric will be implementing the recommended changes, including the incorporation of new technology.

Control Measure LU-7: Evaluate existing construction permit compliance procedures and enhance as necessary (e.g., inspection frequency, construction specifications, and revised permit structure).

Evaluating the existing construction permitting process and procedures will allow port staff to determine areas for improvement in permitting compliance that will reduce pollutant runoff from such sites. These enhancements could be in the form of increased frequency of inspections, improved construction specifications, and revised permit structuring.

Current Status: Both Ports are required to comply with the State Water Resources Control Board's General Construction Activities Storm Water Permit, which the State board is in the process of revising. That permit's requirements include the elimination or reduction of non-storm water discharges to storm drain systems and receiving waters as well as the development of construction SWPPPs. Construction contractors are required to implement BMPs such as: general site management, construction and waste materials management, erosion control, and sediment control. Construction projects are inspected by Port Construction Inspectors to ensure that BMPs are in place and that construction SWPPPs are updated and adequate. Through a new environmental management system, POLB recently completed a comprehensive revision of design and construction management procedures that has reduced impacts of construction activities on harbor waters.

Required Actions: Port staff need to evaluate recent inspection reports and reporting protocols, review upcoming revisions to the General Construction Activities Permit, and formulate the necessary program enhancements. As examples of potential changes, beneficial BMPs already in place could be more uniformly applied, the frequency and scope of inspections could be increased, and construction specifications and contracts could be made more specific with respect to storm water controls.

These changes could be incorporated into the revised permit structure described in Section 4.1.2: the port-wide individual permit could include more detailed requirements for increased use of BMPs and site inspections. Furthermore, changes to the SWRCB's construction permit requirements not anticipated at this time could result in additional requirements.

Implementation: Port initiative. POLB will implement this measure through modifications to the Master Storm Water Program, which encompasses construction permitting requirements. POLA will implement this control measure by incorporating changes into the procedures followed by the Port's Construction and Maintenance Division.

Schedule: TBD

Monitoring and Metrics: The initial metric will be the completion of the program evaluation by the two Ports. Subsequently, progress in implementing the recommended changes in the Ports' construction management programs will be monitored.

4.3 On-Water Discharges

4.3.1 On-Water Sources and Activities

Although storm water control efforts naturally focus on landside sources, a comprehensive approach to managing water quality in the Ports must consider potentially polluting on-water activities, as well. The two ports experience some 10,000 visits per year by ocean-going cargo vessels and are home port to dozens of harbor craft – tugs, ferries, workboats, bait barges, and patrol boats. In addition, some 4,000 recreational pleasure craft are berthed in, and use the waters of, the Port of Los Angeles. Cargo vessels, commercial harbor craft and fishing vessels, and recreational vessels are all potential sources of water pollutants via direct discharge (Table 4-2). In addition, in-water structures such as docks, piers, and cathodic protection devices can leach contaminants into harbor waters, and the bottom paint on vessel hulls is designed to leach toxic substances.

4.3.2 Control Measures for On-Water Sources

Most on-water sources fall under state and federal jurisdiction, although the two ports and their respective city agencies have some additional controls. Nevertheless, as Table 4-2 shows, the Ports have identified three WRAP control measures that could help to control discharges from on-water

activities. These measures would complement and build upon the new federal and state permits described in Section 2.1.3.

4.3.3 Description of Control Measures

For each of the control measures, this WRAP describes the necessity for the proposed measure, the nature of the measure, how the measure will be implemented, including schedule and costs, and how the progress in implementing the measure will be monitored and evaluated (the metrics).

Control Measure OW-1: Develop guidance manual for on-water activities (e.g., allowable and prohibited vessel maintenance activities and discharges).

The identification and communication of allowable and prohibited on-water maintenance activities and vessel discharges as set forth in the VGP and state permit will reduce overall pollutant loading from port activities into the harbor.

Current Status: Currently, several types of on-water operational and maintenance activities occur regularly in the ports, many required for the safety of the vessel, that can result in discharges to harbor waters. The following list illustrates the variety of on-water discharges that are associated with those activities; for a complete listing refer to the VGP (USEPA website):

- Deck and hull wash down, chain locker effluent
- Bilge and ballast water
- Anti-fouling hull coatings and seawater piping additives
- Cathodic protection
- Chain locker effluent
- Gray water and black water
- Oily water from various activities (e.g., separators, pits, bearings)
- Non-oily machinery wastewaters (e.g., scrubbers, condensers, cooling water, fire mains)
- Boiler/economizer blowdown
- Underwater hull husbandry
- Solid waste.

Not all of these discharges are unregulated, nor do they necessarily occur in the Los Angeles-Long Beach harbor complex: federal and state regulations (see Section 2.1.3) prohibit discharges of pollutants and contaminated water in the harbors, and port tariff provisions prohibit discharge of any potentially polluting material into the harbor without approval of the Executive Directors. Nevertheless, it is likely that many of these discharges do occur to some extent, due to a combination of factors including carelessness, ignorance of the law, unclear or incomplete regulations, and lack of oversight and enforcement. In general, however, the Ports lack knowledge concerning the nature and extent of such discharges or of the impacts they may have on water quality in the harbors.

Table 4-2. Water Quality – On-Water Sources, Activities, and Control Measures

SOURCES	ACTIVITIES	KEY POLLUTANTS	MEASURES (*)
Vessel Discharges and On-Water Vessel Maintenance/Fueling	<ul style="list-style-type: none"> • Commercial and recreational vessels • Black water (sewage), gray water (showers, sinks, laundry, kitchen), bilge water, and ballast water • Fuel transfer over water, accidental releases (spills), and jettisoning of solids (trash) • Sanding, painting, mechanical repairs while underway or at anchor • Miscellaneous discharges • Anti-fouling coatings and cathodic protection • Fishing wastes 	Organics, metals (incl copper and zinc), trash, pathogens, nutrients	OW-1
Contaminant Leaching	<ul style="list-style-type: none"> • Pilings • Anodes 	Zinc, organics	OW-2, OW-3

*: On-water control measures described in detail below
 OW-1. Develop guidance manual for on-water activities (e.g., allowable and prohibited vessel maintenance activities and discharges)
 OW-2. Develop BMPs and Port standards for maintenance and in-kind replacement of treated piles
 OW-3. Develop BMPs and Port standards for the use of cathodic protection.

Some Port-specific information is available on two of the sources covered by the VGP, namely anti-fouling bottom paints and cathodic protection. Antifouling coatings (bottom paints) are used on nearly all vessels in the harbors, from small recreational boats to oceangoing cargo vessels. These paints typically contain toxic substances such as heavy metals and organic toxins (copper and tin are widely used on recreational vessels) that are intended to discourage the growth of marine organisms on the hull. The toxic substances are known to leach into the water – in fact, that is the basis for the effectiveness of the coatings, with the result that in some areas of heavy use, such as marinas, water and sediments have been shown to have elevated concentrations of copper and tin. The fact that the harbors are on the 303(d) list for copper makes this source an area of concern.

Cathodic protection inhibits the corrosion of ferrous metal (iron and steel) components of vessels resulting from the electrolytic action of seawater. On vessels, cathodic protection is normally accomplished by the use of sacrificial anodes, most commonly a lump of metallic zinc, whose function is to protect the steel by corroding in its place. Even small vessels such as recreational craft have sacrificial anodes to protect propeller shafts and other below-water metal fittings. The anode's corrosion releases dissolved zinc into the water column, and in situations such as marinas, where there are thousands of boats, there is a real potential for water quality impacts. The fact that the harbors are on the 303(d) list for zinc makes this source an area of concern.

Required Actions: Although the tariffs of the two Ports include general prohibitions of discharge into the harbor, they do not have specific guidance on which activities are prohibited, which are allowed, and what BMPs to employ during allowable activities. Furthermore, as mentioned above, the Ports have very little information concerning on-water discharges in the harbors. This control measure will rectify those deficiencies by first assessing the extent of the problem and then developing manuals that will be distributed to vessel operators (including cargo vessels, harbor craft, and recreational vessels) as guidance for allowable and prohibited discharge-related activities. Assessing the extent of the problem will likely involve a survey of harbor users.

A significant portion of the guidance manual for commercial vessels and those harbor craft subject to the new state and federal permits will consist of a discussion of those permits, but it will also include:

- a summary of tariffs and existing regulations, including the VGP
- a description of water quality impacts associated with vessel operations and maintenance activities
- information sources related to on-water activities
- the requirements for vessel discharge, including potential BMPs and technology improvements
- narrative water-quality based effluent limits in state and federal permits
- inspection, monitoring, recordkeeping, and reporting requirements in state and federal permits
- additional requirements applicable to certain vessel types.

Guidance manuals for international commerce vessels, harbor craft, and exempt vessels will help operators of foreign-flagged vessels understand what to expect when they come to San Pedro Bay, and will help domestic operators understand how they can reduce pollution from their activities. The development of such manuals is not on the agenda of any state, federal, or local regulatory agency, nor is it required by any regulation. Accordingly, the Ports will undertake this initiative, although they expect relevant agencies (e.g., US Coast Guard, State Lands Commission, Coastal Commission, Water Board) and stakeholders (the maritime community) to participate in the effort. Enforcement of the relevant permits would be undertaken by EPA and the State Water Board, not the Ports.

The guidance for the recreational and non-federal commercial vessels ("exempt vessels"; see section 2.1.3) will provide recommendations for best management practices as they relate to recreational and fishing vessels. The guidance will address discharges and activities of concern to the State of California and to the Ports, and will build upon and extend the provisions of

POLA's existing Clean Marinas Program. A particular focus will be education and outreach to reduce water quality impacts associated with anti-fouling paints and cathodic protection.

Implementation: Port initiative, leases, and tariff modifications. The Ports will work together to develop the guidance manuals and conduct an outreach to distribute the manuals and educate the stakeholders. The Ports' tariffs will be revised if it appears necessary in order to incorporate provisions of the manuals and to require that the guidance be used by all vessel operators.

Schedule: TBD

Monitoring and Metrics: The initial metric will be publication of the guidance manuals. The subsequent metric will be accomplishing the distribution and outreach. Staff will monitor and report on progress toward that end. Once the manuals are adopted, progress towards outreach activities will be reported annually.

Control Measure OW-2: Develop Port policy and standards for maintenance, in-kind replacement, and eventual phasing out of exposed treated pilings from in-water applications.

Phasing out treated piles by identifying and implementing effective alternatives for in-kind replacement and maintenance will reduce pollutant loading due to leaching from treated wooden piles.

Current Status: Wooden pilings and other treated timber elements are widely used in wharves, fender piles, dolphins, and other types of ship docking infrastructure. Historically, piles treated with creosote (a coal-tar derivative) have been used in the harbors to prevent marine boring organisms from destroying the piles. A number of other pile types have been used in the harbors in limited applications, including ACZA-treated piles, plastic piles, and untreated ("clear") piles. Piles that have reached the end of their service life as a result of marine borers or decomposition must be replaced, although ongoing maintenance in the form of replacing damaged segments is also common.

The Port of Los Angeles maintains over 15,000 wooden piles: approximately two-thirds are bearing piles, nearly one-third are fender piles, and a small percentage are other piles, such as those known as "dolphins". A large portion of those piles are in the recreational marinas. The Port of Long Beach maintains an estimated 3,000 fender, 200 bearing, and 100 "dolphin" timber piles, almost entirely associated with the cargo terminals.

Both ports hold permits from the U.S. Army Corps of Engineers for in-kind replacement of wooden piles that allow the use of creosote-treated piles only with certain provisions, including that piles be wrapped in plastic. Both ports have already taken steps consistent with Control Measure OW-2, as described below.

POLA Pile Program: Since the late 1970s POLA has wrapped creosote piles in plastic after installation to further protect the piles and prolong their service life. Currently, POLA is initiating the Alternative Wood Pile Material/Wrap Evaluation Program (Pile Program) that is intended to ensure a coordinated effort to minimize impacts of treated wood piles to the harbor environment in a cost-efficient manner and to allow on-going, unimpeded maintenance of wooden in-water structures. The program consists of a systematic evaluation of alternative wrapping materials and procedures, coatings, and alternative treatments and pile materials.

To ensure that structural, maintenance, and environmental issues are addressed in the evaluation process, the Pile Program includes the participation of the Engineering, Construction and Maintenance, and Environmental Management divisions. The goal of the Pile Program is to evaluate potential treated wood pile and wrap strategies to minimize or eliminate the use of treated piles in the harbor and minimize impacts to harbor waters. The expected product of the Pile Program is a guidance document that POLA will apply to future decisions regarding the purchase and installation of new and replacement pilings.

POLB Practices: While POLB has no formally designated piling program, it has actively addressed the issue. Since 1993, POLB has experimented with the use of plastic piles, installing steel-core plastic piles under fender panels. These piles proved unsatisfactory: ultraviolet rays caused the plastic to crack over time, exposing the steel core to rust, and the steel cores could bend under impact (such as from a vessel) to a position that would not allow them to function properly. Solid plastic piles were installed in test locations in 2001, followed in early 2008 by plastic piles with steel cage cores and fiberglass-reinforced plastic piles. These installations are too new to permit an assessment of service life and durability. However, improved plastic in the outer shell and the use of fiberglass raise the expectation that UV light will not negatively impact the structural integrity of the piles.

In 2000, POLB initiated a plan to eliminate the use of creosote-treated pilings. Due to an existing stockpile creosote-treated pilings are allowed to be used under the condition that they are wrapped with a thick polyethylene plastic wrap secured with aluminum alloy nails. The stockpiles are stored at the POLB maintenance facility, and are transported, as needed, to replace broken or damaged piles.

Required Actions: Although each Port has taken steps in the direction of phasing out the use of treated pilings, both need to continue those efforts with the goal of establishing a plan for phasing out exposed treated pilings entirely. This measure does not contemplate replacing existing treated-timber piles at once, but rather as they reach the end of their service lives and must be replaced, and as new in-water structures are constructed. Total replacement of exposed treated-timber structures is likely not to be completed in the short term, as many wooden structures will last that long under normal conditions.

The Ports will focus their efforts in two areas. First, they will establish BMPs for the practices that are currently used for managing pilings, including piling wrapping materials and procedures, pile storage, pile and pile segment installation, and the disposal of spent treated timber. This step will ensure that current practices, which include the use of plastic piles and plastic-wrapped piles, minimize the risk of water quality impacts while other alternatives are explored.

Second, the Ports will continue their efforts to identify feasible alternatives to the use of treated wood pilings. Long Beach needs to establish a formal program of research into potential alternatives, and the Port of Los Angeles needs to modify its existing program to evaluate potential alternatives systematically. It is expected that the Ports' programs will continue to be independent, and they may result in different approaches to the common goal of phasing out the use of exposed treated-timber pilings. The research programs will evaluate such possible alternatives as improved wrapping practices and materials, plastic or recycled-material piles, different reinforcements for plastic piles that will allow them to be driven and increase their durability. The evaluation process will include literature reviews and industry surveys, estimation of the costs, and possibly the installation, monitoring, and assessment of test piles for promising technologies.

The product of the research effort will be plans that will guide each Port as it manages its wooden pilings in the future. The plans will emphasize cost-effective approaches; it is possible, for example, that simply improving wrapping of treated piles will prove to be the most cost-effective alternative, although it is also possible that the increased life of non-wooden piles could offset their high cost, thus making the use of alternative materials cost-effective. Alternatives to current practices will be documented, locations where alternative piles are placed in the harbor will be noted, and the performance of piles and wraps will be assessed and documented.

Implementation: Port initiatives. POLA will continue and refine its existing Piling Program, and will implement its findings through the EMS Program. POLB will apply the guidance developed by its ongoing research and testing programs to its maintenance programs.

Schedule: TBD

Monitoring and Metrics: The initial metric will be to develop guidance based on each Port's piling research and testing program. Subsequently, the application of that guidance to Port practices will be documented and reported annually. The Ports expect that the guidance will be modified

and enhanced as new results are available from the ongoing Port testing and research programs and information from other programs.

Control Measure OW-3: Develop BMPs and Port standards for zinc-based cathodic protection of Port structures and vessels.

Identifying and implementing effective BMPs and providing guidance for the use of zinc as cathodic protection will reduce zinc loading from contaminant leaching by zinc anodes.

Current Status: Unprotected ferrous metals (iron and steel) corrode rapidly in seawater as a result of the electrolytic action of the salts. Both Ports have extensive in-water steel structures, including sheet metal retaining walls, underwater pipelines, conduits, pilings, and other steel structures, and a number of Port-owned harbor craft that must be protected from corrosion. Protection can take the form of paints and other coatings, but painting is only feasible for above-water structures or structures that can be removed from the water for painting. In addition, some metal parts cannot be painted. In such cases, corrosion is often prevented by cathodic protection, which uses the surface of the metal to be protected as the cathode in an electrochemical reaction with seawater.

Cathodic protection can be provided in two basic ways. In the first, an electron-donating metal (the anode), generally zinc but often aluminum or magnesium, is attached to the steel part (the cathode). The anode corrodes instead of the steel (releasing zinc ions into the water column), and is hence called a sacrificial anode. This method is commonly used in small-scale situations such as isolated pilings and vessels. In the second, called impressed current cathodic protection (ICCP), an electric current provides the electrons. ICCP is widely used for linear structures, such as pipelines, or large structures that cannot be economically protected by sacrificial anodes.

In the Ports, both sacrificial anodes and ICCP are widely used for Port structures and vessels (sacrificial anodes are the norm in non-Port harbor craft and recreational vessels, but those are addressed by Measure OW-1). Given the number of ferrous metal in-water structures in the Ports, it is likely that leaching of zinc from sacrificial anodes represents a threat to water and sediment quality in the Ports.

Required Actions: In order to develop effective controls on leaching from cathodic protection the Ports need first to assemble available information on the magnitude of the Ports' cathodic protection activities, the use of ICCP as opposed to sacrificial anodes, and the toxicity and effectiveness of alternatives such as aluminum and magnesium. This information will then be evaluated by Port engineering staff to identify the feasibility of alternatives and develop guidance for applying those alternatives to Port practices.

The Ports do not propose to undertake chemical engineering research projects to discover alternative anti-fouling and anti-corrosion technologies. Instead, the Ports will attempt to apply existing technology to the situations that prevail in the harbor complex. For example, a survey of the literature and current practice around the world could indicate that a different, less toxic, anode metal could be effective, or that ICCP has been successfully applied in situations where sacrificial anodes are currently the norm. Either finding could prompt the Ports to undertake pilot programs to determine the applicability of the technology to the Port situation and to identify the institutional constraints and opportunities that would be involved.

Implementation: Port initiatives. The Ports will evaluate existing information, develop guidance for the use of existing cathodic protection technology, and adopt the guidance into Port practice.

Schedule: TBD

Monitoring and Metrics: The initial metric for this measure is the development of guidance for Port practice in cathodic protection. The subsequent metric will be implementation of the guidance in Port practice. Progress towards those goals will be reported to the Boards.

4.4 Sediment Quality Issues and Solutions

4.4.1 Legacy Contaminants:

4.4.2 Sediment Resuspension/Flux:

4.4.3 Sediment Dredging and Disposal Options

4.4.4 Control Measure

As mentioned above, most of the control measures developed for land-use and on-water sources will, in the long term, benefit sediment quality by reducing the influx of pollutants that could make their way into the sediments. The Ports have developed one additional control measure that is specific to a key sediment quality issue, i.e., the legacy contaminants that cannot be addressed by source control measures.

Control Measure S-1: Develop sediment management policy/guidance establishing priorities for removal, disposal and management of sediments with a clear decision-making framework.

Establishing a sediment quality baseline and formulating a management strategy to address testing, dredging, and disposal of contaminated sediments, will help to address TMDL sediment listings and also minimize potential water quality impacts from water column exposure to contaminated sediments.

Current Status: The Ports conduct maintenance dredging to maintain design depth at berths, capital improvement dredging for wharf construction or creation of new land, and dredging associated with remediation of contaminated sediments. Sediment testing per established USEPA/USACOE guidance is conducted prior to any dredging activity to determine the need for any special protocols or BMPs during dredging, as well as identify suitable disposal options for the dredged materials.

Both Ports were signatories to the MOU forming the Los Angeles Region Contaminated Sediments Task Force in 1999, and have been active participants in this organization since that time. In 2005, the CSTF produced a Long Term Management Strategy to guide decision-making for contaminated sediment evaluation and disposal in the Los Angeles Region. This CSTF plan will be a valuable resource when formulating the sediment management plans outlined in the WRAP.

The Ports have traditionally managed dredged material within the harbor complex when feasible, usually for creation of new land (in the form of a Confined Disposal Facility or CDF), or upland disposal. The Port of Los Angeles currently has an approved upland disposal site adjacent to the Cerritos Channel marinas, which is used primarily for maintenance dredging material and other material not suitable for open water disposal. The Port of Long Beach has stored and disposed of contaminated sediments at various upland sites within the harbor district. The Ports have also accepted dredged material from outside sources when capacity in a fill was available (e.g., Marina del Rey and Los Angeles River sediments).

Ongoing sediment management activities include participation in the multi-agency Contaminated Sediment Task Force and the Consolidated Slip Restoration Task Force, and remediation of sediments in IR Site 7 (Long Beach West Basin).

Required Actions: The Ports need to develop comprehensive sediment management plans. The sediment management strategies of the Ports will be based heavily on the CSTF Long-Term Management Strategy and will emphasize coordination with the responsible regulatory agencies

(Army Corps of Engineers, US EPA, Water Board, and Coastal Commission) on a project basis. The following elements will be included in each plan:

- Identification of gaps in the available sediment data
- Priority sediment management areas and develop a strategy for managing each area
- Guidelines for agency coordination to obtain approval of the site-specific management strategies
- Short- and long-term management strategies to address future Port dredging and disposal activities related to contaminated sediments
- Maintenance of a current sediment database for use in re-evaluating sediment conditions and management needs in the harbor on a periodic basis.

Management strategies for individual sites will take into consideration the source of the contamination to ensure that all responsible parties are involved in the remedy.

Implementation: Port initiatives. The Ports will develop and implement their respective sediment management plans. Each Port will coordinate its plan with the regulatory agencies involved in permitting dredging and disposal activities, to ensure that the plans meet all regulatory requirements.

Schedule: TBD

Monitoring and Metrics: The metric for this control measure is the adoption by each Port of its sediment management plan. Progress toward that goal will be reported to the Boards annually.

4.5 Watershed Sources

4.5.1 Watershed Issues and Sources

The Ports are considered to be part of the Dominguez watershed, as described in Section 2.2, although the Los Angeles River, which is a separate watershed, does influence the eastern side of Long Beach Harbor. The Ports are at the seaward end of the watershed, and are thus influenced by upstream discharges. It is important to note that while the City of Los Angeles is part of the same watershed as its Port, the same is not the case with Long Beach. The City of Long Beach is part of the Los Angeles River watershed and, with the exception of a few areas on the city’s west side, is not upstream of its Port.

As described in Section 2, there are a number of factors outside the control of the ports that can affect water quality in the harbor. These include direct discharge from adjacent land uses, aerial deposition into harbor waters, and the conveyance of pollutants into harbor waters from nearby water bodies and harbor sediments. The WRAP considers these processes under the heading of “Watershed Sources,” as summarized in Table 4-3.

Given the reality that the Ports have no jurisdiction or control over sources outside the harbor districts, it is inappropriate to develop “Control Measures” for watershed sources. Furthermore, the Ports are unable to control the influx of pollutants to the harbors from those outside sources. Accordingly, the WRAP emphasizes cooperative activities such as data gathering and participation in regional water quality and source control efforts, particularly through the ongoing TMDL effort.

Table 4-3. Water Quality – Watershed Sources and Issues		
SOURCES	ISSUES	KEY POLLUTANTS
Storm water and Dry Weather Runoff, Ocean Inputs, Aerial	<ul style="list-style-type: none"> • Dominguez Channel and LA River input • Storm drain input from outside the harbors 	All constituents

Deposition	<ul style="list-style-type: none"> • POTW and industry • Hydrodynamic connection between harbors and eastern San Pedro Bay and the ocean discharges 	
Legacy and Current Contamination	<ul style="list-style-type: none"> • Past watershed inputs and historic port activities • Current port activities and watershed inputs • Resuspension and redistribution 	All constituents

4.5.2 Current Activities Related to Watershed Sources

Pollution control efforts outside the Ports are undertaken by numerous entities through a variety of programs. Efforts include the TMDL development process, permit compliance programs, projects involving physical modifications of infrastructure, and various monitoring, data gathering, and coordination efforts.

TMDL Development: A key watershed-wide water quality initiative is the TMDL program (see Section 2.1.1). The TMDL process involves municipalities, industries, regulatory agencies, and the public throughout Los Angeles County. TMDL processes of concern to the Ports are underway for the Dominguez Channel, Machado Lake, and the Los Angeles River. Some TMDLs are already in place (Los Angeles River Trash, effective September 23, 2008, LA Harbor Bacteria, effective March 10, 2005, Machado Lake Trash, effective March 6, 2008, Machado Lake Nutrient, approved by SWRCB on December 2, 2008) and others are in development, including Dominguez Channel and Harbors Toxic Pollutants and LA River Bacteria. Each TMDL will include a monitoring and implementation plan that will facilitate effective management. The coordination of TMDL monitoring and implementation activities among watershed stakeholders is a key process in meeting numeric limits and improving water quality upstream and to the downstream receiver, the harbor.

MS4 Permits: The City of Los Angeles, including POLA, is currently regulated under the Countywide MS4 Permit, and the City and Port of Long Beach are regulated under an MS4 permit held by the City of Long Beach. These permits require the cities to conduct a number of activities related to storm water pollution prevention, including, but not limited to, street sweeping, catch basin cleaning, public outreach, SUSMP implementation, SWPPP implementation, and public agency activities programs. The countywide permit also includes an industrial/commercial facilities control program. The MS4 permits also require compliance monitoring and reporting, which provides information that facilitates watershed-wide planning and evaluation.

Watershed Projects: The cities have undertaken a number of upstream water quality improvement projects. The City of Los Angeles has undertaken several Proposition O projects in the Dominguez watershed that will have beneficial effects on harbor water quality, including Machado Lake Water Quality Improvement and Rehabilitation, Wilmington Drain Rehabilitation, and Peck Park Rehabilitation, as well as similar projects throughout the Dominguez watershed. Other municipalities in the watershed are undertaking similar efforts.

Other Watershed Activities: In addition to MS4 and TMDL activities, watershed improvements, monitoring, data generation, and watershed planning are occurring through other various stakeholder groups and agencies. Monitoring efforts include the City of Los Angeles' Status and Trends program, Cabrillo Beach bacteria monitoring, and Machado Lake Trash monitoring. Data gathering efforts include hydrodynamic models undertaken by EPA and the Ports (see Section 2.3), the regional studies such as Bight '08 conducted by SCCWRP, special studies conducted by the Ports and their cities, and the ongoing air deposition study being coordinated by SCCWRP. The principle regional planning study relevant to the harbors is the ongoing project planning and implementation of the Dominguez Watershed Advisory Council (DWAC).

4.5.3 Watershed Efforts

The major watershed-related effort that the Ports will undertake is to continue to participate in local and regional efforts to characterize pollutant inputs to the harbors from outside sources, and

to continue to participate in watershed planning efforts. Studies that the Ports will be part of will include pollutant load analysis of storm drains and channels, hydrodynamic modeling, and participation in regional air deposition studies. The Ports expect that their efforts to help define the magnitude of pollutant inputs to the harbor system from outside sources will support regional efforts at pollution reduction.

Current Status: As described in Section 2.1, the regulatory agencies are developing TMDLs for the Dominguez watershed. Characterization of pollutant loads to water bodies that empty into the harbors is being carried out by a number of regional organizations, most notably SCCWRP and the Water Board. The Ports have participated in these efforts through the bight-wide studies (see section 2.3.2) and participation in the Dominguez Watershed Advisory Committee. Inputs via ocean circulation and air deposition, while recognized as potential sources, have not been fully addressed on either a local or regional level.

These efforts have provided preliminary information on pollutant inputs from the Dominguez Channel and on pollutant loads in the Los Angeles River. The Dominguez Channel TMDL effort has identified the need for substantially more information. Much less is known about inputs from storm drains that serve areas outside the harbors but empty into the harbors, and about the role of oceanic circulation in moving pollutants into and out of the harbors. In an effort to address one of those data gaps, the Ports have supported the development of a hydrodynamic model of the harbors (see Section 2.3.2) that will help define the role of oceanic circulation in the harbors. Air deposition has been discussed in various Southern California working groups, but only limited studies have been undertaken to measure the role of aerial deposition in pollutant transport or its contribution to pollutant loading of harbor waters.

Required Actions: Characterization of pollutant loading from rivers, streams, and municipal storm will require the concerted efforts of local, regional, state, and federal entities, including the Water Board, the US EPA, industry groups, municipalities, and the Ports. The agencies need to complete the process of developing and adopting TMDLs for the watershed, and incorporating those TMDLs into upstream NPDES permits. Agencies and upstream dischargers will need to develop implementation plans to ensure compliance with TMDLs to achieve load reductions to the harbors.

Aerial deposition is, by its nature, a regional phenomenon, involving a complex mix of sources and sinks spreading across many jurisdictions. Accordingly, a meaningful characterization of transport and deposition can only be undertaken as a multi-agency, regional, centralized effort based upon a scientifically sound scope of work and with adequate funding.

Future Port Actions: Through the DWAC and the TMDL process the Ports will urge the initiation and continuance of characterization studies in the Dominguez Channel and the Los Angeles River, and will help support those studies as appropriate. Both ports will work with the Water Board and appropriate municipalities to characterize the discharges of storm drains that drain areas outside the ports, and will work with those municipalities to identify port and non-port contributions.

The Ports will continue development, validation, and testing of the hydrodynamic model of the harbor complex. Data from pollutant loading studies will be incorporated into the model as they become available, and modeling results will be shared with the watershed and TMDL stakeholders.

The Ports will continue their participation in regional working groups to address river and channel inputs and will initiate analytical projects to characterize storm drain inputs. The City of Los Angeles is participating in the ongoing Los Angeles River air deposition study, and the Ports will continue to monitor the progress of that study.

Monitoring and Metrics: These watershed-wide actions depend upon the schedules, priorities, and funding of agencies outside the Ports, and thus are not amenable to quantitative metrics. However, staff will continue to monitor and report on the status of watershed activities as part of the regular WRAP reporting.

4.6 Technology Advancement Program

TBD

4.7 Database Development and Maintenance

TBD

DRAFT

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