# 4.0 ACTION PLAN

The Action Plan is organized into nine sections. The Introduction (Section 4.1) includes relevant background information about the development and intended uses of the Dominguez WMMP. In addition, the introductory section provides the framework for adaptive management, prioritizing actions, and updating the WMMP.

The format of the Action Plan is described in Subsection 4.2. This includes a description of the standardized format used to describe actions, and a reference guide to the Action Plan.

The descriptions of actions (programs, projects) are organized and presented in five sections that correspond to each of the five goals of the WMMP. The programs and projects are described within the subsections corresponding to their primary objective. However, many of the actions contribute to more than one goal and objective. The multiple benefits of the programs and projects are included in the description of each action.

The action-related sections of the plan are as follows:

- Subsection 4.3 – Actions Associated with the Goal to Protect and Enhance Water Quality.
- Subsection 4.4 – Actions Associated With the Goal to Conserve, Reuse, and Recharge Water Supply.
- Subsection 4.5 – Actions Associated with the Goal to Protect, Enhance, and Restore Native Biological Resources and Habitats.
- Subsection 4.6 – Actions Associated with the Goal to Promote Public Awareness and Involvement in Watershed Management.
- Subsection 4.7 – Actions Associated with the Goal to Implement Stewardship of the Watershed in Balance with Economic and Environmental Impacts.

An overall strategy for monitoring the health of the watershed and the effectiveness of actions implemented in support of this WMMP is described in Subsection 4.8. Recommendations for monitoring the effectiveness of specific actions are included in the description of each program and project described in Subsections 4.3 through 4.7.

For any given geographic area within the watershed, it will be appropriate to implement a variety of the actions described in Subsections 4.3 through 4.7 to achieve the aim of watershed management to attain a holistic improvement in environmental quality in a cost-effective manner. Subsection 4.9 provides a summary of actions that could be implemented in the different jurisdictions of the watershed, and in areas of particular concern that span jurisdictional boundaries. Subsection 4.9 is intended to assist planning efforts of jurisdictions and/or other stakeholders with particular interest in watershed management within a particular geographic region of the watershed.

# 4.1 Introduction

## 4.1.1 Development of Action Plan

The programs and projects described in this Action Plan were developed in consultation with the DWAC during approximately monthly meetings, and members of the public during four publicly noticed meetings held in January 2003.

## 4.1.2 Intended Uses of Action Plan

The Dominguez WMMP Action Plan has several intended uses, as follows:

- Provide a linkage between existing land uses, watershed characteristics, and watershed management.
- Identify programs and projects for reducing and ultimately eliminating impairments within the Dominguez Watershed in coordination with the Watershed Management Initiative (LARWQCB 2001), Strategy for Developing TMDLs and Attaining Water Quality Standards in the Los Angeles Region (RWQCB et al. 2002), Storm Water Quality Management Program (SQMP) for Los Angeles County and Cities in Los Angeles County, and Standard Urban Storm Water Mitigation Plan (SUSMP) for Los Angeles County.
- Identify programs and projects for protecting, enhancing, and restoring beneficial uses (including habitat) in the Dominguez Watershed consistent with the General Plan Conservation/Open Space and Land Use Elements for Los Angeles County and Cities in Los Angeles County.
- Provide a framework for adaptive watershed management.
- Support applications of grant funding to implement watershed management programs and projects.

## 4.1.3 Framework for Adaptive Management

Implementation of this Action Plan is intended to integrate and coordinate with the SQMP and SUSMP for Los Angeles County, and the SQMP for the City of Long Beach. It is recognized that achievement of the goal of reducing the adverse impacts of storm water and urban runoff within the County will largely result from existing actions carried out in compliance with the SQMPs and SUSMPs. The Dominguez WMMP provides additional recommendations for programs and projects to augment the ongoing efforts of the SQMP and SUSMP to reduce water quality impairments and to improve water quality.

The Action Plan also is intended to integrate and coordinate with the Open Space Conservation and Land Use Elements of the General Plans of the county and the incorporated cities within the watershed. Several of the recommended programs and projects are to protect, enhance, and promote beneficial uses within the Dominguez Watershed.

It is recognized that not all actions will be implemented. Available funding will limit the number of actions that can be implemented. In addition, other actions recommended through the TMDL development process may be considered more critical to implement than some of the actions recommended in this plan because of regulatory requirements. This Action Plan provides a range of recommendations that should enhance the flexibility of the County and the incorporated cities within the Dominguez Watershed

in their planning efforts not only to meet permit requirements, but also to meet goals associated with their General Plans. The plan also is intended to support other stakeholder efforts to implement projects to improve environmental conditions within the watershed.

Each program and project is composed of a series of activities. The activities should be viewed only as guidance. It is recognized that actual methods may vary during implementation, as appropriate. Most projects described in this Action Plan could be implemented at several locations in different areas of the watershed, and several potential locations are identified in this plan. Other suitable locations also may exist that could be identified by the jurisdictions and/or other stakeholders involved in implementation of actions recommended in this plan

Monitoring is included as an integral element of each project so that the effectiveness of the action can be assessed. It is envisioned that monitoring results from implementation of a project at a particular location will be shared among jurisdictions so that subsequent implementation at other locations could be adapted based on lessons learned from implementation at the first location.

The County and its incorporated cities will be evaluating the effectiveness of the SQMP, which includes implementation of structural and non-structural Best Management Practices (BMPs) to reduce and eliminate pollution runoff into the Municipal Separate Storm Sewer System (MS4), dry weather water quality monitoring, and public education and outreach programs. Actions taken as part of the WMMP will be evaluated for effectiveness through monitoring and coordination with many of the same assessment tools established for the SQMP.

It is envisioned that actions implemented in association with this WMMP that demonstrate effectiveness in contributing to the reduction of impairments and promoting beneficial uses will be continued, and actions with less than desirable effectiveness will either be modified or will be discontinued. Thus, the results of monitoring and effectiveness evaluations of the SQMP and WMMP are to be used as a tool to support adaptive management decisions by the County and its incorporated Cities in implementing watershed management actions in balance between environmental benefits and economic costs.

### *4.1.4 Framework for Implementing Actions*

Several actions are described in this WMMP. It is envisioned that the each stakeholder within the Dominguez Watershed will prioritize what actions they would like to implement in addition to or as part of activities implemented in compliance with current regulations.

It is expected that some actions will be implemented immediately while others will have to wait until funding is available, and yet others may not be implemented for years because of substantial constraints. Several factors will affect the order in which actions are implemented, including:

- Staff availability.
- Funding opportunities.
- Benefit versus economic impact.
- Land ownership constraints.
- Time frame to implement.
- Time frame to achieve measurable benefits.
- Recommendations from the public.
- Direction received from a jurisdiction's city council.

### 4.1.5 Framework for Updating the WMMP

The WMMP will be periodically updated using the adaptive management framework to add and/or to modify actions and objectives of the Action Plan, as appropriate. The plan will be updated every five years, as appropriate. A Watershed Management Committee comprised of representatives from each jurisdiction within the watershed and members of the DWAC will oversee the updating of the plan. Activities will include:

- Revision of objectives based on results of implementation of the SQMP, SUSMP, and WMMP, as appropriate.
- Review of actions implemented and not implemented from the original WMMP, and selection of actions to be retained and/or dropped from the updated WMMP.
- Revision of activities associated with retained actions in the updated WMMP based on lessons learned during implementation of actions, as appropriate.
- Development of new actions based on consideration of the status of watershed health and available technologies.

Updates to the WMMP will be made available for review by the public, DWAC, Los Angeles RWQCB, and resource and regulatory agencies. While the formalized process for updating the WMMP will be conducted every five years, it is envisioned that modifications to how an action may be implemented (i.e., activities associated with an action) could be modified on a more frequent basis depending upon the effectiveness of the action.

## 4.2 Format and Reference Guide to Action Plan

Actions were described using a standardized format, which is explained in Subsection 4.2.1. A quick reference guide to the actions is given in Subsection 4.2.2.

### 4.2.1 Action Description Format

Recommended actions are described in Sections 4.3 through 4.7 of the plan in a standardized format (Table 4.2-1). The issue (i.e., problem, concern) the action is designed to address is described first, followed by a brief description of the action. The type of activity represented by the action is identified (i.e., management and planning, structural BMP, non-structural BMP). Each action is cross-referenced to the goal(s) and objective(s) to which it contributes. Activities associated with the action are listed, as well as, stakeholder roles, frequency of each activity, and first order cost estimates associated with each activity and totaled across activities. Cost considerations associated with implementation of the action are identified, as are potential sources of funding. Time frame considerations associated with implementation and before benefits would be realized from implementation are described. In addition, recommendations for monitoring the effectiveness of the action are given. In cases where the action would result in an on-the-ground project, potential project locations were listed.

**Table 4.2-1. Standardized format used for the description of actions.**

The elements of the action plan format are described below.

Issue

Action

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | Total Estimated Cost | |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Type of Action

Goal(s) Addressed by the Action

Objective(s) Addressed by the Action

Benefit(s) of the Action

Cost Considerations

Potential Source(s) of Funding

Time Frame Considerations

Potential Project Location(s)

Monitoring Recommendations

Issue
The issue statement describes the problem or concern the action is designed to address. It provides the rationale or need for the action.

Action
The action statement describes the key elements associated with the action.

*Activities*
The different steps involved in implementing the action are listed under activities. These range from inspections to design and implementation of structural BMPs. Some activities include applying for grant funding, public outreach and involvement, and monitoring.

*Stakeholder (Role)*
Stakeholders and their roles are indicated by letter codes, which are defined at the bottom of the action table. Stakeholders include: resource and regulatory agencies (A), businesses (B), contractors and/or consultants (C), jurisdictions (J), other (O), schools and/or universities (S), and volunteers (V). Stakeholders may serve in lead (L), advisory (Ad), participant (P), or review (R) roles.

*Frequency*
The frequency at which the activities would be implemented is identified. Some activities will be done only once, while others will be implemented on a periodic or ongoing basis.

*Cost Estimate*
First order cost estimates are indicated by codes that refer to a cost range, as follows:

$ = ≤ $10,000
$$ = > $10,000 and ≤ $100,000
$$$ = > $100,000 and ≤ $1,000,000
$$$$ = > $1,000,000

Actual costs would be expected to fall within the cost range. More precise estimation of costs was not appropriate for this planning document, which focuses on what type and where actions will be implemented. How activities are performed will be determined during the implementation phase, at which time more precise estimates of costs will be possible.

Several actions require inspection and/or investigation activities that, once completed, will permit more precise determination of costs. For example, some activities include investigation of land availability and costs, drainage easements, and number of locations for implementing the action based on field investigation. Land acquisition and easement agreements will drive the costs towards the upper range of the first order cost estimates. Other activities such as obtaining grant funding, developing partnerships, and obtaining assistance from volunteers will help to keep the costs down.

Type of Action
Each action is categorized according the type of action involved in its implementation. Watershed management will require a diverse strategy of actions to accomplish the goals and objectives of the WMMP.

A total of seven different categories were used to distinguish different types of actions in this plan, including:

1. Management planning.
2. Operations and maintenance.
3. Structural BMP.
4. Non-structural BMP.
5. Habitat protection, enhancement, and/or restoration.
6. Public education and outreach.
7. Monitoring and/or assessment.

Goal(s) Addressed by the Action
The goal(s) the action contributes to is listed according to the five goals of the WMMP (see Table 3.2-2).

Objective(s) Addressed by the Action:
The objective(s) the action contributes to is listed according to the ten objectives of the WMMP (see Table 3.2-2).

Benefit(s) of Action
The justification for the action was described in terms of the anticipated benefits from its implementation. The benefits listed for each action were based on consideration of the applicability of benefits from the standardized list in Table 4.2-2.

**Table 4.2-2. List of potential action benefits.**

| | | | | | |
|---|---|---|---|---|---|
| Reduce bacteria | Reduce metals | Reduce nutrients | Reduce pesticides | Reduce PAHs | Reduce legacy pollution |
| Address storm water runoff | Address dry weather runoff | Address wastewater | Reduce trash and debris to storm drains | Reduce pollutant concentration | Reduce degradation |
| Management Measures | Source control | Treatment control | Diversion to sanitary sewer | | |
| Reduce water use | Conjunctive Use | Increase Infiltration | Increase water reuse | Increase water supply | Reduce flood level |
| Protect habitat | Enhance/restore habitat | Provide habitat and/or wildlife corridor linkage | Improve > 20 acres of habitat | Improve 5 to 20 acres of habitat | Improve < 5 acres of habitat |
| Habitat Development | Revegetation | Acquisition | Reduce erosion/ sedimentation | Reduce invasive species | Reduce disturbance |
| Increases aesthetic values of land | Increases recreational values of land | Increase economic value of land | Public involvement | Public education and outreach | Partnership opportunities (public and/or private) |
| Address mandated, permit required objective | Address 303(d) listed impairment | Address one of top stakeholder issues | Fill or bridge an existing information gap | Regional and/or watershed benefits | Local benefits |

Cost Considerations

Factors that were considered in the preparation of the cost estimates, which have the potential to most directly affect costs, were listed based on the standardized list of considerations given in Table 4.2-3.

**Table 4.2-3. List of factors considered in developing action cost estimates.**

| | | | | | |
|---|---|---|---|---|---|
| New staff (or contractors) required | Staff reassignment and/or retraining required | One time implementation cost and/or limited maintenance required | Construction and maintenance (annual or more frequent) required | Land easement may be required | Land purchase may be required |
| Measures may be required to protect groundwater from hazardous materials | Design plans required | Permits required | Zoning variance required | Equipment purchase required | Monitoring required to determine effectiveness |

Potential Source(s) of Funds

Programs and projects could be implemented using a variety of funding sources. The following sources of funding were considered.

- Reallocation of budget.
- Fees.
- Bond Money.
- Grants.
- Supplemental RWQCB funds.

Time Frame Considerations

Two aspects of time frame were considered. One that relates to whether the action would result in near-term benefits and/or long-term benefits, and another that considers the time frame within which a program or project could be implemented.

The time frame for implementation will actually vary according to the priority assigned to the action, available funding, resource allocation, nature of constraints, and any necessary agency coordination and/or permitting.

Three potential implementation time frames were considered:

- < 2 years.
- 2-5 years.
- > 5 years.

Potential Project Location(s)

Areas identified within the watershed in which the action potentially could be implemented were listed. Other suitable locations also may exist that could be identified by jurisdictions, stakeholders, or through feasibility analyses.

Monitoring Recommendations
Recommendations were made for evaluating the effectiveness of the action. Monitoring recommendations took into consideration the potential to coordinate with the Countywide monitoring program, and the RWQCB surface waters ambient bay monitoring program (SWAMP).

### 4.2.2 Action Plan Reference Guide

Actions are described in Sections 4.3 through 4.7 of this WMMP according to the primary goal to which the action applies. This type of organization emphasizes the strategic planning that was developed to address the different types of impairments, and to promote effective watershed management associated with increasing public awareness and environmental stewardship. However, it is recognized that implementation of actions most often will be initiated at the local level, and municipalities and other interested stakeholders will be interested firstly in what type of actions are recommended for their geographic area, and secondly how they fit in the larger strategic plan for the watershed. Because of these dual interests in understanding actions from a strategic sense as well as on a geographic scale, Table 4.2-4 lists actions according to the goals they address as well as where in the watershed the action would be implemented. This table serves as a reference guide to the Action Plan, listing the section of the report where the action is described, the type of action and its base cost, goals addressed by the action, and general locations within the watershed where the action could be implemented.

The geographic areas listed on Table 4.2-4 correspond to the subwatersheds of the Dominguez Watershed; i.e., Upper Dominguez, Lower Dominguez, Machado Lake, Basins, and Harbors. Because the Basin subwatershed concerns the drainage to Walteria Lake, and the other detention/retention basins in Torrance are within the Machado Lake subwatersed, these two subwatersheds were combined to simplify the presentation of geographic information on the table. Additional summary of projects according to geographic location (e.g., by city) is given in the Subsection 4.9, Action Plan Summary.

**Table 4.2-4. List of actions according to type and estimated cost, goals, and geographic location.**

| Report Section | Action | Type of Action (Estimated Cost per program or project) | Goals | | | | | Location | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Water Quality | Water Conservation | Biological Resources | Public Awareness and Involvement | Balanced Stewardship | Upper Dominguez | Lower Dominguez | Machado Lake, Basins | Harbors |
| 4.3.2. Reduce Hardscape | 1. Increase use of pervious pavement during development and redevelopment | Management planning, structural BMP ($-$$) | • | | | | | • | • | • | • |
| | 2. Construct parking lots with pervious pavement | Structural BMP ($$$-$$$$) | • | • | | | | • | • | • | • |
| 4.3.3 Reduce Trash | 1. Increase public outreach and number of trash and recyclable containers in high priority areas | Structural BMP, operations and maintenance, ($$) | • | | • | | | • | • | • | • |
| | 2. Install and maintain catch basin inserts in high priority areas | Structural BMP ($) | • | | • | | | • | • | • | • |
| | 3. Install and maintain in-line separation units and/or end-of-pipe controls along all major storm drains to water bodies | Structural BMP ($$-$$$) | • | | • | | | • | • | • | • |
| | 4. Re-install and/or relocate trash booms on Dominguez Channel and Wilmington Drain | Structural BMP ($$-$$$) | • | | • | | | | • | • | |
| 4.3.4 Actions to reduce ongoing discharge impairments | 1. Reduce green waste to storm drains | Source control BMP ($-$$$) | • | | | | | • | • | • | • |
| | 2. Divert dry weather runoff to sanitary sewer system | Structural BMP ($$-$$$) | • | | | | | • | • | | |
| | 3. Install pet waste stations in parks and along trails | Structural BMP ($) | • | | | | | • | • | • | • |
| | 4. Create grassy swales and/or vegetated areas to treat urban runoff | Structural BMP ($) | • | | | | | • | • | • | • |
| | 5. Perform roadway improvements using vegetated medians, buffers, and/or parkways | Structural BMP ($$$-$$$$) | • | • | | | | • | • | • | |
| | 6. Create wetlands to treat urban runoff | Structural BMP ($$$-$$$$) | • | | • | • | | | • | • | |
| | 7. Enhance existing detention/retention basins | Structural BMP, operations and maintenance, habitat enhancement ($$$$) | • | • | • | | | | | • | |

**Table 4.2-4. (Continued)**

| Report Section | Action | Type of Action (Estimated Cost per program or project) | Goals | | | | | Location | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Water Quality | Water Conservation | Biological Resources | Public Awareness and Involvement | Balanced Stewardship | Upper Dominguez | Lower Dominguez | Machado Lake, Basins | Harbors |
| 4.3.4 Actions to reduce ongoing discharge impairments (continued) | 8. Route flows to detention/retention basins to reduce flooding and treat runoff | Structural BMP, operations and maintenance ($$$$) | • | • | | | | | | • | |
| | 9. Construct DURRF for water treatment and reuse | Structural BMP, operations and maintenance ($$$$) | • | • | | | | • | | • | |
| 4.3.5 Actions to reduce legacy pollutants | 1. Manage and remediate sediments in Consolidated Slip and Dominguez Channel | Management planning, operations and maintenance, habitat enhancement ($$$$) | • | | • | | | | • | | • |
| | 2. Manage and remediate contaminated sediments from Los Angeles and Long Beach Harbors | Management planning, operations and maintenance, habitat enhancement ($$$$) | • | | • | | | | | | • |
| | 3. Develop and implement a sediment management plan for Machado Lake | Management planning, operations and maintenance, habitat enhancement ($$$$) | • | | • | | | | | • | |
| 4.4.2 Actions to Reduce Potable Water Use | 1. Add water conservation to municipal education and outreach programs | Education/outreach ($-$$) | | • | | | | • | • | • | • |
| | 2. Increase water-wise landscaping | Education/outreach, operations and maintenance ($) | | • | | | | • | • | • | • |
| 4.4.3 Actions to Increase Water Reuse | 1. Increase use and expansion of the recycled water system | Management planning, operations and maintenance, Education/outreach ($$-$$$) | | • | | | | • | • | • | • |
| | 2. Increase installation of rainwater harvesting systems and cisterns | Management planning, operations and maintenance, Education/outreach ($-$$$$) | | • | | | | • | • | • | • |
| | 3. Develop and construct new alternative water sources | Management planning, operations and maintenance, Education/outreach ($$$$) | | • | | | | | • | | • |

**Table 4.2-4. (Continued)**

| Report Section | Action | Type of Action (Estimated Cost per program or project) | Goals | | | | | Location | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Water Quality | Water Conservation | Biological Resources | Public Awareness and Involvement | Balanced Stewardship | Upper Dominguez | Lower Dominguez | Machado Lake, Basins | Harbors |
| 4.5.2 Actions to Protect Native Habitats | 1. Standardize definition and update list of ESAs | Management planning ($) | | | • | | | • | • | • | • |
| | 2. Target outreach within 300 feet of ESAs | Education/outreach ($) | | | • | | | • | • | • | • |
| 4.5.3 Actions to Enhance/ Restore Habitat | 1. Enhance/restore Wilmington Drain wetlands | Habitat enhancement, restoration ($$$) | • | | • | • | • | | | • | |
| | 2. Enhance Machado Lake wetlands | Habitat enhancement ($$$) | | | • | • | | | | • | |
| | 3. Enhance Gardena Willows | Habitat enhancement ($$$) | | | • | • | | • | | | |
| | 4. Enhance Walteria Lake | Habitat enhancement ($$$) | | | • | • | | | | • | |
| | 5. Enhance pocket wetlands | Habitat enhancement ($$) | | | • | • | | • | • | | |
| | 6. Enhance and restore canyon habitats | Habitat enhancement and restoration ($$$) | | | • | | | | | • | • |
| | 7. Daylight historic streams to restore wetlands | Habitat enhancement and restoration ($$$) | • | | • | | • | • | • | • | • |
| | 8. Investigate feasibility and restore concrete-lined tributary channels | Habitat enhancement and restoration ($$$$) | • | | • | • | | • | • | | • |
| 4.5.4 Actions to Control Exotic Species Impacts | 1. Develop and implement an invasive species eradication program | Habitat enhancement ($$) | | • | • | • | | • | • | • | • |
| | 2. Update municipal landscape plant lists | Management planning ($) | | | • | • | | • | • | • | • |
| | 3. Discourage sale of exotic, invasive plants | Management planning ($) | | | • | • | | • | • | • | • |
| | 4. Coordinate control of non-native species and pets with public outreach | Education/outreach ($) | • | | • | • | | • | • | • | • |

**Table 4.2-4. (Continued)**

| Report Section | Action | Type of Action (Estimated Cost per program or project) | Goals | | | | | Location | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Water Quality | Water Conservation | Biological Resources | Public Awareness and Involvement | Balanced Stewardship | Upper Dominguez | Lower Dominguez | Machado Lake, Basins | Harbors |
| 4.6.2 Actions to Increase Public Awareness and Stewardship | 1. Conduct public awareness campaign for Dominguez Watershed | Education/outreach ($) | | | | • | | • | • | • | • |
| | 2. Develop curricula materials specific to the Dominguez Watershed and provide them to local schools | Education/outreach ($) | | | | • | | • | • | • | • |
| | 3. Adapt Malibu Creek's Living Lightly in Our Watersheds | Education/outreach ($) | | | | • | | • | • | • | • |
| | 4. Install informational kiosks at parks | Education/outreach ($) | | | | • | | • | • | • | • |
| 4.6.3 Actions to Encourage Public Involvement | 1. Support watershed cleanup days | Education/outreach ($) | | | | • | | • | • | • | • |
| | 2. Involve public (including elected officials) in implementation of watershed projects | Education/outreach ($) | | | | • | | • | • | • | • |
| | 3. Implement and/or increase Cool Schools and Campus Forestry Program at local schools | Education/outreach ($) | | | | • | | • | • | • | • |
| | 4. Create recreational/bike trail along Dominguez Channel | Education/outreach ($$$$) | | | | • | | • | • | | |
| | 5. Build additional nature centers | Education/outreach ($$$$) | | | | • | | | • | • | |
| 4.6.4 Actions to Document the Effectiveness of the WMMP | 1. Implement citizen-based monitoring program | Monitoring and/or assessment ($$) | | | | • | | • | • | • | • |
| | 2. Create centralized monitoring data base | Monitoring and/or assessment, management planning ($$) | | | | • | | • | • | • | • |
| | 3. Prepare State of the Watershed Report | Education/outreach ($) | | | | • | | • | • | • | • |
| | 4. Update WMMP | Management planning, Education/outreach ($-$$) | | | | • | | • | • | • | • |

**Table 4.2-4. (Continued)**

| Report Section | Action | Type of Action (Estimated Cost per program or project) | Goals | | | | | Location | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Water Quality | Water Conservation | Biological Resources | Public Awareness and Involvement | Balanced Stewardship | Upper Dominguez | Lower Dominguez | Machado Lake, Basins | Harbors |
| 4.7.2 Actions to Promote Watershed Management Coordination | 1. Continue DWAC coordination amongst stakeholders during implementation of the WMMP | Management planning ($) | • | • | • | • | • | • | • | • | • |
| | 2. Increase coordination with other advisory councils of local urbanized watersheds | Management planning ($) | | | | • | • | • | • | • | • |
| | 3. Increase watershed coordination with regional agencies | Management planning ($-$$) | | | | • | • | • | • | • | • |
| | 4. Develop model city codes/zoning and ordinances for the Dominguez Watershed | Management planning ($-$$) | • | • | • | • | • | • | • | • | • |
| 4.7.3 Actions to Promote Economic and Environmental Benefits | 1. Expand local technical assistance for brownfields redevelopment | Management planning, education/outreach ($$-$$$) | | | • | • | • | • | • | • | • |
| | 2. Increase brownfields redevelopment | Management planning, habitat enhancement education/outreach ($$$$) | | | • | • | • | • | • | • | |
| 4.7.4 Actions to Fund Watershed Programs and Projects | 1. Apply for grant funding to implement watershed projects | Fund raising ($) | | | | | • | • | • | • | • |
| | 2. Implement Adopt-A-Waterway Program | Fund raising ($$) | | | | • | • | • | • | • | • |
| | 3. Establish storm water fee | Fund raising ($$) | | | | | • | • | • | • | • |
| | 4. Establish mitigation bank to manage improvement in wildlife habitat quality | Management planning, fund raising ($$$$) | | | • | | • | • | • | • | • |

Estimated Cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

# 4.3 Actions Associated With the Goal to Protect and Enhance Water Quality

Organization of Section

4.3.1 Introduction
4.3.2 Actions to Reduce Hardscape
4.3.3 Actions to Reduce Trash
4.3.4 Actions to Reduce Ongoing Discharge Impairments
4.3.5 Actions to Reduce Legacy Pollution Impairments

## 4.3.1 Introduction

Issues and Concerns

Water bodies within the Dominguez Watershed are impaired to variable degrees by a variety of pollutants, and exhibit differences in types of impairments. The 303(d) listed water quality impairments result from ongoing discharges as well as legacy pollutants. Legacy pollutants refer to past discharges of environmentally persistent chemicals, which are now banned from use, that have become incorporated in sediments of water bodies. DDT and PCBs are legacy pollutants that impair sediments within the Dominguez Channel, Los Angeles and Long Beach Harbors, and to a lesser extent Machado Lake. Table 4.3-1 lists the identified impairments, which are summarized in greater detail by geographic location and constituent in Tables 1.4-2 and 2.3-9.

**Table 4.3-1. Listed 303(d) impairments for the Dominguez Watershed.**

**Upper Dominguez Channel**
(Bacteria, Metals, Pesticides, PAHs, PCBs)

**Lower Dominguez Channel**
(Bacteria, Metals, Pesticides, PAHs, Benthic Effects)

**Torrance-Carson Laterals**
(Bacteria, Metals)

**Consolidated Slip**
(Metals, Pesticides, PAHs, DDTs, PCBs, Sediment Toxicity, Benthic Effects)

**Los Angeles and/or Long Beach Harbors**
(Metals, DDT, PAHs, PCBs, Benthic Effects, Sediment Toxicity, Beach Closures)

**Wilmington Drain**
(Bacteria, Metals, Ammonia)

**Machado Lake**
(Trash, Ammonia, Algae/Eutrophic, Odors, Pesticides, PCBs)

Several issues and problems relative to water quality were identified from the Background Information Study, regulatory agency reports, and stakeholder outreach (refer to Section 3.0). The identified issues and concerns related to water quality are listed in order of decreasing level of awareness among stakeholders in Table 4.3-2.

Other issue recommendations identified during public outreach included:

- Work with various groups already locally promoting water quality.
- Keep the drains to Dominguez Channel clean.
- Improve drinking water quality.

**Table 4.3-2. Water quality issues and concerns.**

| | |
|---|---|
| 1. | Water quality impairments |
| 2. | Trash on streets, in storm drains, and channels |
| 3. | Historical DDT and PCB sediment contamination |
| 3. | Groundwater contamination and leaching |
| 4. | Erosion and sedimentation |
| 4. | Homeless use of area |
| 5. | Illegal dumping |
| 5. | Benthic community degradation |

Note: Issues and concerns are numbered in decreasing order of stakeholder awareness (see Table 3.2-5)

The DWAC identified several objectives of the WMMP relative to addressing the goal to Protect and Enhance Water Quality. These objectives are to:

- Diminish and eliminate further degradation of the watershed and its resources through better management practices.
- Promote, preserve, and protect beneficial uses of watershed.
- Develop an effective approach to meeting water quality regulations for the watershed.
- Promote science-based methods for water quality and environmental assessment of the watershed.
- Obtain grant funds to implement watershed improvement projects.

Existing Program

A comprehensive strategy to reduce storm water pollution and to improve water quality within the Dominguez Watershed is largely defined by the Storm Water and Urban Runoff NPDES permit (Order No. 01-82, CA5004001) (= Municipal Permit). The State of California and Regional Water Quality Control Board of Los Angeles issued this permit to the County of Los Angeles, and the incorporated cities therein (except for the City of Long Beach), to "*develop, achieve, and implement a timely, comprehensive, cost-effective storm water pollution control program to reduce the discharge of pollutants in storm water to the Maximum Extent Practicable (MEP)*." The discharges of storm water and urban runoff from the municipal storm sewer systems (MS4s), typically called storm drain systems, flow to water courses within the Los Angeles County Flood Control District and into receiving waters of the Los Angeles Region. The storm drain system discharges and water bodies within the Dominguez Watershed are covered under this permit.

The following actions and programs are being implemented under the Storm Water and Urban Runoff NPDES permit:

- Prohibition of non-storm water discharges into the Municipal Separate Storm Sewer System (MS4) and watercourses, with some exceptions.
- Limitation of discharges to receiving waters that cause or contribute to violation of Water Quality Standards, or that cause or contribute to a condition of nuisance.
- Implementation of a Storm Water Quality Management Program (SQMP) that includes using the most effective combination of best management practices (BMPs) to reduce storm water discharges of pollutants to the MEP. The SQMP includes seven programs, which are listed along with their objectives in Table 4.3-3.

**Table 4.3-3. Programs implemented under the SQMP.**

| Program | Objective |
|---|---|
| *Industrial/Commercial Facilities Control Program* | Implement pollutant reduction and control measures at industrial and commercial facilities. |
| *Development Planning Program* | Implement the Standard Urban Runoff Mitigation Plan (SUSMP) for reducing pollution and discharges associated with priority planning development and substantial redevelopment. |
| *Development Construction Program* | Control runoff quantity and reduce pollution associated with construction activity. |
| *Illicit Connections and Illicit Discharges Elimination Program* | Eliminate illicit connections and illicit discharges to the MS4. |
| *Public Agency Activities Program* | Minimize storm water pollution impacts from public agency activities. |
| *Public Information and Participation Program* | Increase awareness, change behavior, and involve and engage the public in mitigating the impacts of storm water pollution. |
| *Countywide Monitoring Program* | Assess receiving water impacts, identification of sources of pollution, evaluation of BMPs, and measurement of long term trends in mass emissions. |

The *Industrial/Commercial Facilities Control Program* requires implementation of pollution reduction and control measures at industrial and commercial facilities. The program includes requirements to track, inspect, and ensure compliance at facilities that are critical sources of pollutants in storm water. The inspected facilities are listed in Table 4.3-4. Inspections are required twice during the 5-year term of NPDES Permit CA5004001, with the first inspection occurring no later than August 1, 2004. The purpose of the inspections is to confirm that storm water BMPs are effectively implemented in compliance with the SQMP, Regional Board Resolution 98-08, State law, and County and appropriate municipal ordinances.

**Table 4.3-4. List of facilities inspected under the Industrial/Commercial Facilities Control Program.**

- Restaurants
- Automotive service facilities
- Retail gasoline outlets
- Automotive dealerships
- Phase I and II facilities, not inspected by RWQCB within 24 months
- Other Federally-mandated facilities

The *Development Planning Program* requires priority planning new development and substantial redevelopment to meet requirements of the program, which are additionally specified in the Standard Urban Runoff Mitigation Plan (SUSMP). Priority planning new development pertains to single-family hillside residences, 100,000 square foot or more commercial developments, automotive repair shops, retail gasoline outlets, restaurants, home subdivisions with 10 or more homes, parking lots 5,000 square feet or more or with 25 or more spaces, and locations within or directly adjacent or discharging to environmentally sensitive areas. Substantial redevelopment means the creation of 5,000 square feet or more of impervious surface.

Table 4.3-5 summarizes the Development Planning Program and SUSMP requirements. The focus of the program is to reduce the quantity of discharges and their associated pollution to the storm drain system.

**Table 4.3-5. Summary of Development Planning Program and SUSMP requirements for Los Angeles County.**

- Minimize impacts of storm water on natural drainages and water bodies.
- Maximize pervious surfaces to allow percolation of storm water into the ground.
- Minimize quantity of storm water to impervious surfaces and the MS4.
- Provide appropriate permanent measures to reduce pollutant loads to storm water.
- Control post-development peak storm water runoff to prevent erosion in natural drainages.
- Conserve natural areas.
- Minimize storm water pollutants of concern.
- Protect slopes and channels.
- Provide storm drain stenciling and signage.
- Minimize pollution from parking lots using Treatment Control BMPs and good housekeeping practices.
- Properly design (to minimize conveyance of pollutants to MS4) outdoor material storage areas, trash storage areas, loading/unloading dock areas, repair/maintenance bays, vehicle/equipment wash areas, gasoline fueling areas, and parking areas.
- Properly design and maintain BMPs in manner that does not promote the breeding of vectors.
- Require BMPs to meet design standards and/or numerical design criteria.
- Provide proof of ongoing BMP maintenance.

*The Development Construction Program* requires permittees to implement a program to control runoff from construction activity at all construction sites. The program requires a combination of BMPs, inspections, and for projects one acre or more in size, the preparation and compliance with a Local Storm Water Pollution Prevention Plan (SWPPP). The minimum requirements of the Development Construction Program are listed in Table 4.3-6. Construction projects are inspected at least once in the wet season. Inspectors are required to have received training regarding the storm water management program. A progressive scale of enforcement is implemented to ensure compliance with the approved SWPPP and local ordinances.

**Table 4.3-6. Minimum requirements of the Development Construction Program.**

- Retain sediments on site using Treatment and Structural BMPs.
- Retain construction-related materials, wastes, spills, or residues on site.
- Contain non-storm water runoff within site.
- Control erosion using a combination of BMPs, schedule, and landscaping.
- For projects ≥ 1 acre, prepare and comply with a SWPP that specifies BMPs and maintenance schedules.
- Obtain Waste Discharger Identification (WDID) Number for filing requirements.

The *Illicit Connections and Illicit Discharges Elimination Program* (IC/ID) requires permittees to eliminate all illicit connections and discharges to the storm drain system, and to document, track, and report such cases. Table 4.3-7 lists the elements of the IC/ID program.

**Table 4.3-7. Key elements of the Illicit Connections and Illicit Discharges Elimination Program.**

- Implement Program.
- Track and map all illicit connections and discharges to storm drain system.
- Train employees in methods of identification, investigation, termination, cleanup, and reporting of IC/ID.
- Screen storm drain system for illicit connections.
- Investigate and determine source, nature and volume of discharge, and responsible party for illicit connections.
- Terminate illicit connection using enforcement authority, as needed.
- Respond to illicit discharges with activities to abate, contain, and clean up within one business day of discovery.
- Investigate illicit discharges and take enforcement action, as appropriate, during or following containment.

The *Public Agency Activities Program* consists of maintenance, inspection, and response to minimize storm water impacts from public agency activities. Minimum requirements of this program are listed in Table 4.3-8. In addition, Permittees were required and conducted a Technical feasibility Study to investigate the possible diversion of dry weather discharges to the sanitary sewer system or the use of alternative Treatment Control BMPs to treat their flows.

**Table 4.3-8. Requirements of the Public Agency Activities Program.**

| | |
|---|---|
| Sewage System Maintenance, Overflow, Spill Prevention<br>• Implement response and repair plan for overflows, blockages, exfiltration to MS4.<br>• Implement procedures to prevent sewage spills or leaks from entering the MS4.<br><br>Public Construction Activities Management<br>• Implement Development Planning Program requirements.<br>• Implement Development Construction Program requirements.<br><br>Vehicle Maintenance/Material Storage Facilities/Corporation Yards Management<br>• Implement SWPPPs consistent with SQMP.<br>• Implement BMPs (good housekeeping practices, material storage control, vehicle leaks and spill control, illicit discharge control).<br>• Vehicle and equipment wash areas to be self-contained, equipped with clarifier (or alternative pre-treatment device), or plumbed to sanitary sewer.<br><br>Landscape and Recreational Facilities Management<br>• Implement standardized protocols for proper application and storage of approved and registered pesticides, herbicides, and fertilizers.<br>• Implement procedures to encourage retention and planting of native vegetation to reduce water, fertilizer, and pesticide needs.<br>• Ensure no application of pesticides and fertilizers immediately before, during, or immediately after rain or when water is flowing off area to be applied.<br><br>Parking Facilities Management<br>• Inspect public-owned parking lots 2/times per month.<br>• Clean parking lots once or twice/month depending upon inspection results. | Storm Drain Operation and Maintenance<br>• Designate and clean catch basins according to the following schedule:<br>  o Priority A – 4 times/year (3 wet season, 1 dry season).<br>  o Priority B – 2 times/year (1 wet season, 1 dry season)<br>  o Priority C – once/year.<br>• Visually inspect open channels and other drainage structures for debris and identify and prioritize problem areas of illicit discharge.<br>• Review to assure appropriate BMPs being utilized to protect water quality.<br>• Remove trash and debris from open channels and other drainage structures once/year prior to storm season.<br>• Minimize discharge of contaminants during MS4 maintenance and clean outs.<br>• Proper disposal of material removed.<br><br>Streets and Roads Maintenance<br>• Designate and clean streets according to the following schedule:<br>  o Priority A – 2 times/month.<br>  o Priority B – Once/month.<br>  o Priority C – As necessary, but no less than once/year<br>• Sawcutting wastes, concrete and other road maintenance materials and wastes, and washout from concrete trucks and chutes shall be managed to prevent discharge to the MS4.<br>• Maintenance employees are required to have received training regarding the storm water management program.<br><br>Emergency Procedures<br>• Repair essential services and infrastructure in a manner to minimize environmental damage. BMPs shall be implemented to extent the measures do not compromise public health or safety. |

Recommended WMMP Actions to Integrate with the SQMP

Recommendations to augment the existing water quality improvement strategy are included in the Dominguez WMMP based on results of the Background Information Study, consideration of permit requirements, and opinions of DWAC and other stakeholders. The strategy includes formalization of some of the ongoing actions of the County and other Permittees, consistent with implementation of the SQMP and SUSMP, into specific program elements that focus on elimination/reduction of identified water quality impairments and/or problems related to current behaviors and/or land use practices. Table 4.3-9 lists the recommended program elements.

**Table 4.3-9. Recommended water quality improvement program elements and their associated objectives.**

| Program Element | Objective |
|---|---|
| *Reduce Hardscape* | Decrease impervious cover and its overall adverse impact on water quality. |
| *Reduce Trash* | Eliminate/reduce trash impairments and concerns. |
| *Reduce Ongoing Discharge Impairments* | Reduce current impairments from bacteria, metals, nutrients, polynuclear aromatic hydrocarbons (PAHs), and pesticides. |
| *Reduce Legacy Pollution Impairments* | Reduce historical legacy impairments from pesticides (including DDTs), PAHs, and polychlorinated biphenyls (PCBs). |

The recommended program elements are intended to contribute to effective management of identified impairments to meet water quality regulations. As such, some of the program elements may serve as a starting point for assisting with compliance of TMDLs, which are planned for the watershed (Table 4.3-10). Other advantages of associating actions with a formal program element include development of specific objectives, strategic solutions, and greater awareness and attention given to fulfillment of the objectives of the program element.

The recommended program elements include actions and projects that are envisioned to be implemented in coordination with ongoing actions implemented under SQMP and SUSMP programs. As such, the additional program actions and projects may incrementally contribute toward, but are not required, for compliance with the existing Storm Water and Urban Runoff NPDES permit.

The following subsections describe the programs and projects associated with each of the recommended program elements:

- 4.3.2 Actions to Reduce Hardscape
- 4.3.3 Actions to Reduce Trash
- 4.3.4 Actions to Reduce Ongoing Discharge Impairments
- 4.3.5 Actions to Reduce Legacy Pollution Impairments

Each subsection briefly summarizes ongoing actions being implemented under the SQMP and SUSMP that relate to the recommended program elements. The focus of each subsection is the description of the additional recommended program actions and projects. Table 4.3-11 lists the recommended program actions and projects according to the different program elements and the impairments they address. In addition, the potential for the action to have multiple benefits related to water conservation, habitats, aesthetics, recreation, and/or public involvement are listed. Figure 4.3-1 shows potential locations where the projects could be implemented; in several cases, additional investigation will be required to verify actual locations.

**Table 4.3-10. Proposed TMDL schedule for 303(d) listed impairments of the Dominguez Watershed.**

| TMDL Type/ Location | LARWQCB 2001 | RWQCB et al. 2002 |
|---|---|---|
| **Ammonia/Algae/Eutrophic/Odors** | | |
| Dominguez Channel/Wilmington Drain (ammonia) | 2007/08 | 2007 |
| Machado Lake (ammonia, algae, eutrophic, odors) | 2010/11 | 2007 |
| **Bacteria** | | |
| Dominguez Channel, Torrance Carson Channel (high coliform counts) | 2004* | 2004* |
| Cabrillo Beach-Inner and Los Angeles Harbor-Main Channel (beach closures) | 2004* | 2004* |
| **Metals** | | |
| Impairments include one or more metals (cadmium, chromium, copper, lead, mercury, nickel, zinc), as listed in Table 2.3-9. | | |
| Dominguez Channel, Wilmington Drain, Torrance Carson Channel | 2006/07 | 2007 |
| LA Harbor, San Pedro Bay | 2010/11 | 2007 |
| **PAHs** | | |
| Dominguez Channel, LA & LB Harbors (except Southwest Slip), San Pedro Bay | 2007/08 | 2007 |
| **PCBs, Pesticides, Benthic Community Effects, Sediment Toxicity** | | |
| These TMDLs will address one or more legacy (historic) pollutants or their effects such as PCBs, pesticides (DDT, aldrin, Chem A, chlordane, dieldrin, toxaphene), benthic community effects, and/or sediment toxicity, as listed in Table 2.3-9. | | |
| Dominguez Channel, Cabrillo Beach-Inner, LA & LB Harbors, San Pedro Bay | 2007/08 | 2007 |
| **Trash** | | |
| Machado Lake | 2007/08 | 2007 |

Note:
*The year 2004 was given because the years (2002/2003) listed in LARWQCB 2001 have passed. The 2005 date listed in RWQCB et al. 2002 refers to an EPA adoption date required by a legal consent decree (U.S. District Court Case No. C 98-4825 SBA 1999); however, per a 2/25/04 correspondence from LARWQCB, the Board's basin plan adoption date is expected to occur in the summer of 2004.

Estimated costs for the actions range from a few thousand to several million dollars. Implementation of the additional program actions and projects would depend upon funding availability, and would not be substituted for required actions and BMPs without prior approval by the RWQCB, as required by the Storm Water and Urban Runoff NPDES permit. The actions would be funded by a mix of public funding, grants, low-interest loans, and partnerships/sponsorships. The main outside funding sources are grants that are let on a Federal and State level. Additional information on funding sources is presented in Subsection 4.7.

The effectiveness of the actions and projects would be assessed and/or monitored using many of the same techniques currently employed by the county and cities within the watershed. Additional monitoring would be required at site-specific locations associated with implementation of site-specific projects. Monitoring recommendations are included in the description of the projects. An overall strategy for monitoring is described in Section 4.8.

**Table 4.3-11. List of program and project actions associated with the goal to Protect and Enhance Water Quality.**

| Report Section | Actions | Reduce/Eliminate Impairments and/or Contributing Factors | | | | | Other Benefits | | | | | | Time Frame to implement (Years) | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hardscape | Trash | Bacteria, Metals, Nutrients | Pesticides, DDT, PAHs, PCBs | Erosion/Sedimentation | Water Conservation | Flood Control | Habitat | Aesthetics or Recreation | Public Involvement | Outside Funding | | |
| 4.3.2.1 | Increase use of pervious pavement during development and redevelopment. | √ | | √ | √ | | | √ | | √ | | | < 2 | $-$$ |
| 4.3.2.2 | Construct parking lots with pervious pavement | √ | | √ | √ | | √ | √ | | √ | | √ | 2-5 | $$$-$$$$ |
| 4.3.3.1 | Increase public outreach and the number of trash, cigarette, and recyclable containers in high priority areas | | √ | | | | | | | √ | | | < 2 | $$ |
| 4.3.3.2 | Install and maintain catch basin inserts in high priority areas | | √ | | | √ | | | | √ | | √ | 2-5 | $-$$ |
| 4.3.3.3 | Install and maintain in-line separation units and/or end-of-pipe controls along all major storm drains to water bodies | | √ | √ | | √ | | | | √ | | √ | 2->5 | $$-$$$ |
| 4.3.3.4 | Re-install and/or relocate trash booms on Dominguez Channel and Wilmington Drain | | √ | | | | | | | √ | | | <2-5 | $$-$$$ |
| 4.3.4.1 | Reduce green waste to storm drains | | | √ | | | | | | √ | √ | | <2 | $-$$$ |
| 4.3.4.2 | Divert dry weather runoff to sanitary sewer system | | | √ | √ | | | | | | | | 2-5 | $$$ |
| 4.3.4.3 | Install pet waste stations in parks and along trails | | | √ | | | | | | √ | √ | | < 2 | $ |
| 4.3.4.4 | Create grassy swales and/or vegetated areas to treat urban runoff | √ | | √ | | | √ | | | √ | | √ | 2-5 | $ |

**Table 4.3-11. (Continued)**

| Report Section | Actions | Reduce/Eliminate Impairments and/or Contributing Factors | | | | | Other Benefits | | | | | | Time Frame to Implement (Years) | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Hardscape | Trash | Bacteria, Metals, Nutrients | Pesticides, DDT, PAHs, PCBs | Erosion/Sedimentation | Water Conservation | Flood Control | Habitat | Aesthetics or Recreation | Public Involvement | Outside Funding | | |
| 4.3.4.5 | Perform roadway improvements using vegetated medians, buffers, and/or parkways | √ | | √ | | | √ | | | √ | | √ | 2-5 | $$$-$$$$ |
| 4.3.4.6 | Create wetlands to treat urban runoff | | | √ | √ | √ | | | √ | √ | | √ | 2-5 | $$$-$$$$ |
| 4.3.4.7 | Enhance existing detention/retention basins | | | √ | √ | √ | √ | | √ | √ | | √ | 2-5 | $$$$ |
| 4.3.4.8 | Route flows to detention/retention basins to reduce flooding and to treat runoff | | | | | | √ | √ | | | | √ | 2-5 | $$$$ |
| 4.3.4.9 | Construct DURRF for water treatment and reuse | | √ | √ | √ | √ | √ | | | | | √ | > 5 | $$$$ |
| 4.3.5.1 | Manage and remediate contaminated sediments in Dominguez Estuary and Consolidated Slip | | | √ | √ | | | | √ | | | √ | > 5 | $$$$ |
| 4.3.5.2 | Manage and remediate contaminated sediments from Los Angeles and Long Beach Harbors | | | √ | √ | | | | √ | | | √ | og to >5 | $$$$ |
| 4.3.5.3 | Develop and implement a sediment management plan for Machado Lake | | | | √ | √ | | √ | √ | √ | | | 2->5 | $$$$ |

Notes: og = ongoing action
$ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

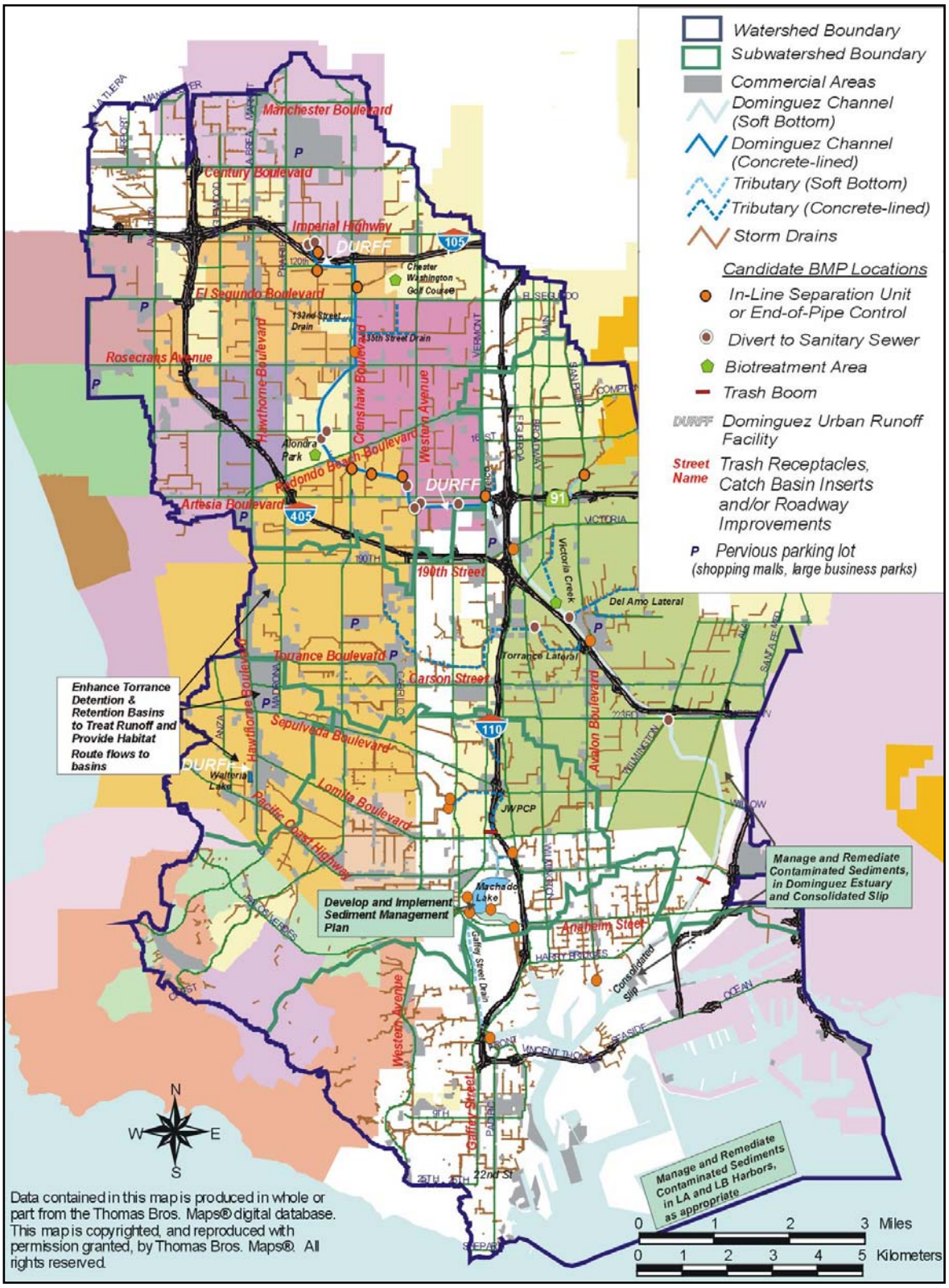



**Figure 4.3-1. Potential locations of water quality improvement projects.**

### 4.3.2 Actions to Reduce Hardscape

Statement of Problem

The extent of impervious cover of the land from roads, buildings, parking areas, and other impenetrable surfaces is a fundamental indicator of the quantity and quality of storm water and urban runoff. A substantial amount of runoff is generated from the urban landscape because rainwater and water used outdoors by people for a variety of washing and watering activities cannot infiltrate into the soil, which is covered by pavement and asphalt. Flooding can occur during storms if the excess water exceeds the capacity of storm drains and channels. The quality of the runoff and storm water is degraded by the pollutants the waters come into contact with as they run across parking lots, along street gutters, and into the storm drains. Over 90 percent of lands in the Dominguez Watershed are developed and most of that represents impervious cover.

Existing Actions

Reducing runoff to the storm drain system is a major requirement of the municipal Storm Water and Urban Runoff NPDES permit. The permit effectively prohibits non-storm water discharges into the storm drain system, with some exceptions.

Reducing runoff also can be accomplished by limiting the overall impervious cover (hardscape), and/or by directing runoff from impervious areas to pervious areas for infiltration.

The SUSMP specifies requirements and lists examples of ways to reduce impervious cover (Table 4.3-12). The requirements to conserve natural areas and to properly design parking lots are aimed at reducing the footprint of development. So too are example BMPs that concern minimizing lot sizes and dimensions of sidewalks, streets, and parking spaces. No discussion is given, although examples are listed, for reducing impervious cover by use of alternative or permeable surfaces.

**Table 4.3-12. SUSMP requirements and guidelines consistent with reduction of hardscape (impervious surfaces).**

- Conserve natural areas (concentrate or cluster development and leave remaining land in undisturbed condition, limit clearing and grading to minimum needed, maximize trees and other vegetation, promote vegetation with parking lot islands and other landscaped areas, preserve riparian areas and wetlands).
- Properly design parking lots (≥ 5,000 square feet or with ≥ 25 spaces) to reduce impervious coverage of parking areas.
- Example BMPs for consideration in project design, which must comply with all zoning and applicable ordinances, include:
  - Minimum width for sidewalks and streets.
  - Permeable surfaces for private sidewalks, driveways, parking lots, or interior roadway surfaces;
  - Alternative driveway surfaces and shared driveways that connect two or more homes together;
  - Parking lots with compact car spaces, minimum stall dimensions, efficient parking lanes, and use of pervious materials in spillover parking areas.
  - Open space development that incorporates smaller lot sizes.

Issue

Opportunities exist to substantially reduce runoff by incorporating the use of pervious surfaces in new development and substantial redevelopment.

Purpose

The purpose of the Hardscape Reduction program element is to decrease the amount of runoff during wet and dry weather by reducing the amount of impervious surfaces within the watershed. In cases where it is possible to integrate landscaping with the permeable surfaces, there will be the added benefits of enhancing the visual aesthetics of the land and greater potential for treating runoff.

The objectives of the Hardscape Reduction program element are to:

- Reduce runoff by decreasing impervious areas within the watershed.
- Reduce the footprint of required impervious surfaces to the minimum needed to comply with applicable zoning and ordinance requirements, as appropriate.
- Reduce impervious areas by use of pervious surfaces, where feasible.
- Encourage the use of pervious surfaces when rehabilitating, renovating, or redeveloping properties.

Opportunities to reduce the size of impervious areas and/or to increase the use of pervious surfaces include new development, redevelopment, and rehabilitation or renovation of properties. The above-listed objectives apply to nearly all types of development including residential, commercial, and industrial and include parking lots, pathways, and light-duty roads.

Limitation

Consistent with the SUSMP, pervious surfaces would not be recommended for areas of industrial activity or areas subject to high vehicular traffic (25,000 or greater average daily traffic (ADT) on main roadway or 15,000 ADT on any intersecting roadway). In addition, the groundwater aquifers underlying the Dominguez Watershed have well documented contamination and in many locations, the water table is very close to the ground surface. The aquifers used for water supply are very deep and not penetrable from the surface due to restricting clay layers. As such, reducing hardscape in the watershed will not result in beneficial groundwater recharge.

Actions

The Hardscape Reduction Program proposed in this plan consists of the existing actions required under the SUSMP (see Table 4.3-11). Coordination with the Public Information and Public Participation Program (PIPP) also is recommended to increase awareness regarding runoff, impervious areas, and the use of alternative pervious surfaces. Actions associated with increasing public awareness and participation are described in Section 4.6. Two additional actions, which are described below include:

- Increase the Use of Pervious Pavement During Development and Redevelopment.
- Construct Municipal Parking Lots with Pervious Pavement.

### *4.3.2.1 Increase Use of Pervious Pavement During Development and Redevelopment*

Issue

Development and redevelopment result in large areas being covered over with pavement, which results in an increased volume of runoff over pre-development conditions along with an increased pollutant load. Use of alternative paving surfaces with a lower coefficient of runoff or "C-Factor" helps reduce runoff from developed areas. The C-Factor is a representation of a surface's ability to produce runoff. Surfaces that produce higher volumes of runoff are represented by higher C-Factors, such as impervious surfaces. Surfaces that produce smaller volumes of runoff are represented by lower C-Factors, such as more pervious surfaces. Typical C-Factor values for various pervious pavement surfaces during small storms are shown in Table 4.3-13. Values for traditional (non-pervious) pavement are included for comparison.

**Table 4.3-13. Estimated C-Factors for various surfaces during small storms**

| Paving Surface | C-Factor |
|---|---|
| Concrete | 0.80 |
| Asphalt | 0.70 |
| Pervious Concrete | 0.60 |
| Cobbles | 0.60 |
| Pervious Asphalt | 0.55 |
| Natural Stone without Grout | 0.25 |
| Turf Block | 0.15 |
| Brick without Grout | 0.13 |
| Unit Pavers on Sand | 0.10 |
| Crushed Aggregate | 0.10 |
| Grass | 0.10 |
| Grass Over Porous Plastic | 0.05 |
| Gravel Over Porous Plastic | 0.05 |

Source: CASQA 2003

Pervious (porous) pavement is a special type of pavement that allows rain to pass through it, thereby reducing the runoff from a site and surrounding areas. The surface of the porous pavement can itself be porous such that water infiltrates across the entire surface of the material (e.g., grass and gravel surfaces, porous concrete and porous asphalt), a "checkerboard" combination of impermeable pavers and grass) or can be built up of impermeable blocks separated by spaces and joints (e.g., interlocking pavers), through which water can drain. The porous pavement surface is typically placed over a highly permeable layer of open-graded gravel and crushed stone. A filter fabric is placed beneath the gravel and stone layers to filter out fine soil particles.

The suitability of a pervious system at a particular site is dependent on the loading criteria required of the pavement. Factors that need to be considered in the design of parking areas with such systems include adequate subgrade to sustain traffic loading without excessive deformation, sufficient granular capping and sub-base layers to give sufficient load-bearing, and selection of materials that won't crack or suffer excessive rutting under the influence of traffic.

***Increase Use of Pervious Pavement During Development and Redevelopment (Continued)***

Use of pervious pavement will require assessment of site suitability, selection of type of pervious pavement, site preparation, construction, and maintenance.

Maintenance of pervious systems, e.g., cleaning surface, prevention of soil washing onto surface, outlet inspects, and replacement of geotextiles, is required to prevent clogging of the pervious surface. The pavement should be inspected several times during the first few months following installation, and then approximately four times per year. Maintenance will vary depending upon the type of material used and its configuration. Maintenance may include vacuum sweeping, washing, and/or high pressure hosing to free pores in the top layer from clogging.

Action

The action is to increase the use of pervious pavement systems in new development and redevelopment projects. Activities to promote such use include coordination amongst jurisdictional planning, building and safety, and maintenance departments to include pervious pavement in municipal projects. In addition, there will be coordination with the PIPP to develop materials to encourage developers to incorporate pervious systems into their projects. Recommendations will be included in the planning process to include such systems in new development, substantial redevelopment, and when major repair of parking lots is required.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Coordinate with PIPP to develop materials on the benefits of pervious pavement and to encourage their use. | J (L) | Once | $ |
| Use pervious pavement in the design of development and redevelopment projects. | J (L), B (L), C (P) | As needed | $-$$ |
| Coordinate among jurisdictional planning, building and safety, and maintenance departments to include pervious pavement in municipal projects. | J (L) | As needed | $ |
| Include pervious pavement as a check off category in the plan check process. | J (L) | Once | $ |
| | | Total Estimated Cost | $-$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed

Type of Action: Management planning, structural BMP.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Conserve, reuse, and recharge water supplies.
- Promote public awareness and involvement in watershed management.

***Increase Use of Pervious Pavement During Development and Redevelopment (Continued)***

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Develop an effective approach to meeting water quality regulations for the watershed.

Benefit(s) of Action

Encouraging the use of pervious pavement will contribute to a reduction in hardscape and storm water runoff in the watershed. It also will contribute to a reduction in pollutants that enter the storm drain system.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address 303(d) listed impairment | | Local benefits | | Public education and outreach |
| Address mandated, permit required objective | | | | |
| Address one of top stakeholder issues | | | | |
| Address storm water runoff | | | | |
| Increase Infiltration | | | | |
| Reduce metals, PAHs | | | | |
| Regional and/or watershed benefits | | | | |
| Treatment control | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Staff reassignment and/or retraining required.
- Application of less familiar materials and maintenance methods for routine work.

Potential Source(s) of Funds

- Reallocation of budget for coordination and outreach activities.
- Pervious pavements should be incorporated into design of new projects with little to no additional cost ramification.
- Transportation Enhancement Activities (TEA) funds would be applicable to transit oriented projects.

Time Frame Considerations

- Implement in < 2 years.
- Near- and long-term benefits.

Potential Project Location(s)

Pervious pavements could be used on parking lots and walkways of large commercial centers and business parks. Various pervious treatment options are available for residential driveways (e.g., crushed aggregate, permeable unit pavers). Pervious pavement may be applicable on the shoulders of airport taxiways and runways, provided that the grades, subsoils, drainage characteristics, and groundwater characteristics are suitable. Use of pervious pavement would be limited from areas of active industrial activity, but may be suitable for parking lots in industrial areas depending upon the nature of the industry.

#### *4.3.2.2 Construct Parking Lots with Pervious Pavement*

Issue
Exterior parking lots account for a large proportion of the hardscape in urban watersheds and generate substantial runoff to the storm drain system.

Action
This action involves use of a combination of asphalt and pervious pavement to reduce runoff and increase infiltration. This action also recommends adding landscaped islands to parking lots with sufficient space to provide shade and to improve aesthetics. In some applications, water reservoirs may be added to temporarily hold storm water until it can infiltrate, or underground holding tanks (cisterns) could be added to store storm water for reuse to irrigate landscaped areas. The action would be applied to new parking lots and to existing parking lots in need of substantial repair or rehabilitation, where feasible.

A site analysis would be performed of each parking lot project location to review locations of underground utilities, slope, soils, and existing or planned traffic volume and loads. Other design considerations also would be considered such as Americans with Disability Act (ADA) access, fire and emergency access, maintenance and security requirements, parking lot configuration, landscape irrigation and maintenance. A parking lot design, including selection of type of pervious pavement, and cost estimate would be prepared. Projects implemented under this action should be eligible for several different types of funding programs and grants, and applications would be made to obtain supplementary funds. Environmental CEQA documentation would be prepared, as appropriate, according to the type of project (i.e., new development or repair and maintenance). Any necessary permits would be obtained.

Many of the same activities associated with construction of conventional parking lots would apply such as demolition, excavation, grading, site preparation, paving, drainage pipelines, and electrical systems. The project would differ in type and appearance of the pavement, and there would be a reduction in the amount of piping required for the storm drain system. A landscape and irrigation plan would be prepared, where appropriate. Regular maintenance of the landscaping, and periodic maintenance of the pervious pavement would be required. Monitoring would be conducted to demonstrate the effectiveness of the action.

Activities, stakeholder roles, and cost estimate for the action are described on the next page. The assumed parking lot design is three acres with two acres of conventional (asphalt) paving for the driveway approaches and driving portions of the parking lot, and one acre of porous pavement associated with parking lot stalls. The example design includes landscaped islands with drought-tolerant native plants and 36-inch box trees, and an underground cistern as part of the irrigation system. Trash receptacles will be placed in the parking lot to encourage proper litter disposal. Costs provided in CASQA (2003) and Evans and Associates (2001) were consulted.

***Construct Parking Lots with Pervious Pavement (Continued)***

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Assess site suitability for use of pervious pavement. | J (L), C (P) | Once per site | $ |
| Design parking lot with pervious pavement and landscaped islands; prepare site-specific costs (include landscape islands, where feasible). | J (L), C (P) | Once per site | $$ |
| Apply and obtain grant or other funding sources. | J (L), C (P) | Once per site | $ |
| Finalize plans and specifications. | J (L), C (P) | Once per site | $ |
| Prepare CEQA documentation. | J (L), C (P) | Once per site | $ |
| Obtain local permits. | J (L), C (P) | Once per site | $ |
| Conduct site preparation (demolition, grading, excavating). | J (L), C (P) | Once per site | $$ |
| Install utilities. | J (L), C (P) | Once per site | $$ |
| Install underground drainage system, cistern, and catch basin inserts. | J (L), C (P) | Once per site | $$$ |
| Select and install pervious pavement (filter fabric, stone fill, sand, paving) – cost variable depending upon type. | J (L), C (P) | Once per site | $$-$$$ |
| Install asphalt paving, two driveway approaches, and concrete parking curbs. | J (L), C (P) | Once per site | $$$ |
| Stripe parking stalls. | J (L), C (P) | Once per site | $ |
| Install landscape and irrigation system, where appropriate. | J (L), C (P) | Once per site | $$$ |
| Install trash receptacles. | J (L), C (P) | Once per site | $ |
| Conduct maintenance inspections | J (L) | 5 times/year | $ |
| Conduct vacuuming of pervious pavement to ensure proper operation of pervious pavement. | J (L) | 6 times/year | $ |
| Conduct washing of pavement. | J (L) | 6 times/year | $ |
| Conduct deep cleaning of pavement. | J (L), C (P) | Every two years | $ |
| | | Total Estimated Cost | $$$-$$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed

Type of Action: Operations and maintenance, structural BMP.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Conserve, reuse, and recharge water supplies.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Develop an effective approach to meeting water quality regulations for the watershed.

***Construct Parking Lots with Pervious Pavement (Continued)***

Benefit(s) of Action

The combination of pervious pavement projects with landscape islands will reduce runoff, increase infiltration, and increase aesthetic resources. Pervious pavement provides the benefit of reducing impervious areas and runoff requiring treatment as well as filtering some pollutants from the runoff. Pervious pavement pollutant removal mechanisms include straining, microbiological decomposition in the soil, and absorption. Trash receptacles will be used to reduce litter on the ground. Use of an underground cistern to collect and store storm water runoff for reuse to irrigate the landscaped islands will conserve water. Trees in the landscaped islands will provide shade for cars and reduce reflected heat to office buildings resulting in energy conservation.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address 303(d) listed impairment | | Local benefits | | Public education and outreach |
| Address mandated, permit required objective | | Increase aesthetic values of land | | |
| Address one of top stakeholder issues | | | | |
| Address storm water runoff | | | | |
| Increase Infiltration | | | | |
| Reduce metals, PAHs | | | | |
| Reduce water use | | | | |
| Regional and/or watershed benefits | | | | |
| Treatment control | | | | |

Cost Consideration(s)

Pervious pavements are up to 25% less costly, or at least no more expensive than traditional forms of pavement, when all construction and drainage costs are taken into account (CASQA 2003). Construction costs for pervious systems are in the range of $10,000 to $300,000 per acre installed (or approximately $0.25 to $8 per square foot), depending on the type of material used. Ornamental types used for small landscaping installations tend to be more expensive on a per unit basis. Landscape islands cost about $5.00 per square foot for vegetation and $750 per 36-inch box tree.

The following factors have the potential to affect the cost of the action:

- Design plans required.
- Permits required.
- Equipment purchase required.
- Construction and maintenance (annual or more frequent) required.
- New staff (or contractors) required.

***Construct Parking Lots with Pervious Pavement (Continued)***

Potential Source(s) of Funds

- Metropolitan Water District has a "City Makeover Program", which is a competitive grant program to provide funding for native and drought-tolerant themed landscapes in prominent public locations. Use of pervious pavements with native, drought-tolerant landscaping in municipal locations would qualify for consideration under that grant program.
- Transportation Enhancement Activities (TEA) program.

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

Potential Project Location(s)

Exterior parking lots at:

- Airports.
- Civic Centers.
- Ken Malloy Harbor Regional Park.
- Business parks.
- Industrial parks where hazardous materials are confined to buildings.
- Large shopping centers and shopping malls.
- Public libraries and community centers.
- Wastewater treatment and water recycling facilities.

Monitoring Recommendations

Samples will be collected from selected locations where underground cisterns were installed to measure water quality at the inlet structures of the pervious pavement and within the storm water holding tank.

### 4.3.3 Actions to Reduce Trash

Statement of Problem

Trash (including litter and natural debris) is a significant problem throughout the Los Angeles basin, including the Dominguez Watershed. Specifically, Machado Lake has been listed on the Section 303(d) list as impaired due to trash, and will eventually have a trash TMDL (in the 2006/2007 timeframe). In addition, trash was identified as a key concern among watershed stakeholders during the field visits and public workshops conducted in developing this WMMP.

Trash and debris are unsightly and detract from the aesthetic appearance of the waterway, and degrade habitat for wildlife. Additionally, trash and debris may clog catch basins and storm drain pipes, contributing to flooding and odor problems.

Existing Actions

Under the Storm Drain Operation and Maintenance section of the Public Agency Activities Program, the municipalities in the Dominguez Watershed must designate catch basins within their jurisdictions as Priority A, B, or C. Priorities are defined based on whether they generate high, moderate, or low volumes of trash and/or debris. Since the Dominguez Channel does not currently have a trash TMDL, catch basins are cleaned according to a schedule based on their priority designation (Priority A cleaned 3 times during the wet season and once during the dry season; Priority B cleaned once during the wet season and once during the dry season; and Priority C cleaned once per year). Catch basins must also be cleaned any time they accumulate trash such that they are 25% full. In addition to these routine maintenance activities, the Permittees are required to consider the need for additional controls for facility operators adjacent to or discharging into Environmentally Sensitive Areas (ESAs) or tributaries to Section 303(d) listed water bodies (under the SQMP's Industrial/Commercial Facilities Control Program).

Issue

Effective control of litter requires several lines of defense. Since littering is a human behavior, initial control must begin at the point of litter generation (e.g., commercial strips with numerous fast food restaurants). For example, public education regarding proper disposal of litter may be focused on places where disposable materials are common (e.g., fast food restaurants). Source controls may also be placed well upstream of the receiving water (e.g., trash receptacles). Finally, physical barriers may be sited in the storm drain system (e.g., catch basin inserts, in-line separation units, end-or-pipe controls) or in the channel itself (e.g., trash booms).

Purpose

The purpose of this program element is to raise public awareness of trash as a problem in the Dominguez Watershed, effect change in people's littering behavior, and intercept trash that would otherwise end up in the channel.

Actions

Recommended actions include augmenting existing source controls by implementing a targeted public outreach to trash generating businesses (e.g., fast food restaurants, convenience stores, strip malls), and by adding new trash receptacles and increasing the frequency of trash collection in High Priority Areas. In addition, engineered devices such as catch basin inserts, in-line separators, end-of-pipe controls, and trash booms are suggested to control pollutants in runoff. Catch basin inserts capture trash, sediments, and pollutants at the point where runoff enters the storm drain system from the street. In-line separation units intercept trash within the storm drain system, and end-of-pipe controls capture trash at storm drain outlets. Trash booms represent a last line of defense strategy aimed at protecting downstream habitats.

The implementation of the engineered controls should be based on determination of need after the effectiveness of the recommended additional source control measures are evaluated. The choice of whether to install catch basin inserts, in-line separation units, end-of-pipe controls, or some combination of these strategies should be based on maintenance and access considerations. It is recommended that installation of the engineered devices be prioritized so that added protection is first given to environmentally sensitive areas with natural habitat so that disturbance associated with manual trash removal from these areas can be minimized. Continued operation of a trash boom on Wilmington Drain and re-installation of a trash boom on Dominguez Channel are recommended until such a time when source control effectiveness demonstrates that trash booms are no longer needed. It is recommended that other public outreach actions such as trash clean up days at environmentally sensitive areas continue to be held in the watershed; this as well as other public outreach and education actions to increase personal stewardship and source control are described in Section 4.6.

The actions, which are described in the subsections below, include:

- Increase Public Outreach and the Number of Trash, Cigarette, and Recyclable Containers in High Priority Areas.
- Install and Maintain Catch Basin Inserts in High Priority Areas.
- Install and Maintain In-line Separation Units and/or End-of-Pipe Controls Along All Major Storm Drains to Water Bodies.
- Re-install and/or Relocate Trash Booms on Dominguez Channel and Wilmington Drain.

### 4.3.3.1 Increase Public Outreach and the Number of Trash, Cigarette, and Recyclable Containers in High Priority Areas

Issue

The first line of defense in preventing trash and debris from entering Dominguez Channel is behavior modification to discourage people from littering. In many cases, littering activities are concentrated in commercial areas along major boulevards and thoroughfares. Fast food restaurants utilize a large amount of paper and plastic products such as cups, plates, wrappers, and bags that end up on the street and in the storm drain system. Trash receptacles are not always placed outside convenience stores, and trash gets dropped onto nearby sidewalks and roads. In other cases, trashcans in heavy use areas may overflow with a substantial amount of trash ending up on the ground. A substantial portion of the trash that ends up on the ground ultimately is conveyed by the storm drain system to local water bodies.

Action

This action would interface with the PIPP to conduct a targeted anti-litter campaign in High Priority Areas, and involves increasing the number of trashcans, cigarette butt receptacles, and recyclable containers in high traffic commercial areas. Maintenance activities will be coordinated with existing maintenance efforts, resulting in an incremental cost increase for ongoing operation and maintenance.

Activities, stakeholder roles, and cost estimate for the action are described below.

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| Coordinate with PIPP to develop watershed-themed anti-litter outreach plan and materials for targeted businesses such as fast food restaurants and convenience stores. | J (L) | Once | $ |
| Conduct outreach and provide education materials to identified businesses. | J (L), B (P) | Once | $ |
| Interview city maintenance staff to identify priority areas for placement of additional trashcans, cigarette receptacles, and recyclable containers. | J (L) | Once | $ |
| Identify specific locations and numbers of containers to be placed in public areas. | J (L) | Once | $ |
| Conduct fundraiser with public purchase of watershed-themed logo plaque with their name to be placed on receptacle or public bench. Coordinate with local business for sponsorships. | J (L), B (P), O (P) | Once | $ |
| Purchase and install the containers. | J (L), B (L) | Once | $$ |
| Coordinate with existing trash programs to maintain receptacles. | J (L), B (L) | As needed. | $ |
| Conduct follow-up interviews with businesses to assess effectiveness of the public outreach campaign. | J (L) | Quarterly, then annual | $ |
| Assess whether there is a relative change in the volume and/or frequency of trash removed from areas of storm drain outlets after implementation of the action. Incorporate the assessment activity into routine maintenance and inspection programs. | J (L) | Monthly | $ |
| Total Estimated Cost (Cost would be less with a successful fundraiser) | | | $$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed

***Increase Public Outreach and the Number of Trash, Cigarette, and Recyclable Containers in High Priority Areas (Continued)***

Type of Action: Structural BMP, operations and maintenance.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.

Benefit(s) of Action

The placement of additional trash receptacles has several benefits. In addition to keeping litter out of the storm drain system and ultimately the Dominguez Channel, reduced littering will result in a general aesthetic improvement in the area. This in turn should lead to a greater appreciation from the general public in the benefits of stewarding the watershed.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address one of top stakeholder issues | Address one of top stakeholder issues | Address one of top stakeholder issues | | Address one of top stakeholder issues |
| Address 303(d) listed impairment | Reduce degradation | Increases aesthetic values of land | | Public education and outreach |
| Address mandated, permit required objective | Local benefits | Local benefits | | Sponsorship opportunities |
| Reduce degradation | | | | |
| Regional and/or watershed benefits | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Equipment purchase required.
- One time implementation cost and/or limited maintenance required.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Reallocation of budget.
- Fundraiser with public purchase of logo plaque (with storm water program message and person's name) to be placed on bench and/or trash receptacle.

***Increase Public Outreach and the Number of Trash and Recyclable Containers in High Priority Areas (Continued)***

Time Frame Considerations

- Implement in < 2 years.
- Near- and long-term benefits.

Potential Project Location(s)

High priority commercial areas along major streets such as, but not limited to, the following streets:

| | | |
|---|---|---|
| Anaheim Street | Hawthorne Boulevard | Western Avenue |
| Artesia Boulevard | Imperial Highway | 190th Street |
| Avalon Boulevard | Lomita Boulevard | |
| Carson Street | Manchester Boulevard | |
| Century Boulevard | Pacific Coast Highway | |
| Crenshaw Boulevard | Redondo Beach Boulevard | |
| El Segundo Boulevard | Rosecrans Avenue | |
| Gaffey Street | Sepulveda Boulevard | |

Monitoring Recommendations

Assessment of the action will include follow-up outreach to targeted businesses in High Priority Areas to assess their perceptions about the effectiveness of implemented activities. In addition, maintenance personnel will determine whether there is a relative change in the volume and/or frequency of trash removed from areas of storm drain outlets after implementation of the action.

### *4.3.3.2 Install and Maintain Catch Basin Inserts in High Priority Areas*

Issue

Substantially reducing and/or eliminating the conveyance of trash to environmentally sensitive areas may require additional actions besides increasing the number of trash and recyclable containers upstream (Action 4.3.3.1). One alternative is to install inserts in catch basins (storm drain inlets or curb inlets) located along roads and in parking lots. Catch basin inserts capture sediments and pollutants at the point where runoff enters the storm drain system from the street. Catch basin inserts are designed to capture and remove sediments, trash, and the pollutants associated with them.

Drain inserts are usually fairly simple devices, such as fabric bags or rigid basket type devices physically installed within storm water inlets. There are a multitude of inserts of various shapes and configurations, typically falling into one of three different groups: socks, boxes, and trays (CASQA 2003). Catch basin inserts treat runoff from a very small area. Their advantages are that they do not require additional space, they are easy to access, and they do not retain water so there is little concern for mosquito breeding. However, although inexpensive on a per unit basis, catch basin inserts must be installed at numerous locations (for example one given intersection could have three or four storm drain drop inlets, each of which would require a separate unit). Therefore, extensive (and potentially costly) maintenance is required to ensure that they function properly. In addition, performance is likely to be significantly less than treatment systems located at the end of the drainage system (*ibid.*)

Action

This action involves installing catch basin inserts in High Priority Areas with a perennial trash and debris problem. Because maintenance of catch basin inserts is labor intensive, this action should be implemented only after monitoring has determined that additional action is needed after implementation of Action 4.3.3.1 and/or additional control is needed in addition to in-line separation or end-of-pipe controls (Action 4.3.3.3). Municipal maintenance staff would assist in locating areas that are most appropriate for their use.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Identify and prioritize catch basins. | J (L) | Once | $ |
| Obtain funds for project. | J (L) | As needed | $ |
| Purchase and install catch basin inserts. | J (L) | Once (multiple inserts) | $ (per unit) |
| Maintain catch basin inserts (before and during rainy season). | J (L) | As needed | $ (per unit) |
| Document effectiveness. | J (L) | Annual | $ |
| Total Estimated Cost (per street - $$ for construction and maintenance first year, then $) | | | $-$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed

Type of Action: Structural BMP.

***Install and Maintain Catch Basin Inserts in High Priority Areas (Continued)***

Goal(s) Addressed by Action

- Protect and enhance water quality.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.

Benefit(s) of Action

Removal of trash and debris will reduce degradation, improve water quality, and enhance aesthetics.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address one of top stakeholder issues | Addresses one of top stakeholder issues | Addresses one of top stakeholder issues | | |
| Address 303(d) listed impairment | Protects habitat | Increase aesthetic values of land | | |
| Address mandated, permit required objective | Reduce degradation | Local benefits | | |
| Reduce degradation | Local benefits | | | |
| Regional and/or watershed benefits | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- New staff (or contractors) required.
- Equipment purchase required; catch basin inserts range from less than $100 to approximately $2,000 per unit (CASQA 2003), a typical cost for planning purposes is $800 per unit (Parsons 2002).
- Construction and maintenance (annual or more frequent) required. Maintenance cost varies with type of inlet (a typical cost for planning purposes is $50/unit x 4 times per year).
- Monitoring to determine effectiveness.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Grants (e.g., 319(h), Proposition 13, Proposition 40.
- Funds from Adopt-a-Waterway program, if implemented.
- Partnerships and/or sponsorships with local businesses.
- Reallocation of budget.

Time Frame Considerations

- Implement in 2 to 5 years.
- Near- and long-term benefits.

***Install and Maintain Catch Basin Inserts in High Priority Areas (Continued)***

Potential Project Location(s)

- Streets with strip malls and fast food restaurants that are upstream of storm drain outlets with perennial problems with trash.

Monitoring Recommendations

The amount of trash and debris removed from the catch basins will be documented.

### *4.3.3.3 Install and Maintain In-Line Separation Units and/or End-of-Pipe Controls Along All Major Storm Drains to Water Bodies*

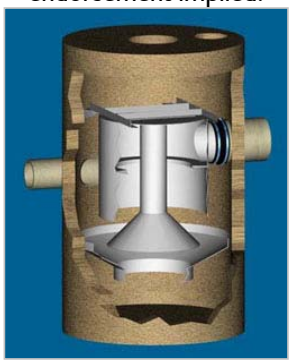
Issue

Water quality is impaired in the watershed due to contaminants, debris, and trash becoming incorporated in the runoff that enters the storm drain system. Actions for additional source control (4.3.3.1) and/or capture of trash at the point of entry into the storm drain system (4.3.3.2) focused on implementation of those actions along streets with trash-generating commercial development, such as fast food restaurants and convenience stores. While those measures would be expected to yield measurable results, they are targeted efforts. Trash also is generated in areas of other land uses (e.g., industrial, residential) and from vehicle escape along roadways.

Devices have been developed to capture debris, sediment, and trash within the storm drain system and/or at the storm drain outfalls to prevent it from entering the receiving water body. In-line separation units and end-of-pipe controls are relatively large, engineered devices that treat water from a relatively large drainage area, such as a storm drain main that has numerous collection points (e.g., drop inlets) draining into it. These systems are designed so they are placed within the flow path of the runoff (in-line controls), or at the point where the storm drain outfalls to a receiving water (end-of-pipe controls).

Several types of products are available commercially, and several sources of information are available that describe design, removal efficiencies, maintenance, and cost considerations (e.g., Parsons 2002; CASQA 2003, http://www.epa.gov). No endorsement of any particular product is given in this action.

Example of Vortex Separator. No endorsement implied.



In-line units, such as vortex-type separators, are usually installed below ground in a manhole or other access point immediately upstream of the point of discharge into the water body. Vortex separators (alternatively, swirl concentrators) are gravity separators, whereby removal efficiency is enhanced by water moving in a centrifugal fashion before exiting the unit. Maintenance consists of the removal of accumulated material with a vactor truck (tanker truck equipped with a suction unit designed to remove liquids and solids from subsurface holding containments).

Members of DWAC viewing Netting TrashTrap® end-of pipe BMP at Hamilton Bowl. No endorsement implied.

Other types of in-line units include trash nets that are suspended horizontally in line with the flow stream. That application also has been used as an end-of-pipe control. For example, LACDPW installed the Netting TrashTrap® system at the Hamilton Bowl flood control retention basin located in the City of Long Beach. The system includes large debris grates and double nets that capture trash. Maintenance includes removal of trash-filled nets, which are trucked to an appropriate disposal facility, and replacement of the nets.

***Install and Maintain In-Line Separation Units and/or End-of-Pipe Controls Along All Major Storm Drains to Water Bodies (Continued)***

Action

This action involves installing in-line separation units and/or end-of-pipe controls at locations upstream of major storm drain outfalls into Dominguez Channel, the Wilmington Drain, Ken Malloy Harbor Regional Park, and Los Angeles and Long Beach Harbors. Municipal maintenance staff would assist in locating areas that are most appropriate for their use. Inspections would be conducted of storm drain outfalls to identify locations where there is adequate space to install these BMPs.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Identify, field inspect and prioritize storm drain lines on which to install structural BMPs. | J (L) | Once | $-$$ |
| Apply for grant funding for installations. | J (L), A (R) | Once (for each site) | $ |
| Purchase and install in-line BMP units, or construct end-of-pipe BMPs. | J (L), C (P) | Once (at each location) | $$-$$$ |
| Maintain BMPs (before and during rainy season). | J (L), C (P) | As needed | $-$$ |
| Conduct monitoring to evaluate effectiveness. | J (L), C (P) | Annual | $ |
| | | Total Estimated Cost | $$-$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed, as appropriate
Agencies = LARWQCB, SWRCB

Type of Action: Structural BMP.

Goal(s) Addressed by Action

- Protect and enhance water quality.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.

Benefit(s) of Action

Capture and removal of trash and debris before it reaches a water body will reduce the impairment of that water body, and will reduce degradation of habitat for biological resources. In addition, the reduction of trash contributes to a more aesthetic setting, making it more attractive to people using the area for recreational purposes. This proactive measure provides for local jurisdictions to reduce trash, debris, and other pollutants measurably, and will be useful for meeting wasteload allocations associated with future TMDLs.

***Install and Maintain In-Line Separation Units and/or End-of-Pipe Controls Along All Major Tributaries to Dominguez Channel (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address 303(d) listed impairment | Protect habitat | Increase aesthetic values of land | | Public education and outreach |
| Address mandated, permit required objective | | | | |
| Address one of top stakeholder issues | Address one of top stakeholder issues | Address one of top stakeholder issues | | |
| Reduce pollutant concentration | Reduce degradation | | | |
| Regional and/or watershed benefits | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Design plans may be required.
- Permits may be required.
- New staff (or contractors) required.
- Land easement may be required.
- Equipment purchase required ($100,000 to $500,000 per BMP).
- Construction and frequent maintenance required (after every storm to avoid vector problems).
- Monitoring to determine effectiveness.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Grants (e.g., 319(h), Proposition 13, Proposition 40).
- Funds from Adopt-a-Waterway program, if implemented.
- Reallocation of budget.

Time Frame Considerations

- Implement in 2 to > 5 years.
- Near and long term benefits.

Potential Project Location(s)

A number of sites potentially exist for locating in-line and/or end-of-pipe treatment systems (Figure 4.3-1). In general, major storm drains (approximately ≥48 inches in diameter) and draining areas with commercial land uses are good candidate locations. Potential locations on Figure 4.3-1were based on consideration of the pattern of the storm drain network (e.g., drains at the end of a network system and that ended at a water body). Information on the size of the storm drain was not available for several locations, and inspections will be necessary to verify that dimensions and access are suitable for installation of the BMP. Not all locations shown on Figure 4.3-1 may be expected to receive this action.

Monitoring Recommendations

Trash, debris, and sediment cleaned from the BMP during maintenance will be weighed and documented.

### *4.3.3.4 Re-install and/or Relocate Trash Booms on Dominguez Channel and Wilmington Drain*

Issue

Trash is a problem in the Dominguez Channel watershed. Trash degrades the aesthetic and recreational appeal of a receiving water and may impact downstream habitat and other areas, especially after storm events. Trash booms have been successfully used to intercept in trash in channels to prevent it from being conveyed to larger downstream water bodies. A trash boom currently is being used on the lower portion of the Wilmington Drain to substantially reduce the amount of trash conveyed to Machado Lake. A trash boom location also has been constructed on the lower Dominguez Channel, but the boom has not yet been installed.

Action

This action involves the installation and maintenance of trash booms on the lower portion of Dominguez Channel on Wilmington Drain. On Dominguez Channel, an existing trash boom location was previously constructed south of Pacific Coast Highway. The action would include reinstallation and maintenance of a trash boom at this location. Maintenance would include removal and disposal of trash after storm events or as needed, and inspection of the integrity of the boom during each clean out event. The boom would be repaired and/or replaced as necessary.

A functional trash boom currently occurs just north of Pacific Coast Highway on the Wilmington Drain. This boom provides a last line of defense before Machado Lake; however, it does not protect the Wilmington Drain from degradation due to trash. The trash boom on Wilmington Drain should be moved further upstream (north of Lomita Boulevard) in order to provide protection to most of Wilmington Drain as well as Machado Lake. The trash boom would be maintained according to the current schedule (i.e., after storm events or as needed).

Trash boom on Wilmington Drain

Potential sources of funding to install new trash booms may include grants, allocation of budget from the Adopt-A-Waterway program if it is implemented, and/or reallocation of jurisdictional budgets. All cities contributing trash to Dominguez Channel and/or the Wilmington Drain should share the responsibility of maintaining the trash boom. Likewise, the jurisdictions whose trash maintenance efforts benefit from the placement of the trash boom should contribute to its maintenance. A trash maintenance funding agreement among jurisdictions is recommended.

***Re-install and/or Relocate Trash Booms on Dominguez Channel and Wilmington Drain (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Dominguez Channel*** | | | |
| Apply and obtain grant or other funding. | J (L), A (R) | Once | $ |
| Establish trash maintenance funding agreement among jurisdictions. | J (L), J (P) | Once | $ |
| Install trash boom at location near Pacific Coast Highway. | J (L) | Once | $ |
| Properly dispose of accumulated trash and debris. | J (L), C (P) | After storm events and as needed | $-$$ |
| Inspect and maintain trash boom. | J (L), C (P) | After storm events and as needed | $ |
| | | Subtotal Estimated Cost (per year) | $$ |
| ***Wilmington Drain*** | | | |
| Apply and obtain grant or other funding. | J (L), A (R) | Once | $ |
| Establish trash maintenance funding agreement among jurisdictions. | J (L), J (P) | Once | $ |
| Select location for upstream trash boom north of Lomita Boulevard. | J (L) | Once | $ |
| Construct upstream trash boom location. | J (L), C (P) | Once | $ |
| Install trash boom. | J (L) | Once | $ |
| Properly dispose of accumulated trash and debris. | J (L), C (P) | After storm events and as needed | $-$$ |
| Inspect and maintain trash boom. | J (L), C (P) | After storm events and as needed | $ |
| | | Subtotal Estimated Cost (per year) | $$ |
| | | Total Estimated Cost (both locations per year) | $$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed
Agencies = LARWQCB, SWRCB

Type of Action: Structural BMP.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Protect, enhance, and restore native habitats and biological resources.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.

***Re-install and/or Relocate Trash Booms on Dominguez Channel and Wilmington Drain (Continued)***

Benefit(s) of Action

Installation of trash booms on Dominguez Channel and Wilmington Drain will provide an additional line of defense against trash and debris impacting the habitats downstream of the main channel. The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address one of top stakeholder issues | Address one of top stakeholder issues | Address one of top stakeholder issues | Address one of top stakeholder issues | Regional and/or watershed benefits |
| Address 303(d) listed impairment | Reduce degradation | Increases aesthetic values of land | Increase recreational values of land | |
| Address mandated, permit required objective | Local benefits | Reduce degradation | Reduce degradation | |
| Reduce degradation | | Local benefits | Local benefits | |
| Reduce trash | | | | |
| Regional and/or watershed benefits | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Equipment purchase required,
- One time implementation cost and regular maintenance required.
- Installation costs are approximately $7,000 per boom.
- Maintenance costs are approximately $3,200 (small storm); $4,200 (medium storm); and $15,300 (large storm).

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Grants (e.g., 319(h), Proposition 13, Proposition 40).
- Adopt-A-Waterway program funds, if implemented.
- Reallocation of budget.

Time Frame Considerations

- Implement in < 2 – 5 years.

Potential Project Location(s)

- Lower Dominguez Channel.
- Wilmington Drain (north of Lomita Boulevard).

Monitoring Recommendations

Trash removed from the trash booms will be weighed prior to disposal to provide a record of the functioning and need for the booms.

### 4.3.4 Actions Associated With Reduction of Ongoing Discharge Impairments

Statement of Problem

Several impairments occur in the watershed due to ongoing discharges and releases to the watershed. These include bacteria, nutrients, metals, and pesticides. The sources of these impairments are described below.

*Bacteria*

Bacteria indicators (total and fecal coliforms, *Enterococcus*) are found in the intestinal tracts of warm-blooded animals (humans, dogs, cats, birds, etc.). They are generally not harmful themselves, but they may indicate the possible presence of pathogenic bacteria, viruses, and protozoans that also live in human and animal digestive systems. Bacteria is a 303(d) listed impairment for the Watershed, and reported levels sometimes exceed AB411 thresholds for water-contact recreation at Cabrillo Beach within Los Angeles Harbor, Machado Lake, and Dominguez Channel. A TMDL for this constituent is currently being developed by the LARWQCB.

The bacteria impairment is widespread and occurs in all water bodies of the watershed. Sources of bacteria are numerous and may include pet waste, bird roosting, rodents, homeless use of an area, and leaks or spills from the sanitary sewer system. Bacteria may be associated with vegetative debris (grass clippings, leaf litter) due to contact with animal feces. Elevated bacteria levels in stormwater are very difficult to characterize because of bacteria's capability to grow, culture, and die off depending upon its environment and surroundings.

*Heavy Metals*

Trace amounts of total and dissolved metals are widely present in the Dominguez Watershed, and TMDLs will be developed for all water bodies except Machado Lake. Although invisible to the human eye, metals can be toxic to aquatic organisms, especially when present in the more bioavailable dissolved phase. Common sources of heavy metals include automobile-related materials (e.g., zinc from tire wear, copper from brake pad wear and used oil), paints and coatings, galvanized steel, and soils (due to aerially deposited lead).

*Nutrients*

Nutrients (nitrogen and phosphorous compounds) are a concern in Wilmington Drain and Machado Lake. Nutrients encourage algae growth and may contribute to eutrophication and depressed oxygen levels in aquatic systems. Common sources of nutrients include fertilizers, vegetative debris, and soil erosion. These materials may be mobilized into the storm drain year-round through over-irrigation. Other sources of nutrients include discharges from sanitary wastewater treatment plants and leaks from sanitary sewer pipelines.

*Pesticides*

Pesticides are also a issue in many portions of the watershed. In addition, current pesticides (e.g., organophosphate compounds such as diazinon) are found in common home and garden insecticides (e.g., ant control products), are highly soluble, and toxic to aquatic life at extremely low levels. Legacy pesticides (e.g., DDT, chlordane) do not break down easily and tend to accumulate in sediments; actions to reduce legacy pollutants are described in Section 4.3.5.

*PAHs*
Sources of polynuclear aromatic hydrocarbons (PAHs) include lubricating oils and grease, asphalt, tire wear, vehicle exhaust, and industrial effluents.

Existing Actions
The Municipal Storm Water Permit prohibits non-storm water discharges into the storm drain system and watercourses. This as well as the programs implemented under the SQMP (see Table 4.3-3) represents the primary methods to reduce sources of pollutants that have or continue to cause impairments in the watershed.

Issue
Reduction of ongoing discharge impairments will likely require a combination of source control and treatment methods due to the widespread nature of the problems.

Purpose
The purpose of the Ongoing Discharge Impairment Reduction program element is to augment source control measures implemented under the existing SQMP programs with projects that have the potential for multiple benefits including water quality improvement, habitat enhancement, and/or aesthetic improvements.

Actions
Eight actions are recommended. The actions, which are described in the subsections below, include:

- Reduce Green Waste to Storm Drains.
- Divert Dry Weather Runoff to Sanitary Sewer System.
- Install Pet Waste Stations in Parks and Along Trails.
- Create Grassy Swales and/or Vegetated Areas to Treat Urban Runoff.
- Perform Roadway Improvements Using Vegetated Medians, Buffers, and/or Parkways.
- Create Wetlands to Treat Urban Runoff.
- Enhance Existing Detention/Retention Basins.
- Route Flows to Stormwater Detention/Retention Basins to Reduce Flooding and to Treat Runoff
- Construct DURRF for Water Treatment and Reuse.

### *4.3.4.1 Reduce Green Waste to Storm Drains*

Issue

Green waste, also called yard waste, consists of leaves, tree trimmings, weeds, grass and other organic materials. Landscape maintenance personnel and homeowners often use leaf blowers to remove vegetative debris from lawns and landscaped areas. These materials represent a substantial source of nutrients (nitrogen and phosphorous compounds), organic matter, and bacteria to the storm drain system. Also, green wastes may contain trace amounts of toxic organic chemicals from pesticides and herbicides that have been applied to the landscape. Green waste washed into surface waters increases the biochemical oxygen demand (BOD) of the water body resulting in the consumption of dissolved oxygen needed by aquatic organisms. Green waste washed into water bodies can also alter the natural flow and configuration of stream channels. Debris piles must be removed in front of culverts and bridges prior to the storm season to maintain flood control capacity in channels.

Action

Green waste will be reduced from the storm drain system through a combination of public outreach and new services (green waste collection and reuse). Environmentally sound alternatives exist for recycling and composting yard waste (http://www.888CleanLA.com; http://www.start gardening.com; http://www.ladpw.com/epd/mdpgrass/index.cfm; http://www.wm_la.com;yard.html). A grasscycling outreach program has been initiated in Los Angeles with participation by the County and some of the cities within the watershed. This program includes outreach to leave grass clippings in place on the lawn to act as a mulch. This program would be expanded to include all cities within the watershed. In addition, the action would include coordination with the PIPP to develop a mailer to encourage homeowners to grasscycle, compost, prevent yard waste escape to street, and to require their landscape services, if used, to do these same activities as well.

Currently, green waste collection services exist in most cities of the watershed. In some cities, the green waste is beneficially reused. For example, some of the green waste collected by the City of Los Angeles is co-composted with wastewater biosolids from the city's wastewater treatment plants to produce TOPGRO compost. The cost of hauling, disposing, and processing the green waste into mulch is approximately $65/ton. Similarly, green waste is separately collected for reuse in most cities in the watershed (Compton, Gardena, Hawthorne, Inglewood, Lawndale, Lomita Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estate). This may include turning the green waste into compost or hauling it to landfills (e.g., Puente Hills Landfill) where it is used as alternative daily cover. The City of Long Beach and Lomita incinerate green waste along with refuse at the Southeast Resource Recovery Facility (SERRF), which converts waste to energy. A few cities have commingled waste collection (e.g., Carson, El Segundo, Torrance). In those cases, green waste may be sorted from other refuse to be recycled or it is handled with other refuse at landfills. Some of the waste taken to the Puente Hills Landfill is used in its Gas-to-Energy Facility. The action includes investigation of the feasibility of developing a green waste collection and reuse program for those cities that currently lack such a program.

***Reduce Green Waste to Storm Drains (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Public Outreach*** | | | |
| Coordinate with PIPP to develop mailer to encourage homeowners to grasscycle, compost, and not to blow yard waste into street, and to require their landscape service, if used, to grasscycle and to sweep street of any yard waste generated from their activities. Include mailer with water bill. | J (L) | Once | $ |
| Post outreach materials on municipal web sites. | J (L) | Once | $ |
| | | Subtotal Cost | $ |
| ***Green Waste Collection and Reuse*** | | | |
| Coordinate with local hauler to develop a cost-effective program for green waste collection and beneficial reuse. | J (L), C (P) | Once | $ |
| Implement green waste collection and reuse program, if feasible. | J (L), C (P), O (P) | Weekly | $$-$$$ |
| | | Subtotal Cost per year | $$-$$$ |
| | | Total Estimated Cost | $-$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed
O = Residents, landscape maintenance personnel

Type of Action: Source control BMP.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.

Benefit(s) of Action

The dual activities of expanding public outreach to perform on-site mulching and composting and to provide green waste pickup for reuse have the potential for several benefits. Since green waste may contribute a variety of pollutants (i.e., nutrients, pesticides, bacteria), preventing this material from entering the storm drain system represents an important pollutant source control measure. Mulching and use of composted material in soil helps soils retain water and thus represents a beneficial conservation measure. Use of green waste for beneficial reuse (compost, landfill alternative daily cover) will increase environmental stewardship in the Dominguez Watershed.

***Reduce Green Waste to Storm Drains (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address 303(d) listed impairment | Protect habitat | | | Public education and outreach |
| Reduce bacteria, nutrients, pesticides | | | | Public involvement |
| Reduce pollutant concentration | | | | Partnership opportunities (public and/or private) |
| Reduce water use | | | | |
| Source control | | | | |
| Regional and/or watershed benefits | Regional and/or watershed benefits | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- New staff (or contractors) required to implement action.
- One time implementation cost and ongoing maintenance required.

Potential Source(s) of Funds

- Reallocation of budget.

Time Frame Considerations

- Expand public outreach in < 2 years.
- Implement green waste collection in > 5 years.
- Near- and long-term benefits.

Potential Project Location(s)

- All jurisdictions within the watershed.

Monitoring Recommendations

The effectiveness of the public outreach effort to reduce green waste to storm drains will be evaluated by comparing bacteria, nutrient, and pesticide concentrations in receiving waters before and after this action is implemented.

### *4.3.4.2 Divert Dry Weather Runoff to Sanitary Sewer System*

Issue

Water quality in Dominguez Channel is impaired due to the introduction of pollutants in urban runoff. Dry weather runoff is a continuous source of pollutants to the storm drain system, which then flows into Dominguez Channel. Although dry weather runoff should be addressed through source control, in some cases this may not be feasible. One possible solution is the diversion of dry weather runoff to the sanitary sewer system for treatment and discharge through the ocean outfall.

Action

This action involves initiating a study in the Dominguez Watershed to locate the sources of dry-weather flows and determine the appropriate management practices. This evaluation should include a thorough water quality and flow characterization, and a comprehensive field survey to determine the source(s) of flow and pollutants. This source evaluation should identify the source categories and evaluate the BMPs listed in the following table.

| **Source** | **Dry weather BMP(s) to be evaluated*** |
|---|---|
| NPDES permitted discharges | None. These locations have been determined by the Regional Water Quality Control Board to be appropriate discharges. |
| Discharges from residential land use | Irrigation management education to prevent/reduce overspray, public education on the effects of outdoor water use |
| Discharges from non-residential land uses | Irrigation management education to prevent/reduce overspray, code enforcement |
| Surfacing groundwater | Surfacing groundwater should be evaluated to determine the pollutant load. These locations should be evaluated to determine if they are fed by a water leak or over irrigation. |
| Illicit discharges | Illicit discharges should be eliminated in accordance with existing programs. |
| *This list is not exhaustive. Any BMP which will prevent/reduce the generation of dry weather flow is appropriate to consider. | |

If polluted discharges remain after implementation of appropriate BMPs, alternative treatment options should be considered. One such treatment is a diversion to the sanitary sewer. Implementation of a diversion will require design and construction of a physical system that will route the dry weather flows from the storm drain to the sanitary sewer. The following guidelines should be considered when selecting a diversion location:

- Diversions will not be allowed where pollutants are detected in quantities that may interfere with the treatment plant's ability to comply with waste discharge requirements.
- The diversions are only allowed to sewers which flow to the Joint Water Pollution Control Plant (JWPCP).
- Diversions will only be allowed where capacity is available in the sewer. Where capacity is available, diversions will be required to operate during off-peak hours for the sewer (12 am - 6 am for example) and in most cases will require storage.
- Pre-treatment of diverted waters may be required.
- Diversions from open channels are not appropriate. Open channels have been interpreted to be Waters of the State/U.S., as such, the construction of diversion structures within open channels should be avoided.
- Diversions systems must be constructed above the high tide level.

***Divert Dry Weather Runoff to Sanitary Sewer System (Continued)***

Once the study is complete and appropriate sites are selected, permits will be required for construction, and a connection fee will be required. Once connected, an annual operating and maintenance fee will be required. Monitoring to test pollutant concentrations within diverted waters will be conducted on a quarterly basis. Grants or alternate funding would be sought to implement the diversion projects. Jurisdictions tributary to the diversion project should form a partnership to share any matching fund requirements.

Activities, stakeholder roles, and cost estimates for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Planning Phase*** | | | |
| Complete dry-weather flow study and finalize diversion locations. | J (L), A (R) | Once | $$ |
| | | Subtotal Estimated Cost | $$ |
| ***Construction Phase*** | | | |
| Apply and obtain grant funding. | J (L), A (R) | Once | $ |
| Conduct final design of the diversion system. | J (L) | Once per location | $$-$$$ |
| Obtain necessary permits. | J (L), A (R) | Once | $$ |
| Construct diversion system. | J (L), C (P) | Once per location) | $$$ |
| Pay connection fee. | J (L) | Once per location | $$$ |
| | | Subtotal Estimated Cost (per location) | $$$ |
| ***Operational Phase*** | | | |
| Treatment fee, if applicable. | J (L) | Annual per location | $$ |
| Operation and maintenance. | J (L) | Annual per location | $$ |
| Monitoring effectiveness. | J (L) | Semi-Annual per location | $ |
| | | Subtotal Estimated Cost (per location ) | $$ |
| | | Total Estimated Cost (per location for five years) | $$$ |
| Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other<br>S = schools/universities, V = volunteers<br>Roles: L = lead, Ad = advisory, P = participant, R = review<br>Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000 | | | |

Note: Jurisdictions = All cities and county jurisdictions tributary to diversion project
Agencies = LACSD, LARWQCB

Type of Action: Structural BMP.

Goal(s) Addressed by Action

- Protect and enhance water quality.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.

***Divert Dry Weather Runoff to Sanitary Sewer System (Continued)***

Benefit(s) of Action

Diversion of low-flow runoff to the sanitary sewer will reduce pollutant loads in the storm drain system. The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address 303(d) listed impairment | Local benefits | | | Partnership opportunities |
| Address mandated, permit required objective | | | | |
| Address dry weather runoff | | | | |
| Reduce bacteria, metals, nutrients, PAHs, pesticides | | | | |
| Reduce degradation | | | | |
| Treatment control | | | | |
| Regional and/or watershed benefits | | | | |

Cost Consideration(s)

The initial source identification study may be expected to cost between $50,000 to $100,000 if GIS data are available to target the efforts. Design and construction of diversions may be expected to cost between $500,000 and $700,000 per diversion project. Annual operation and maintenance may be expected to cost between $25,000 and $40,000 per diversion project.

The following factors have the potential to affect the cost of the action:

- Design plans required.
- Permits required.
- Construction and maintenance (annual or more frequent) required.
- Monitoring to determine effectiveness.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Grants (319(h), Proposition 13, Proposition 40).
- State Revolving Fund (SRF) Program.
- Partnerships among jurisdictions tributary to the same diversion project.

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

***Divert Dry Weather Runoff to Sanitary Sewer System (Continued)***

Potential Project Location(s)

The County of Los Angeles MS4 Permittees recently conducted a Dry Weather Discharge Treatment Feasibly Study[1] to evaluate the potential for dry weather flow diversion to wastewater treatment plants. Seventeen locations were identified in the Dominguez Watershed as meriting treatment (diversion or otherwise) based on flow (greater than or equal to 0.05 cfs). At eleven of these locations, it was determined that there was available capacity in a nearby sewer (Figure 4.3-1). Unfortunately, some of these locations do not meet the site selection criteria for sanitary sewer diversion. Further, the study stated that additional information was required for all the locations before diversions could be considered. The study proposed in this action will complete and refine the conclusions of the feasibility study.

Monitoring Recommendations

Water samples will be collected from the storm drain outlet at the location of the proposed diversion prior to construction, and will be collected during the operational phase of the diversion project to test pollutant concentrations. These results will be compared to water quality monitoring of the Dominguez Channel conducted by the County and/or the RWQCB surface waters ambient bay monitoring (SWAMP) program.

[1] This study was submitted to the Los Angeles Regional Water Quality Control Board by the County of Los Angles Department of Public Works Watershed Management Division on July 1, 2003 to fulfill a requirement of Order 01-182 (NPDES Permit No. CAS004001), Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges within the County of Los Angeles, and the Incorporated Cities therein, except Long Beach.

### *4.3.4.3 Install Pet Waste Stations in Parks and Along Trails*

Example pet waste station, no endorsement implied

Issue

Pet waste is a significant (yet controllable) source of bacteria in storm water. People walking their dogs in parks and on recreational trails may be more inclined to pick up their pet's waste if they have convenient access to pet waste bags and disposal receptacles.

Action

This action would involve identifying installation of pet waste stations at parks, along recreational trails, and other key areas in the watershed where people tend to walk their dogs. Once the priority areas are identified, the pet waste stations consisting of plastic bag dispensers, disposal receptacles, and appropriate signage encouraging pet owners to use the materials would be acquired and installed. The program also would include ongoing operation and maintenance to replace the plastic bags and service the receptacles. It is assumed that pet waste stations would be placed near a subset of existing trash receptacles at a recreation location to facilitate maintenance of the pet waste stations.

Pet control will remain an important consideration of ensuring recreational enjoyment of parks and trails by people. Leash law signage will be added to pet waste stations to reinforce responsible control of pets at public parks and trails.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Planning and Implementation Phases*** | | | |
| Meet with municipal maintenance staff to prioritize recreational areas and to determine the number of pet waste stations to be installed at each recreational area. | J (L) | Once | $ |
| Acquire and install pet waste stations. | J (L) | Once | $ |
| | | Subtotal Estimated Cost | $ |
| ***Operation and Maintenance Phase*** | | | |
| Operate and maintain pet waste stations. | J (L) | Same as trash receptacles | $ |
| | | Subtotal Estimated Cost | $ |
| | | Total Estimated Cost | $/park or trail |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed

Type of Action: Structural BMP.

Goal(s) Addressed by Action

- Protect and enhance water quality

***Install Pet Waste Stations in Parks and Along Trails (Continued)***

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Proper disposal of pet waste will lead to the reduction of one important source of bacteria to Dominguez Channel. The removal of pet feces also contributes to the aesthetic improvement of public use facilities.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address 303(d) listed impairment | | Increases aesthetic values | Increase recreational values of land | Public involvement |
| Reduce bacteria | | | | |
| Regional and/or watershed benefits | | Local benefits | Local benefits | Regional and/or watershed benefits |
| Source control | | | | |

Cost Consideration(s)

Pet waste stations cost approximately $300 each, and heavy-duty liner bags cost approximately $7 per roll of 200 bags (Source: internet advertisements – www.belson.com, www.yuckos.com).

The following factors have the potential to affect the cost of the action:

- One-time implementation cost.
- Frequent maintenance required.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Reallocation of budget.
- Adopt-A-Waterway Program, if implemented.
- Sponsorships (e.g., from pet stores, veterinarians).

Time Frame Considerations

- Implement in < 2 years.

Potential Project Location(s)

- All parks and trails within Watershed (locations of parks are shown on Figure 4.3-2).
- Along Dominguez Channel when bike trail completed (see Action 4.6.3.3).
- Along Wilmington Drain when enhancements completed (see Action 4.5.2.1).

Monitoring Recommendations

The effectiveness of the action will be evaluated by including in the Annual Report of each jurisdiction the number of pet waste stations maintained and pet waste bags purchased per year.

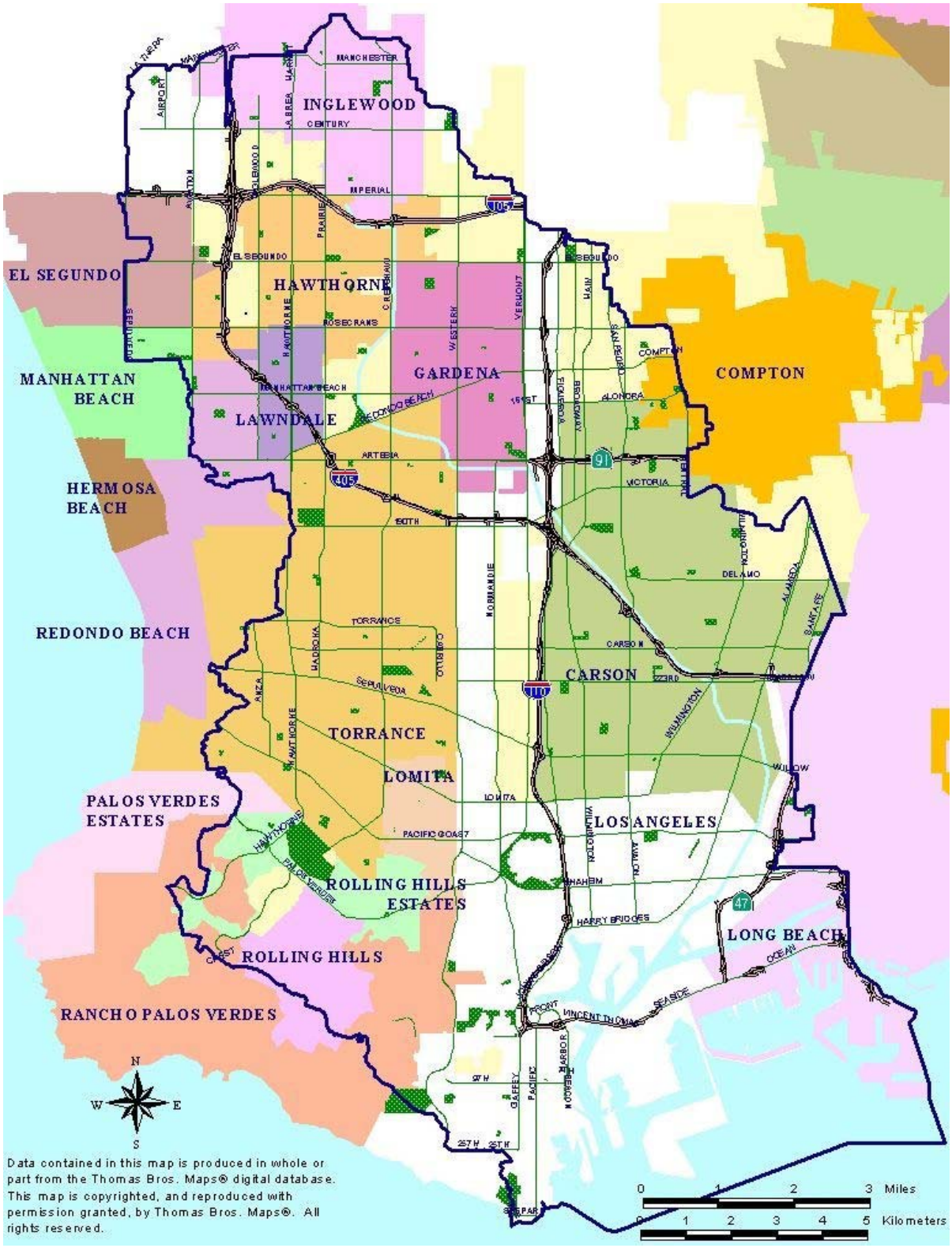



**Figure 4.3-2. Locations of parks within the watershed.**

### *4.3.4.4 Create Grassy Swales and/or Vegetated Areas to Treat Urban Runoff*

Issue

The Dominguez Watershed is highly urbanized, with much of the land surface being covered by buildings and roads. With new development or as an area is redeveloped, there is an opportunity to incorporate grassy swales and/or vegetated areas into the design to provide water quality improvement and aesthetic enhancement.

Vegetated swales are open, shallow channels that collect and slowly convey runoff flow to downstream discharge points. They treat runoff by filtering through vegetation, a subsoil matrix, and/or infiltration into the underlying soils. They trap particulate pollutants (e.g., suspended solids and trace metals), promote infiltration, and reduce the flow velocity of storm water runoff (CASQA 2003). Vegetated swales can serve as part of a storm water drainage system by replacing curbs and gutter along streets.

The useful life of a vegetated swale system is directly proportional to its maintenance frequency. If properly designed and regularly maintained, vegetated swales can last indefinitely. The maintenance objectives for vegetated swale systems include keeping up the hydraulic and removal efficiency of the swale and maintaining healthy vegetation. Vegetation may include dense, grass cover or drought tolerant (preferably native) plants where grass is not desirable due to need for irrigation and frequent maintenance.

Action

This action involves the use of grassy swales and vegetated areas in private and public new development and redevelopment projects. Activities to promote such use include coordination amongst jurisdictional planning, building and safety, and maintenance departments to include grassed swale conveyances and vegetated areas in municipal projects. In addition, there will be coordination with the Public Information and Public Participation (PIPP) program to develop materials to encourage developers to incorporate pervious systems into their projects. Recommendations should also be included in the planning process of jurisdictions located in the watershed to include such systems.

Source: CASQA 2003

Example of grassy swale.

Specific redevelopment projects that would provide opportunities for introduction of grassy swales include renovation of schools, shopping centers, business parks, and residential subdivisions. Recommendations for sites at which grassy swales can be effectively incorporated into renovations or new landscaping projects should be made with an engineering feasibility study.

***Create Grassy Swales and/or Vegetated Areas to Treat Urban Runoff (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Promote use of Grassy Swales and/or Vegetated Areas to Treat Urban Runoff*** | | | |
| Coordinate among jurisdictional planning, engineering, and maintenance departments to include grassed swale conveyances and vegetated treatment areas in municipal projects. | J (L) | As needed | $ |
| Coordinate with PIPP to develop materials to encourage developers to incorporate grassy swales and/or landscaped treatment areas in their projects, and school districts to include vegetated swales in renovation projects. | J (L) | Once | $ |
| Integrate recommendations into plan review processes. | J (L) | Once | $ |
| ***Implementation of Grassy Swales and/or Vegetated Areas to Treat Urban Runoff*** | | | |
| Assess site suitability for use of swales and vegetated areas. | J (L), C (P), B (L), S (L) | Once (per site) | $ |
| Conduct site preparation (grading, excavating, subsurface drainage). | J (L), C (P), B (L), S (L) | Once (per site) | $ |
| Plant vegetation in swales/landscaped areas. | J (L), C (P), B (L), S (L) | Once (per site) | $ |
| Conduct inspections. | J (L), C (P), B (L), S (L) | 4 times per year | $ |
| Conduct lawn maintenance (mowing) and/or other landscape maintenance. | J (L), C (P), B (L), S (L) | 8 times per year | $ |
| Conduct re-seeding, fertilizing, mulching. | J (L), C (P), B (L), S (L) | As needed | $ |
| | | Total Estimated Cost | $ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed

Type of Action: Structural BMP.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Conserve, reuse, and recharge water supply.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.

Benefit(s) of Action

Installing grassy swales can be an effective means of reducing pollutants in urban runoff. If properly designed, vegetated, and operated, swales can serve as an aesthetic, potentially inexpensive urban development or roadway drainage conveyance measure with significant accompanying water quality benefits. Roadside ditches should be regarded as significant potential swale/buffer strip sites and should be utilized for this purpose whenever possible.

***Create Grassy Swales and/or Vegetated Areas to Treat Urban Runoff (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address 303(d) listed impairment | | Increases aesthetic values | | Public education and outreach |
| Address mandated, permit required objective | | | | Partnership opportunities (public and/or private) |
| Address one of the top stakeholder issues | | | | |
| Increase Infiltration | | | | |
| Reduce bacteria, metals, nutrients, PAHs, pesticides | | | | |
| Reduce degradation | | | | |
| Reduce pollutant concentration | | | | |
| Treatment control | | | | |

Cost Consideration(s)

Example costs for a trapezoidal swale with a bottom width of 1 foot, top width of 10 feet, and length of 1,000 feet range from $6,395 to $17,075 with a 25 percent contingency factored into the cost (CASQA 2003). Caltrans has estimated that the expected annual maintenance cost for a swale with a tributary area of approximately 5 acres was approximately $2,700.

The following factors have the potential to affect the cost of the action:

- Design plans required.
- Construction and maintenance required.
- Land easement may be required.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Reallocation of budget.
- Grants (e.g., 319 (h), Proposition 13, Los Angeles Neighborhood Block Grant).

Time Frame Considerations

- Implement in the next 2 - 5 years.

Potential Project Location(s)

- New development and redevelopment project sites (residential, commercial, municipal, and industrial).
- Common areas of residential developments.
- Schools.
- Areas with flat or gentle slopes.

***Create Grassy Swales and/or Vegetated Areas to Treat Urban Runoff (Continued)***

Monitoring Recommendations

Monitoring will be conducted in association with maintenance. The performance of the vegetated area will be examined during the rainy season to verify proper drainage. Maintenance activities will include periodic mowing (with grass never cut shorter than the design flow depth), weed control, watering during drought conditions, reseeding of bare areas, and clearing of debris and blockages. Accumulated sediment will be removed manually to avoid concentrated flows in the swale. The application of fertilizers and pesticides should be minimal.

Another aspect of a good maintenance plan is repairing damaged areas within the swale. For example, if the swale develops ruts or holes, it should be repaired utilizing a suitable soil that is properly tamped and seeded. The grass cover should be thick; if it is not, it should be reseeded as necessary. Any standing water removed during the maintenance operation must be disposed to a sanitary sewer at an approved discharge location.

### *4.3.4.5 Perform Roadway Improvements Using Vegetated Medians, Buffers, and/or Parkways*

Issue

The Dominguez Watershed is highly urbanized, with much of the land surface covered by roads. Pollutants resulting from storm water runoff over pavement are conveyed directly to the storm drain system and contribute to water body impairments.

Action

This action involves installing vegetated BMPs in the design of new roadways and substantial roadway improvement projects. Design features such as directing runoff to vegetated medians swales, vegetated buffer (filter) strips, and/or vegetated parkways offer benefits of water quality treatment (through filtration, enhanced infiltration, and vegetative uptake) and improved aesthetics (by adding more green space). Vegetated strips have been demonstrated to have a high efficiency for removal of oil and grease, metals, and sediment (CASQA 2003). New development, substantial roadway repair, and roadway revitalization projects are opportunities to incorporate these types of vegetated treatments to improve water quality and local aesthetics. Implementation of this effort will be enhanced by coordination with the Public Information and Participation Program (PIPP) to develop educational materials, and coordination amongst municipal streetscape committees and engineering, planning, and maintenance departments to encourage and promote their use in implementing projects.

Implementation of municipal roadway improvement projects with vegetated treatments will require a feasibility study to determine if the proposed features can be effectively incorporated, design and cost estimation of the features, construction, and maintenance. Grants, federal funds, and/or state funds would be obtained to implement the municipal roadway improvement projects. Roadside ditches should be regarded as potential sites and should be utilized for this purpose whenever possible. Roadside ditches should be regarded as potential sites and should be utilized for this purpose whenever possible. Vegetation selected for the treatments would include drought-tolerant grasses and/or drought-tolerant shrubs and trees without substantial leaf drop. Maintenance would include inspection to ensure proper drainage, removal of litter, and periodic grass mowing and/or shrub/tree trimming. Monitoring is recommended on selected projects to demonstrate the effectiveness of the action.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Planning Phase*** | | | |
| Coordinate with PIPP to develop materials to encourage use of vegetated medians, buffer (filter) strips, parkways, and swales in street design of new developments. | J (L) | Once | $ |
| Coordinate with municipal streetscape committees, and engineering, maintenance, and planning departments to include use of vegetated treatments in municipal roadway improvement projects. | J (L) | Once | $ |
| | | Subtotal Estimated Cost | $-$$ |

***Perform Roadway Improvements Using Vegetated Medians, Buffers, and/or Parkways (Continued)***

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| ***Implementation Phase for Municipal Projects*** | | | |
| Identify planned roadway improvement projects. | J (L), C (P) | Annual | $ |
| Conduct initial screening of planned roadway projects to identify feasibility of incorporating vegetated treatments into redesign. | J (L), C (P) | Once/project | $ |
| Develop conceptual design of vegetated treatments, identify engineering requirements, and prepare first order cost estimates of incorporating vegetated treatments into projects that pass the initial screen. | J (l), C (P) | Once/project | $$ |
| Coordinate with MTA to obtain funds, and/or apply and obtain grant funding or other funding source. | J (L), A (R) | Once/project | $ |
| Include vegetated treatments in final design plans and specifications. | J (L), C (P) | Once/project | $$ |
| Obtain necessary permits. | J (L), C (P), A (R) | Once/project | $ |
| Construct project. | J (L), C (P) | Once/project | $$$-$$$$ |
| Inspect and maintain vegetated areas. | J (L), C (P) | Quarterly, or as needed | $ |
| Coordinate with the Los Angeles Conservation Corps to assist with vegetative improvements. | J (L), A (P) | Once | $$ |
| Monitor effectiveness. | J (L), C (P) | Annual | $ |
| | | Subtotal Estimated Cost | $$$-$$$$ |
| | | Total Estimated Cost | $$$-$$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed
Agencies = Caltrans, LARWQCB, Los Angeles Conservation Corps, Los Angeles Metropolitan Transportation Authority (MTA)

Type of Action: Structural BMP.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Conserve, reuse, and recharge water supply.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.

Benefit(s) of Action

Installing vegetated medians, buffers, and parkways can be an effective means of reducing pollutants in urban runoff from roadways. If properly designed, vegetated systems can serve as an aesthetic, potentially inexpensive roadway drainage conveyance measures with substantial accompanying water quality benefits.

***Perform Roadway Improvements Using Vegetated Medians, Buffers, and/or Parkways (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address 303(d) impairments | | Increases aesthetic values | | Partnership opportunities |
| Address mandated, permit required objective | | | | |
| Addresses dry weather runoff | | | | |
| Address storm water runoff | | | | |
| Reduce bacteria, metals, nutrients, PAHs, pesticides | | | | |
| Reduce degradation | | | | |
| Reduce pollutant concentration | | | | |
| Treatment control | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Design plans required.
- Permits required.
- Construction and maintenance (annual or more frequent) required.
- Land easement may be required.
- Monitoring to determine effectiveness.

Potential Source(s) of Funds

Several sources of funds may exist, and different sources of funding may be combined. The Los Angeles County Metropolitan Transportation Authority (MTA) is responsible for administering Proposition A and Proposition C programs, which are two one-half cent sales tax measures approved by Los Angeles County voters to finance a countywide transit development program. Other sources of funds may include federal or state grants and/or Gas Tax funds. Some funding sources give preference to projects involving coordination with the Los Angeles Conservation Corps, and partnerships should be encouraged where possible. Sources of funding may include:

- Grants
  - Transportation Enhancement Activities (TEA) funds.
  - Transportation Equity Act of the 21st Century (TEA 21) funds.
  - Propositions 13 and 50.
- Sales Tax funds
  - Proposition A and Proposition C funds.
- Surface Transportation Program Local (STPL).

***Perform Roadway Improvements Using Vegetated Medians, Buffers, and/or Parkways (Continued)***

Time Frame Considerations

- Implement in 2-5 years.
- Near and long term benefits.

Potential Project Location(s)

- Artesia Boulevard (this would represent expanding planned improvements along the length of this street).
- Hawthorne Boulevard (this would represent expanding the existing project along the length of this street).
- Other major street rehabilitation projects.
- Design of streets in new developments or substantial redevelopments.

Monitoring Recommendations

One or two roadway improvement projects per jurisdiction will be monitored to demonstrate the effectiveness of the vegetated treatments. Runoff quantity and quality will be compared for similar streets with similar land uses, but with and without the roadway improvement.

### *4.3.4.6 Create Wetlands to Treat Urban Runoff*

Issue
Water quality within Dominguez Channel is impaired, and wetland habitat and recreational areas are limited within the watershed. Water quality impairments and limited open space are two of the most important issues identified for the watershed.

Action
This action involves design and creation of biotreatment areas with adjacent wetlands at selected locations where this method represents a cost effective alternative for treating urban runoff. The biotreatment and wetland areas would be created by a combination of excavation and fill, and vegetated to provide freshwater marsh and riparian vegetation. Water would be diverted from Dominguez Channel and/or tributaries by removing a portion of the channel wall and grading to tie-in with the biotreatment area. The biotreatment area and water diversion would be designed so as to not adversely affect flood control capacity or maintenance. The biotreatment area would be designed as a primary treatment pond to facilitate maintenance and removal of sediment, and to minimize exposure of contaminants to wildlife. The adjacent created wetlands would be used to further reduce pollutant concentrations "polishing" and wildlife enhancement.

Vacant land not already planned for development next to channels and/or tributaries is limited within the watershed. Potential locations may include former landfills or private property. Former landfill sites may require mitigation or cleanup prior to the construction of any treatment wetlands and such a project would require significant funds. Also, there could be negative public perception to treating stormwater on a site that historically contained hazardous materials, even though the site may have been completely remediated. Feasibility of use of these areas would require investigation, coordination with property owners, obtaining land easements, and/or acquisition of property. It may be possible to design a project to be compatible with planned development or redevelopment of a site provided the parcel is of adequate size. An application would be prepared to obtain grant funding for the project. The public would be invited to participate in landscaping and maintenance associated with the project. Monitoring would be conducted to demonstrate the effectiveness of the biotreatment and wetlands area to improve downstream water quality and enhance habitat for wildlife.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Meet with LACDPW to discuss feasibility and constraints to maintain flood control capacity. | J (L)<br>C (P) | Once per location | $ |
| Investigate land ownership and easement requirements. | J (L) | Once per location | $ |
| Determine previous use and hazardous material constraints. | J (L),<br>C (P) | Once per location | $ |
| Develop concept plan and estimate costs, and conduct cost benefit analysis comparing other feasible treatment alternatives. | J (L),<br>C (P), A (Ad) | Once per location | $-$$ |
| Obtain approvals on conceptual design and identify required document for environmental clearance. | J (L),<br>C (P), A (Ad) | Once per location | $-$$ |
| Apply for grant funding. | J (L), A (R) | Once per location | $ |

***Create Wetlands to Treat Urban Runoff (Continued)***

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Obtain land and drainage easements, as needed. | J (L) | Once per location | $-$$$ |
| Prepare final construction plans and specifications. | J (L), C (P) | Once per location | $$ |
| Prepare CEQA documentation. | J (L), C (P) | Once per location | $$ |
| Obtain necessary permits. | J (L),<br>C (P), A (R) | Once per location | $-$$ |
| Construct biotreatment and wetland areas and recreational trail. | C (L) | Once per location | $-$$/acre |
| Invite media and politicians to ground breaking. | J (L) | Once per location | $ |
| Organize volunteers and solicit businesses to assist with materials and snacks for volunteers. | J (L),<br>B (P), V (P), S (P) | Once per location | $ |
| Landscape with native vegetation. | C (L),<br>J (P), B (P), V (P), S (P) | Once per location | $/acre |
| Install temporary irrigation to establish plants. | J (L)<br>C (P) | Once per location | $ |
| Develop and install watershed education signage. | J (L),<br>C (P) | Once per location | $ |
| Maintain vegetation and trail. | J (L),<br>B (P), V (P), S (P) | Annual | $/yr |
| Monitor effectiveness. | J (L),<br>C (P), S (P) | Annual for 5 yrs | $/yr |
| | | Total Estimated Cost | $$$-$$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = Los Angeles County and other jurisdictions, as appropriate
Agencies = LACDPW, CDFG, RWQCB, USACE, USFWS

Type of Action: Structural BMP.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Protect, enhance, and restore natural habitats and biological resources.
- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Creation of biotreatment areas to treat urban runoff with adjacent wetlands for wildlife has the potential for multi-use benefits. In addition to reduction of bacteria and nutrients in waters that flow through a biotreatment area, wildlife would benefit from the additional wetland habitat. Public involvement during project implementation and watershed based education signage would foster increased awareness and environmental stewardship of the watershed.

***Create Wetlands to Treat Urban Runoff (Continued)***

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Addresses 303(d) listed impairment | Restores Habitat | Increases aesthetic values of land | Increases recreational values of land | Public involvement |
| Addresses mandated, permit required objective | Improves < 5 acres to 20 acres of habitat | | Contributes to General Plan goal(s) | Public education and outreach |
| Addresses one of top stakeholder issues | Addresses one of top stakeholder issues | | Addresses one of top stakeholder issues | Partnership opportunities (public and/or private) |
| Reduce bacteria, metals, nutrients, PAHs, pesticides | | | | |
| Reduce pollutant concentration | | | | |
| Regional and/or watershed benefits | Regional and/or watershed benefits | Local benefits | Local benefits | |
| Treatment control | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Design plans required.
- Permits required (CDFG 1601, RWQCB 401, USACE 404, Construction, NPDES).
- Land purchase may be required.
- Measures may be required to protect project and groundwater from hazardous materials.
- Parcel size.
- New staff (or contractors) required to implement action.
- Construction and maintenance (annual or more frequent) required.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Grants (e.g., 319(h), Proposition 12, Proposition 13, Proposition 40).
- Supplemental RWQCB funds.
- Five-star Restoration Challenge Grant Program.

Time Frame Considerations

- Implement in 2-5 years.
- Near- and long-term benefits.

Potential Project Location(s)

- Alondra Park.
- Chester Washington Golf Course (in association with daylighting stream – Action 4.5.3.7).
- Victoria Golf Course.

***Create Wetlands to Treat Urban Runoff (Continued)***

Monitoring Recommendations

Samples for water quality analysis will be taken upstream and downstream of the biotreatment area to demonstrate removal efficiencies of pollutants of concern. Monitoring of water quality will be coordinated with the County and/or RWQCB surface waters ambient bay monitoring (SWAMP) program. General wildlife surveys should be conducted before and after implementation to document habitat utilization and benefits. Habitat monitoring also could be coordinated with the South Coast Audubon Society and/or local colleges/universities to provide education opportunities. Monitoring and reporting will be conducted annually for five years.

### *4.3.4.7 Enhance Existing Detention/Retention Basins*

Issue

The City of Torrance and County of Los Angeles operate detention and retention basins for flood control in a highly urbanized setting. Some of the basins ultimately discharge into Santa Monica Bay, Machado Lake, Dominguez Channel, and Los Angeles Harbor. These basins provide opportunity to improve water quality, as well as to provide some habitat, aesthetic, and/or recreation benefits.

Action

This action involves enhancement of detention and/or retention basins for multiple benefits while maintaining flood control capacity. A feasibility study would first be conducted based on review of design characteristics, including detention time, storage volume, surface area relative to catchment area, type of sediment/substrate, side slope, settling time and velocity, and water elevation range and duration under different flood event sizes. Site visits would be made to document operational features, sediment characteristics, water quality, and existing vegetation. An appropriate combination of engineered controls (e.g., forebays, slope modification, more efficient pumps, baffles) and biofiltration using vegetation would be recommended to improve water quality. Vegetation also would provide some habitat and aesthetic benefits. In some cases, it may be possible to use basins during the non-storm season for recreational purposes (e.g., soccer field), although liability issues would require careful consideration on a case-by-case basis. Conceptual plans would be developed and reviewed with the County Flood Control District to ensure no adverse impacts to flood control capacity.

Del Amo retention basin

The improvements would be implemented using funds obtained from grants and/or other sources. Several basins would be included in the same grant application. The basins would be inspected and maintained according to the requirements of the implemented enhancements. Monitoring would be conducted to document the effectiveness of the enhancements to improve water quality and provide habitat benefits; inspections also would be conducted after major storm events to document flood capacity.

***Enhance Existing Detention/Retention Basins (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Planning Phase*** | | | |
| Conduct feasibility study of basins, and make recommendations for water quality improvement, habitat, and recreational enhancements, where feasible. | J (L), C (P) | Once | $$ |
| Develop conceptual engineering and landscape plans. | J (L), C (P) | Once | $$ |
| Coordinate with County Flood Control Department to ensure no adverse impact to flood control capacity. | J (L) | Once | $ |
| | | Subtotal Estimated Cost | $$ |
| ***Implementation Phase*** | | | |
| Apply and obtain grant funding. | J (L), A (R) | Once | $ |
| Prepare CEQA documentation (e.g., FONSI). | J (L) | Once | $$ |
| Finalize plans and specifications. | J (L), C (P) | Once | $$ |
| Obtain necessary permits. | J (L), A (R) | Once | $ |
| Construct engineered improvements. | J (L), C (P) | Once | $$$$ |
| Remove invasive plants and vegetate with native plants according to landscape plan. | J (L), C (P) | Once | $$ |
| Maintain improvements. | J (L), C (P) | As needed | $$ |
| Monitor effectiveness. | J (L), C (P) | Annual | $$ |
| | | Subtotal Estimated Cost | $$$$ |
| | | Total Estimated Cost | $$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = City of Torrance, County
Agencies = LARWQCB, Southern California Wetland Recovery Project, SWRCB

Type of Action: Structural BMP, operations and maintenance, habitat enhancement.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Conserve, reuse, and recharge water supply.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.
- Develop an effective approach to meeting water quality regulations for the watershed.

Benefit(s) of Action

Enhancements to existing detention and/or retention basins to improve water quality in receiving water bodies, provide islands of habitat in an urbanized environment, improve aesthetics, and accommodate some recreational uses represents a cost effective way to contribute to beneficial uses and reduce impairments.

***Enhance Existing Detention/Retention Basins (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address 303(d) listed impairment | Enhance habitat | Increase aesthetic values of land | Increase recreational values of land (if feasible) | Public education and outreach |
| Address one of top stakeholder issues | Local benefit | Local benefit | Local benefit | |
| Address storm water runoff | | | | |
| Reduce bacteria, metals, nutrients, PAHs, pesticides | | | | |
| Regional and/or watershed benefits | | | | |
| Treatment control | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Design plans required.
- Permits required.
- Construction and maintenance (annual or more frequent) required.
- Monitoring to determine effectiveness.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Grants (e.g., 319(h), Proposition 13, Proposition 40, Southern California Wetland Recovery Project Work Plan and Small Grants programs).
- Reallocation of budget.
- Supplemental RWQCB funds.
- State Revolving Fund (SRF) Program.

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

Potential Project Location(s)

- City of Torrance detention and retention basins.
- Walteria Lake.

Monitoring Recommendations

Influent and effluent water quality will be measured twice during the storm season at each of the enhanced basins. General wildlife surveys will be conducted before and after the enhancement, and could be coordinated with the South Coast Audubon Society and/or local colleges/universities to provide education opportunities.

### 4.3.4.8 Route Flows to Stormwater Detention/Retention Basins to Reduce Flooding and to Treat Runoff

Issue

Whereas most major flood control channels within the Dominguez Watershed are adequate to convey the 50-year flood, there are several isolated flooding "hot spots" within the watershed (see Figures 2.3-3 and 2.3-11). Areas of poor street drainage can cause traffic hazards during rainfall events, could lead to flooding of adjacent residences and businesses, and can persist for days after a flood, creating a nuisance. The cause of this flooding can be inadequate or plugged storm drain inlets, inadequate storm drain conveyance to the main flood control channels, natural low areas or sumps that collect water, or a combination of these factors.

Flood detention/retention basins are currently used in some areas of the watershed, most notably Torrance, as a means of controlling flooding. Detention basins collect water for controlled release into the surface drainage system. Retention basins collect runoff for infiltration into the ground. Approximately 13 square kilometers (4%) of the watershed now drain to these structures. Local detention/retention basins can be an effective solution to local flooding problems where effective connection to the surface drainage system is not practical. The basins also provide opportunity to capture and/or treat runoff with a resulting benefit on downstream water quality. Enhancing basin performance to improve water quality was described in the previously described Action 4.3.4.7.

Action

The feasibility of using existing detention/retention basins to accept additional water to eliminate or reduce localized flooding, as well as provide treatment benefits, will be assessed from a hydraulic and capacity standpoint.

Activities, stakeholder roles, and cost estimate for the action are described below.

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| Coordinate with Los Angeles County Flood Control District to investigate the feasibility of routing additional storm drain flows to existing detention/retention basins for flood control and water quality treatment. | J (L) | Once | $$ |
| Develop concept plans and cost estimates to route flows to existing basins and to enhance the basin for water treatment and habitat benefits. | J (L), C (P) | Once per project | $$-$$$ |
| Apply for grants and/or obtain funding. | J (L) | Once | $ |
| Finalize design plans and specifications. | J (L), C (P) | Once per project | $$$ |
| Prepare CEQA documentation. | J (L), C (P) | Once | $$ |
| Apply and obtain permits. | J (L) | Once per project | $ |
| Construct basins and necessary storm drain conveyance and/or conveyance to existing basins. | J (L), C (P) | Once per project | $$$-$$$$ |
| | Total Estimated Cost | $$$$ | |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers.
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = County, City of Torrance

***Route Flows to Stormwater Detention/Retention Basins to Reduce Flooding and to Treat Runoff (Continued)***

Type of Action: Structural BMP and operations and maintenance.

Goal(s) Addressed by Action

- Conserve, reuse, and recharge water supply.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.

Benefit(s) of Action

Detention/retention basins have been used with success in the watershed to eliminate or reduce flooding. Other benefits include protecting surface water quality and enhancing habitat for local wildlife.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address storm water runoff | Enhance habitat | Reduce flood level | | Public education and outreach |
| Increase Infiltration | Local benefit | Local benefit | | |
| Reduce pollutant concentration | | | | |
| Regional and watershed benefits | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Construction and maintenance (annual or more frequent) required.
- Design plans required.
- Permits required.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Grants (e.g., 319(h), Proposition 13, Proposition 40).
- Reallocation of budget.
- State Revolving Fund (SRF) Program.

Time Frame Considerations

- Implement in 2-5 years.
- Short and long term benefits.

Potential Project Location(s)

- City of Torrance.

### *4.3.4.9 Construct DURRF for Water Treatment and Reuse*

Issue

Water quality is impaired, most water is imported, and only a small proportion of water is beneficially reused in the Dominguez Watershed. The City of Santa Monica has demonstrated that urban runoff water can be effectively captured, treated, and reused. The Santa Monica Urban Runoff Recycling Facility (SMURRF) captures dry weather flows from a major storm drain system, treats it to a tertiary level, and then distributes it for reuse as irrigation water. Due to the massive volumes of storm water during actual rainfall events, the volume of runoff actually captured, treated, and reused generally is limited to dry weather flows in the storm drain system (e.g., irrigation waters) and the "first flush" (initial portion) of runoff during rain events. Although the costs for the SMURRF facility were high ($12 million), this may be due to the fact that it was the first facility of its kind. It is possible that the cost would not be as high if a similar facility were constructed in the Dominguez Watershed.

Action

This action involves activities leading to the construction and operation of an urban runoff treatment and recycling facility in the Dominguez Watershed. (i.e., Dominguez Urban Runoff Recycling Facility – DURRF). A feasibility study would be conducted to evaluate the potential of constructing and operating one or more plants to treat and reuse storm water (dry weather flow and potentially first flush runoff). The study would include recommendations for location alternatives based on considerations of water volume, available land, and proximity to beneficial reuse locations. The study also would consider the plans of West Basin Municipal Water District to expand their recycled water lines to minimize potential conflicts with water reuse potential of the DURRF. Conceptual designs would be prepared for feasible alternatives and cost estimates prepared. A combination of funding sources and/or partnerships would be sought to construct the facility. The preferred alternative would be selected, design finalized, and permits would be obtained to construct the facility and associated water distribution networks. Public education would be included in the operation of the facility.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Conduct feasibility study for constructing one or more urban runoff recycling plant(s) and distribution networks. | J (L), C (P) | Once | $$$ |
| Work with West Basin Municipal Water District to coordinate water reuse plans. | J (L) | Once | $ |
| Prepare conceptual design and cost estimates. | J (L), C (P) | Once | $$ |
| Apply and obtain grants or other funding, including partnerships. | J L), A (R) | Once | $ |
| Prepare CEQA documentation. | J (L), C (P) | Once | $$ |
| Obtain necessary permits. | J (L), A (R) | Once | $$ |
| Finalize plans and specifications. | J (L), C (P) | Once | $$ |
| Acquire land easements and/or land, as necessary. | J (L) | Once | $$$$ |
| Construct facility and water distribution network. | J (L), C (P | Once | $$$$ |
| Invite media (and elected officials) to ground breaking. | J (L) | Once | $ |
| Operate and maintain facility. | J (L) | Annual | $$$ |
| Monitor effectiveness. | J (L), C (P) | Monthly | $ |
| Conduct tours of facility for public education and outreach. | J (L), S (P) | Monthly | $$ |
| | | Total Estimated Cost | $$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = County and city within which facility is located
Agencies = CDFG, LARWQCB, USACE, USFWS

***Construct DURRF for Water Treatment and Reuse (Continued)***

Type of Action: Structural BMP, operations and maintenance..

Goal(s) Addressed by Action

- Protect and enhance water quality.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.

Benefit(s) of Action

Operation of a DURRF has the potential for several benefits, including removing contaminated water from the Dominguez Channel, and conserving and reusing water. A location at Walteria Lake would have the advantage of providing an alternate source of clean water for Machado Lake.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address one of top stakeholder issues | Addresses one of top stakeholder issues | | | |
| Address 303(d) listed impairment | Reduce degradation | | | |
| Address mandated, permit required objective | | | | |
| Address dry weather runoff | | | | |
| Increases water reuse | | | | |
| Address storm water runoff | | | | |
| Increase water reuse | | | | |
| Reduce bacteria, metals, nutrients, PAHs, pesticides | | | | |
| Reduces pollutant concentration | | | | |
| Regional and/or watershed benefits | | | | |
| Treatment control | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Design plans required.
- Permits required.
- Land easement may be required.
- Land purchase may be required.
- Construction and maintenance (annual or more frequent) required.
- Equipment purchase required.
- New staff (or contractors) required.

Potential Source(s) of Funds

Initial feasibility studies and capital costs would be funded by grants and/or a combination of grants, loans, and/or partnerships. Long-term operations and maintenance would be funded using recycled urban runoff water fees.

***Construct DURRF for Water Treatment and Reuse (Continued)***

Several sources and/or combination of sources of funds may exist, including:

- Grants (e.g., Propositions 204).
- Water Recycling Financial Assistance (Proposition 204) loan.
- State Revolving Fund (SRF) Program.
- Partnerships.
- Fees.
- Reallocation of budget.

Time Frame Considerations

Due to the size and expense involved with storm water treatment facilities, this type of project will likely require many years (> 5) to become a reality.

Potential Project Location(s)

Locations of potential project are shown on Figure 4.3-1. The locations are near the following landmarks:

- Near Hawthorne Airport.
- Near Gardena Willows.
- Walteria Lake (to supply water to Machado Lake).

Monitoring

Water quality will be compared between influent and effluent samples.

### 4.3.5 Actions to Reduce Legacy Pollution Impairments

Statement of Problem

Persistent pollutants such as DDTs, PCBs, and PAHs are 303(d) listed impairments within the Dominguez Channel.

Dichlorodiphenyltrichloroethane and its metabolites (collectively referred to as DDTs) were discharged, dumped, and/or used in the Dominguez Watershed from the 1940s until the 1970s. In 1972, the Food and Drug Administration banned DDT from sale for agricultural use in the United States due to environmental health concerns. However, Montrose Chemical Corporation continued to manufacture DDT for export until 1982, when the plant in Torrance was closed. During the operational period of the Montrose facility, DDT was carried with runoff to the Dominguez Channel, which empties into the Consolidated Slip of the Los Angeles Harbor. Aerial transport of DDT-laden dust from the facility and from the local landfills also widely deposited DDT.

**DDT = Dichlorodiphenyltrichloroethane**

DDTs = DDT plus breakdown products

*Uses: pesticide, insecticide*

Manufactured in Torrance, CA (1947-1982)

Banned from U.S. agricultural use (1972)

**PCB = Polychlorinated biphenyl**

PCBs = Any of a possible 209 biphenyl chemicals

*Uses: Electrical transformer cooling fluids, hydraulic fluid used in paper industry, antifouling paints, manufacturing processes (electrical, glass)*

Widely used in industry

Banned from manufacturing (1977)

**PAH = Polynuclear aromatic hydrocarbon**

*Products of petroleum processing or combustion*

Polychlorinated biphenyls (PCBs) were used in transformer oils as a heat exchange medium, in hydraulic fluids used in paper industry, in manufacturing processes (e.g., chemical, electrical, glass), and were a component of marine antifouling paints. PCBs have been found in the southern California marine environment since the late 1930s, with peak inputs into the Southern California Bight from 1965 to 1970 (Mearns et al. 1988). PCBs were discharged directly to the ocean; conveyed to the ocean from storm drain runoff into the Dominguez Channel, Los Cerritos Channel, and Los Angeles River; and dispersed by aerial transport. The primary historical sources of PCBs to the Southern California Bight were the former Westinghouse Electric Company maintenance and repair facility for electrical equipment in Dominguez Hills, San Gabriel Paper Mills, scrap metal processors utilizing used transformers with oils containing PCBs, discharge from fish canneries, discharge from wastewater treatment plants, port activities, and antifouling paints (Young and Heesen 1974; NOAA et al. 1991). PCB manufacturing was banned in the U.S. in 1977.

Polynuclear aromatic hydrocarbons (PAHs) are products of petroleum processing or combustion. PAH contamination has resulted from historical industrial releases and discharges, and historical and current vehicle use in the watershed.

DDTs, PCBs, and PAHs are persistent chemicals that have a high affinity for soils and sediments. Many PAHs are carcinogenic at relatively low levels. DDTs and PCBs bioaccumulate into tissues of plants and animals where they can attain concentrations that create adverse biological effects. The State of California has issued a fish consumption advisory for white croaker, which warns the public to limit or avoid consumption of this fish at certain coastal locations of Los Angeles and Orange Counties, including

within Los Angeles and Long Beach Harbors. In addition, the State has imposed bag limits and banned commercial fishing for white croaker in the vicinity of the Palos Verdes shelf due to high tissue levels of DDTs and PCBs.

Existing Actions

The Los Angeles Region Contaminated Sediment Task Force (CSTF) was formed in 1998 to develop a Contaminated Sediment Long-Term Management Strategy for the Los Angeles Region. It was recognized that remediation of water bodies with contaminated sediments may require dredging and disposal of this material. The CTSF includes local, state, and federal agencies involved in the regulation and management of dredging, and includes the U.S. Army Corps of Engineers (USACE), U.S. Environmental Protection Agency (EPA), California Coastal Commission (CCC), Los Angeles Regional Water Quality Control Board (LARWQCB), County of Los Angeles, City of Long Beach, Port of Long Beach, and Port of Los Angeles. Other interested parties may attend strategy development committees. The CSTF has four major goals (http://www.coastal.ca.gov/web/sediment/action.html). The first goal is to identify the scope of the contaminated sediment problem, the second goal is to identify management, disposal, treatment, and/or beneficial reuse alternatives for the contaminated sediment. The third goal of the CSTF is to develop guidance for a well defined and consistent regulatory review process to address contaminated sediment. The fourth goal is to identify inputs of contaminants to coastal waters and ongoing regional efforts to reduce such inputs, including existing watershed management programs.

Issue

Because DDTs, PCBs, and PAHs bind to sediments and are slow to break down, reduction and/or elimination of these pollutants within the watershed will require removal, capping, and/or treatment of the contaminated sediments.

Purpose

The purpose of this program element is to raise public awareness regarding the legacy pollutants that occur in the watershed and to encourage actions to facilitate the reduction and/or elimination of the DDT, PCB, and PAH impairments within the Dominguez Watershed.

Actions

Continued coordination and support of the efforts of the CSTF will be important to ensure actions are undertaken to reduce and/or eliminate the legacy pollutants within water bodies of the Dominguez Watershed. The following actions, which are described in the subsections below, are recommended.

- Manage and Remediate Contaminated Sediments from Dominguez Estuary and Consolidated Slip.
- Manage and Remediate Contaminated Sediments from Los Angeles and Long Beach Harbors.
- Develop and Implement a Sediment Management Plan for Machado Lake.

### 4.3.5.1 Manage and Remediate Contaminated Sediments from Dominguez Estuary and Consolidated Slip

Issue

Consolidated Slip is the terminus of the Dominguez Channel. All runoff conveyed from the Dominguez Channel to Los Angeles Harbor passes through the Consolidated Slip. The Consolidated Slip is thought to be the most polluted location within the Los Angeles and Long Beach Harbor complex. The lower Dominguez Channel, which has a soft sediment bottom, also is contaminated. The Dominguez Channel/Consolidated Slip is considered a toxic hot spot by the Bay Protection and Toxic Cleanup Program, and has been investigated by the EPA as part of their response activities associated with the Montrose Superfund National Priorities List site. Sediment sampling and testing was conducted in 2003 to characterize the nature and extent of the contamination problem. In addition to legacy pollutants, metals concentrations also are relatively high. Contaminated sediments generally extend to a depth of at least 20 feet in the Consolidated Slip (A. Jirik, Port of Los Angeles, personal communication 2004). A sediment clean up strategy is needed, but has not yet been developed for the lower Dominguez Channel/Consolidated Slip.

Action

A clean up strategy for the lower Dominguez Channel/Consolidated Slip is needed since these areas represent a major source of pollutants to the harbors receiving environment. Because of EPA's activities associated with cleanup of the Montrose Superfund Site, there should be close coordination between local jurisdictions, CSTF, and EPA in the development of a clean up strategy for these areas. It is recommended that a grant be obtained from EPA for Superfund Technical Assistance to facilitate coordination and information exchange regarding these legacy impaired areas. Implementation of the clean up strategy will require obtaining environmental clearance, permits, and funding.

Activities, stakeholder roles, and cost estimate for the action are described below.

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| Apply for Superfund Technical Assistance. | J (L) | Once | $ |
| Develop a clean up strategy for the lower Dominguez Channel/Consolidated Slip. | J (L), O (P) | Once | $$ |
| Obtain funding to implement clean up strategy. | J (L), O (P), A (R) | As needed | $$ |
| Prepare CEQA/NEPA documentation. | J (L), O (P), C (P) | Once | $$-$$$ |
| Prepare applications and obtain necessary permits. | J (L), C (P), A (R) | Once | $$ |
| Implement clean up strategy. | J (L,), C (P), O (R) | Once | $$$$ |
| Monitor to determine success of clean up | J (L), O(P), C (P), A (R) | Annual for five years | $$$ |
| | | Total Estimated Cost | $$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = County of Los Angeles, City of Los Angeles, City of Carson, Port of Los Angeles
Agencies = CCC, CDFG, LARWQCB, NMFS, USACE, USEPA, USFWS
Other = CTSF

***Manage and Remediate Contaminated Sediments from Dominguez Estuary and Consolidated Slip (Continued)***

Type of Action: Management planning, operations and maintenance, and habitat restoration.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Protect, enhance, and restore native habitats and biological resources.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.

Benefit(s) of Action

Under current conditions, the lower Dominguez Channel/Consolidated Slip is thought to be the most polluted water body in the watershed. Contaminated sediments have the potential to be redistributed and deposited elsewhere in the harbors during major storm events; therefore, reducing and/or removing contamination from these areas will control a major pollution source to the harbors. Clean up of these areas will enhance/restore marine and estuarine benthic habitat, which will lead to an increase in biological diversity and health of aquatic organisms.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address 303(d) listed impairment | Reduce degradation | | Local benefits | Partnership opportunities (public and/or private) |
| Address mandated, permit required objective | Enhance/restore habitat | | | |
| Reduce degradation | | | | |
| Reduce pollutant concentration | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- New staff (or contractors) required.
- One time implementation cost and/or limited maintenance required.
- Design plans required.
- Permits required.
- Monitoring to determine effectiveness.

***Manage and Remediate Contaminated Sediments from Dominguez Estuary and Consolidated Slip (Continued)***

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Superfund Technical Assistance Grant.
- Court settlement funds associated with Montrose Superfund Site.
- Grants (e.g., 319(h), Proposition 12, Proposition 13, Proposition 40).
- Supplemental RWQCB funds.
- Partnerships.
- State Revolving Fund (SRF) Program.

Time Frame Considerations

- Implement in 5 years.

Potential Project Location(s)

- Lower Dominguez Channel.
- Consolidated Slip.

Monitoring Recommendations

A site specific monitoring plan will be developed in coordination with the CSTF and appropriate agencies. The plan should include measurement of sediment contaminant concentrations within the lower Dominguez Channel and Consolidated Slip after completion of the clean up activities to establish post-clean up concentrations. In addition, the benthic invertebrate community should be sampled and analyzed prior to and after the implementation of the clean up strategy to document the recovery of benthic community health in response to the clean up.

### 4.3.5.2 Manage and Remediate Contaminated Sediments from Los Angeles and Long Beach Harbors

Issue

Several areas within Los Angeles and Long Beach Harbor are 303(d) listed as being impaired. Sediment contamination within the harbors has decreased over time due to dredging associated with maintenance of channel depths, deepening of channels associated with port development, and filling of areas of the harbor associated with port development. Further reduction of contamination concentrations would be expected with future maintenance dredging activities, but may also require additional dredging and/or other strategies in localized areas of the harbor.

The CSTF is in the process of developing a Contaminated Sediment Long-Term Management Strategy. As part of that effort, the CSTF has been compiling historical sediment data and dredging/disposal information for the Los Angeles and Long Beach Harbors and is organizing that information in a centralized database. This information will provide a record of what is known about the physical and chemical properties of the harbor sediments, toxicity of sediments from different areas of the harbors, and what kinds of regulatory requirements were associated with previous dredging and disposal of harbor sediments. This information will be valuable for helping to formulate contaminated sediment management guidelines.

Action

It is recommended that the CSTF, which includes the Ports of Los Angeles and Long Beach, formulate (as part of the long-term contaminated sediment management guidelines) an overall strategy to remove contaminated sediments from Los Angeles and Long Beach Harbors. Areas potentially in need of remediation should be identified based on proximity to documented elevated pollutant concentrations and sediment toxicity. The strategy should identify opportunities for sediment removal and reuse associated with planned maintenance dredging, harbor deepening, and/or port development. The strategy also should identify contaminated sediment areas where the Ports do not have planned projects. Potential disposal alternatives for the contaminated sediments also should be identified.

Implementation of sediment remediation will require obtaining environmental clearance, permits, and funding. Some of the recommended sediment removal locations may fall under planned port maintenance and/or future development activities. In those cases, it would be most cost effective to schedule the removal activities to coincide with those planned projects. In contaminated areas where the Ports of Los Angeles and Long Beach do not have planned projects, other or additional funding may be required to fund the sediment dredging and disposal. It is not expected that the Ports would fund remedial projects where sources of contamination may have originated elsewhere and were conveyed to the harbors via the Dominguez Channel. Monitoring of sediment contaminant concentrations and toxicity before and after sediment removal is recommended to document the success of the action.

***Manage and Remediate Contaminated Sediments from Los Angeles and Long Beach Harbors (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Identify areas within Los Angeles and Long Beach Harbors in need of sediment remediation based on historical sediment data including the CSTF database. | J (L), O (P) | Once | $ |
| Develop an overall strategy to remove contaminated sediments from Los Angeles and Long Beach Harbors that takes into consideration planned dredged projects and disposal guidelines developed by the CSTF. | J (L), O (P) | Once | $$ |
| Obtain funding to implement remedial projects in areas outside of planned port maintenance and development. | J (J),O (P), A (R) | As needed | $$ |
| Prepare CEQA/NEPA documentation, as appropriate. | J (L), O (P), C (P) | Per project, as needed | $$ |
| Obtain necessary permits. | J (L), O (P), C (P), | Per project, as needed | $ |
| Implement sediment removal project. | J (L), O (R), C (P), | Per project, as needed | $$$ |
| Monitor effectiveness. | J (L), O (R), C (P), A (R) | Before and after sediment removal | $$$ |
| | | Total Estimated Cost | $$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = Ports of Los Angeles and Long Beach, City of Los Angeles, City of Long Beach
Agencies = CCC, CDFG, LARWQCB, NMFS, USACE, USEPA, USFWS
Other = CSTF

Type of Action: Management planning, operations and maintenance, and habitat restoration.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Protect, enhance, and restore native habitats and biological resources.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.

Benefit(s) of Action

Removal of contaminated sediments that result in degradation and toxicity of the benthic community will improve the ecological health of the harbors. Benthic organisms serve as prey for fish, and some contaminants bioaccumulate to levels in fish that may represent a health risk to people who consume several meals of fish per month and/or to seabirds and marine mammals. Reducing contaminant concentrations may result in the lifting of the fish consumption advisory for white croaker for Los Angeles and Long Beach Harbors.

***Manage and Remediate Contaminated Sediments from Los Angeles and Long Beach Harbors (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address 303(d) listed impairment | Reduce degradation | | Local benefits | Partnership opportunities (public and/or private) |
| Address mandated, permit required objective | Enhance/restore habitat | | | |
| Reduce degradation | | | | |
| Reduce pollutant concentration | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- New staff (or contractors) required.
- One time implementation cost and/or limited maintenance required.
- Permits required.
- Monitoring to determine effectiveness.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Reallocation of budget.
- Grants (e.g., 319(h), Proposition 13, Proposition 40).
- Supplemental RWQCB funds.
- State Revolving Fund (SRF) Program.
- Legislative Action.

*Note: In other areas of the country where legacy pollution has resulted from past discharge practices, and/or in areas where non-point source pollution in the receiving water body results from a multitude of contributors, legislation may be an appropriate means to obtain assistance to help pay for the clean up. A local example is the legislation introduced by Assemblyman Alan Lowenthal to provide funding to clean up the Los Angeles River.*

Time Frame Considerations

- Implement in ongoing to > 5 years.
- Long term benefits.

Potential Project Location(s)

- Los Angeles Harbor.
- Long Beach Harbor.

Monitoring Recommendations

Sediment contaminant concentrations and toxicity will be measured prior to and after sediment remediation. The sampling prior to the project will verify the need for the project based on contaminant concentrations exceeding guidance threshold levels developed by the CSTF. The sampling after project completion will establish post-remediation concentrations and document lack of sediment toxicity.

### *4.3.5.3 Develop and Implement a Sediment Management Plan for Machado Lake*

Issue

Machado Lake is 303(d) listed as an impaired water body with several constituents of concern including DDTs, other organochlorine pesticides (chlordane, dieldrin), ChemA pesticides, and PCBs. Metals concentrations also are elevated. In the mid 1990's, fish tissue analyses revealed elevated contaminant levels that were considered unsafe for human consumption by resource and regulatory agencies. The City of Los Angeles closed the lake to fishing for consumption purposes, swimming, and boating. Parsons (2002) performed sediment testing in the lake and selected wetland areas in 2001 that showed elevated pesticide and metals concentrations. Parsons (2002) concluded that the contaminant concentrations in the lake were not at a level of concern, but did report that sedimentation was a major problem and recommended dredging as a BMP solution. Sedimentation was reported as probably resulting from erosion and runoff from canyons of Palos Verdes Peninsula and also from runoff through the Wilmington Drain.

The California Coastal Conservancy is helping the KMHRP Task Force to develop an Integrated Implementation Plan to prioritize and implement actions for the KMHRP. A recent review of information for the Conservancy stated that sedimentation may be slower than previously reported, and that additional study was recommended prior to lake dredging.

This WMMP recommends that future study of the need for dredging should also examine sediment chemistry in more detail than was done in 2001. The Parsons' 2001 sediment sampling plan was of a reconnaissance nature, and samples were mixed across depth of sediment according to transect locations. That approach is useful for providing preliminary characterization of an area to determine if there are any obvious contamination concerns. However, mixing of sediments has the potential to dilute contaminant concentrations if the contaminants vary in concentration with sediment depth and/or location. The elevated concentrations of DDE, DDT, Chlordane and several metals reported by Parsons (2002) for the 2001 sediment samples, and the prior testing results in the 1980s and 1990s indicating fish contamination levels in excess of California fish consumption trigger levels, indicate that the lake has sediment contamination problems. Results of Fish tissue analyses reported by Parsons (2002) for the 1980s and 1990s consistently exceeded regulatory screening levels for DDT, other pesticides, and PCBs. Additional data are needed to understand the extent of the contamination. Additional analysis of sediment chemistry according to EPA and U.S. Army Corps of Engineers testing requirements also would be required prior to obtaining a permit for dredging and disposal.

It should be pointed out that statement made by Parsons (2002) that there has been a downward trend in fish contaminant concentrations over time was misleading. The "downward" trend actually reflected the comparison of contaminant concentrations in goldfish in the 1980s to concentrations in carp in the 1990s. When data are compared over time for carp, DDT and several other contaminant concentrations reported in the 1990s were similar to those in the 1980s. Contaminant concentrations in goldfish were variable in the 1980s and no data for this species were reported for the 1990s.

***Develop and Implement a Sediment Management Plan for Machado Lake (Continued)***

Action

It is recommended that a contamination management plan be developed for the lake. Depending upon the extent of contamination, dredging may or may not be recommended as a remediation strategy. Additional study is required to understand the vertical and spatial extent of sediment contamination and how that may relate to ecological risk. Given that the lake is located relatively close to the location in Torrance where DDT was historically manufactured, which was designated as a Superfund Site, it is recommended that a Superfund Technical Assistance grant be applied for to facilitate coordination with EPA regarding the selection and design of potential contamination remedies for the lake. Implementation of the contamination management plan may require obtaining environmental clearance and permits.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Apply for Superfund Technical Assistance. | J (L), O (P) | Once | $ |
| Develop a sediment testing plan to characterize the spatial and vertical extent of contamination in Machado Lake and spatial extent of contamination in its upstream tributary (Wilmington Drain). Coordinate the sampling design to also address sedimentation and the potential need for dredging. | J (L), O (P)<br>C (P), A (R) | Once | $-$$ |
| Apply and obtain grant funds. | J (L), O (P),<br>A (R) | Once | $ |
| Conduct technical study. | J (L), O (R),<br>C (L) | Once | $$-$$$ |
| Develop a sediment management plan for Machado Lake based on collected data. | J (L), O(P),<br>A (R), C (P) | Once | $$ |
| Apply and obtain funding to implement sediment management plan. | J (L), O (P),<br>A (R) | As needed | $ |
| Prepare CEQA/NEPA documentation. | J (L), O (P),<br>C (P) | Once | $$ |
| Prepare applications and obtain necessary permits. | J (L), O (P),<br>C (P), A (R) | Once | $$ |
| Implement sediment management plan. | J (L), O (P),<br>C (P) | Once | $$$$ |
| Monitor to determine effectiveness of plan implementation. | J (L), O (P),<br>C (P), A (R), | Three times over five years | $$$ |
| | | Total Estimated Cost | $$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = City of Los Angeles and Agencies
Agencies = California Coastal Conservancy, CDFG, LARWQCB, USACE, USEPA, USFWS
Other = KMHRP Task Force

Type of Action: Management planning, operations and maintenance, and habitat restoration.

Goal(s) Addressed by Action

- Protect and enhance water quality.
- Protect, enhance, and restore native habitats and biological resources.

***Develop and Implement a Sediment Management Plan for Machado Lake (Continued)***

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.

Benefit(s) of Action

Machado Lake and the surrounding KMHRP is designated a Sensitive Ecological Area, and is one of the largest habitat areas in the watershed. It is used by a variety of wildlife species, approximately 200 species of birds use the park annually. Sediment management has the potential for multiple benefits including reduction in contaminant concentrations, improvement in aquatic habitat quality, and improvement of flood storage capacity. Reducing contaminant concentrations may result in the lifting of the fish consumption advisory and enable the reinstatement of recreational fishing. Lower contaminant concentrations in fish also would potentially benefit wildlife that forage on aquatic life, perhaps including the endangered California least tern, which has been observed to forage on fish from the lake.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address one of top stakeholder issues | Address one of top stakeholder issues | | Local benefits | Partnership opportunities |
| Address 303(d) listed impairment | Reduce degradation | | | |
| Address mandated, permit required objective | Enhance/restore habitat | | | |
| Reduce degradation | Regional and/or watershed benefits | | | |
| Reduce pollutant concentration | | | | |
| Reduce flood level | | | | |
| Regional and/or watershed benefits | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- New staff (or contractors) required.
- Design plans required.
- One time implementation cost and/or limited maintenance required.
- Permits required.
- Monitoring to determine effectiveness.

***Develop and Implement a Sediment Management Plan for Machado Lake (Continued)***

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Superfund Technical Assistance Grant.
- Wetland Program Development Grant
- Other Grants (e.g., Proposition 13, Proposition 40, California Department of Parks and Recreation Habitat Conservation Fund, Southern California Wetland Recovery Project grants program,).
- Supplemental RWQCB funds.

Time Frame Considerations

- Implement in 2- >5 years.
- Long term benefits.

Potential Project Location(s)

- KMHRP

Monitoring Recommendations

Sediment contaminant concentrations will be measured prior to and after sediment removal activities. The sampling prior to the project will be used in part to define the limits of dredging. The sampling after completion of the project will establish post-remediation concentrations. A bathymetric survey will establish pre- and post-project water depths in the lake. Fish tissue contaminant concentrations will be periodically measured to verify the success of the sediment remediation (recommend first sampling 1 year after sediment removal, then two more times over five years). Water depths will be periodically measured in the lake and/or sediment trap to determine the need and timing for future maintenance dredging.

## 4.4 Actions Associated With the Goal to Conserve, Reuse, and Recharge Water Supply

Organization of Section

4.4.1 Introduction
4.4.2 Actions to Reduce Water Use
4.4.3 Actions to Increase Water Reuse

### 4.4.1 Introduction

Issues and Concerns

Diminished water supply, reliance on imported sources, protecting groundwater from contamination, and localized flooding were four important concerns identified during public outreach. Stakeholders identified several potential solutions to reduce these problems including water conservation, minimizing runoff and maximizing soil infiltration, using reclaimed water where feasible, and examining alternative water resources.

Existing Programs

While the focus of the Municipal Stormwater Permit is the reduction of pollutants in storm water and urban runoff, the guidance provided to assist with compliance of that permit has overlapping connection with objectives to conserve and recharge water supply. The SQMP and associated SUSMP specify objectives to reduce impervious surfaces, divert runoff to vegetated areas, and to retain runoff within construction sites to allow percolation of water into the ground (i.e., recharge). Table 4.4-1 lists requirements under the SQMP and SUSMP relevant to water conservation measures that promote ground water recharge. In addition, the SUSMP lists several example BMPs to capture and infiltrate runoff as a means to reduce pollutants to the storm drain system. The example BMPs, listed in Table 2 of the SUSMP, include several measures to reduce impervious cover and maximize infiltration by minimizing the footprint of development, use of permeable materials instead of conventional pavement, and use of other infiltration BMPs such as vegetated swales and strips, extended/dry detention basins, infiltration basin, infiltration trenches, and wet ponds. The infiltration BMPs are recommended except for areas of industrial activity or areas subject to high vehicular traffic on main roadways unless appropriate pretreatment is provided to ensure the groundwater is protected and the infiltration BMP is not rendered ineffective by overload.

**Table 4.4-1. Water conservation measures required under the SQMP and SUSMP to minimize pollutant runoff to the storm drain system.**

SQMP Development Planning Program
- Maximize the percentage of pervious surfaces to allow percolation of storm water into the ground.
- Minimize the quantity of storm water directed to impervious surfaces and the MS4.

SQMP Development Construction Program
- Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained at the project site.

SUSMP
- Conserve natural areas.
- Divert roof runoff (and surface flow) to vegetated areas before discharge unless the diversion would result in slope instability.

Agencies involved in providing water service and supply to Los Angeles have various conservation programs aimed at reducing waste of water and extending water supply (Table 4.4-2). The programs may include outreach and education on water saving tips, incentive programs to conserve water, and grants and/or sponsorships to implement water conservation projects.

**Table 4.4-2. Sources of information on water conservation within the Dominguez Watershed and Los Angeles County.**

- http://www.bewaterwise.com/
- http://calwater.com/calwater/conservation/index.htm
- http://www.ladwp.com/ladwp001257.jsp
- http://www.lbwater.org
- http://www.mwd.dst.ca.us/mwdh20/pages/conserv01.html
- http://www.scwater.com/organization/conservation/conservation.html
- http://www.westbasin.org/programs.htm

Metropolitan Water District (MWD) has several programs to promote water conservation (http://www.mwd.dst.ca.us), including:

- The Residential Rebate Program, in partnership with its member agencies, offers financial rebates for replacing and use of low flow toilets and high efficiency clothes washers.
- The Commercial/Industrial Rebate Program offers financial incentives to business, industry and institutional customers to encourage water efficiency.
- The City Makeover Program, which was established in 2003, is as a competitive grant program to provide funding for new, native and drought-tolerant themed landscapes in prominent public locations.
- The Community Partnering Program, which was established in 1999, provides sponsorships to non-profit organizations that promote discussion and interaction in regional water quality, conservation and reliability issues.
- The Innovative Conservation Program provides grants to explore water savings potential and practicality of new water conservation technologies.

Los Angeles Department of Water and Power (www.ladwp.com) offers rebates for installation of water and energy saving appliances. Rebates are given for low flow toilets, high-efficiency clothes washer, refrigerator, air conditioner, dishwasher, high performance windows, window reflective film, programmable thermostat, whole-house fans, ceiling fans, and central heat pump. LADWP also implements several energy and beautification programs. The Trees for a Green LA program (www.greenla.com) provides trees free of charge to residents who wish to plant shade trees in their yard as part of an effort to add over 200,000 trees to Los Angeles' "urban forest" to help cool homes and achieve energy savings. In addition, LADWP has other sustainability programs with incentives for use of solar power.

West Basin Municipal Water District (www.westbasin.com) offers, in cooperation with the MWD, a rebate program for residents that purchase and install ultra low flow toilets and high-efficiency clothes washers. West Basin also participates in distribution programs for free ultra-low-flush toilets and other water saving devices (e.g., restaurant spray nozzles). As part of their public education programs, West Basin offers, free of charge, "El Protector Del Aqua" classes from MWD, which are held to discuss water

efficient residential landscaping. West Basin also co-participates in the "Planet Protector Water Exploration" school educational program, where students receive a free, guided tour of the West Basin Water Recycling Facility in El Segundo and then visit the Roundhouse Marine Studies Lab and Aquarium on the Manhattan Beach Pier for a marine science lesson.

The Long Beach Water Department (LBWD) in cooperation with the City of Long Beach has a comprehensive Water Conservation Master Plan that includes a Memorandum of Understanding to implement the Urban Water Conservation Best Management Practices developed by water suppliers, public interest groups, and the State in the early 1990s (Table 4.4-3).

**Table 4.4-3. Best Management Practices for Urban Water Conservation in California.**

1. Interior and exterior water surveys and incentive for single-family residential, multi-family residential, and government/institutional customers.
2. Plumbing-new and retrofit:
   a. Enforcement of requirements of ultra-low-flush toilets in all new construction since Jan. 1, 1992.
   b. Support of legislation prohibiting sale of toilets using more than 1.6 gallons per flush.
   c. Plumbing retrofit.
3. Distribution system water surveys, leak and repair.
4. Metering with commodity rates for all new constructions and retrofit of existing connections.
5. Large landscape water surveys and incentives.
6. High efficiency washing machine rebate program.
7. Public information.
8. Public education.
9. Commercial and industrial water conservation.
10. Wholesale agency assistance program.
11. Conservation pricing.
12. Conservation coordinator.
13. Water waste prohibition.
14. Ultra-low-flush toilet replacement.

The Long Beach Water Conservation Master Plan includes several programs associated with the following elements:

- Incentives and rebates (conducted in cooperation with the MWD)
  - Residential program,
  - Commercial/industrial/institutional program,
  - Ultra-low-flush toilet program,
  - Conservation rate structure program.
- Water surveys and water conservation planning assistance
  - Indoor survey of flow rates, toilet flush volumes, leak tests, rebate and incentive opportunities,
  - Exterior survey of irrigation systems, watering schedule, education, rebate and incentive opportunities.
- Distribution system maintenance (main/valve replacement, meter exchange/testing, high bill investigation, leak detection, system losses programs).

- Education and outreach
  - Bill inserts,
  - Articles in City of Long Beach "The Wave" newsletter,
  - Booths and giveaways at community events,
  - Displays at LBWD business offices,
  - Brochure distribution stands,
  - Water conservation hotline,
  - Demonstration gardens,
  - Aquarium Educational Partnering Program for elementary school children,
  - Water Ambassador Program, including Long Beach Unified School District Admiral Splash Program for 4th graders.

The City of Long Beach has several ordinances that support and are incorporated in the implementation of the Water Conservation Master Plan. Water and sewer rates for customers of the Long Beach Water Department are approved by the City Council. The City Council adopted Ordinance C-6849 requiring use of ultra-low-flush toilets and urinals and water saver showerheads in new construction and in alterations, repairs, or additions. The City adopted Ordinance C-7065 and Resolution No. C-25346 that establishes a structure for designing, installing, and maintaining water efficient landscapes. In addition, the Mayor of the City of Long Beach has annually declared May as the "Water Awareness Month" since 1995, with street banners and widespread water conservation outreach programs conducted during that month.

Some of the other cities within the Dominguez Watershed include water conservation measures in their General Plans, including ordinances that promote water conservation, and/or public education regarding the importance of water conservation. Examples from several cities are given below:

- The City of Carson General Plan includes several water conservation measures, including a requirement for automatic or computerized irrigation control systems for purposes of water conservation on public land. A city ordinance requires new development to submit a water conservation plan that meets State requirements, incorporating measures such as use of low flow plumbing fixtures, drought tolerant plantings, reclaimed water, and water efficient irrigation systems.
- The City of Lawndale General Plan includes the following eight policies: *"New construction and development shall conserve water through conservation techniques relating to water usage and waste. All new construction requiring indoor plumbing shall be required to install low-flow toilets, faucets, and showerheads. New developments should install water conserving appliances such as washing machines and dishwashers. Require the use of xeriscape and micro-irrigation practices for development review approval of all landscape plans. Residential projects having common green areas, and all commercial, industrial, and public projects shall be required to install automatic moisture sensing, micro-irrigation. Non residential projects shall be encouraged to incorporate decorative hardscape plazas with drought tolerant landscaping into project design. Examine and initiate where appropriate and feasible, the use of alternative water conservation systems, such as graywater and reclaimed water usage. Provide additional storm drainage facilities, and improve existing deficient facilities, where necessary as determined by the Los Angeles County Department of Waste Water Management and/or City of Lawndale."*

- The City of Los Angeles implements a water conservation plan that includes an emergency water conservation plan; water closet, urinal, and showerhead regulations; reduction of sewer flows; and large turf water conservation regulations. The Emergency Water Conservation Plan requires that no lawn, landscape or other turf areas shall be watered or irrigated between the hours of 10 am and 5 pm from April 1 to September 30, nor between the hours of 11 am and 3 pm from October 1 through March 31 except for nurseries, drip irrigation systems, and/or professional gardeners holding a current City Business Tax Registration Certificate. Another city ordinance prohibits hose washing of any hard or paved surface (sidewalks, walkways, driveways, parking areas) except to cleanup hazardous materials for the benefit of public health and safety. Owners of large turf areas that do not use reclaimed water for irrigation have been required to reduce their water consumption by 10 percent relative to a specified base year.
- The City of Lomita implements a Water Conservation Ordinance to promote the use of xeriscape landscaping, water conserving materials, and devices that reflect current technology.
- The City of Torrance prepared an Urban Water Management Plan that includes: Education and Public Information Programs to increase public awareness of the importance of wise water use and how to eliminate water waste, and Promotional Programs that include distribution of water conservation/retrofit kits, low-flow shower heads, and encouraged use of drought resistant/low water use gardens. In addition, the plan specifies that Water Management and Policy Measures will be implemented that include technical adjustments to improve system management and [respond to] legislative actions.

Only a few of the jurisdictions within the Dominguez Watershed include water conservation tips or information on how to obtain rebates for water conservation on their web sites, as follows:

- ci.long-beach.ca.us/water/conservation/programs.html,
- ci.manhattan-beach.ca.us/pubworks/environmental/waterconserv.htm,
- ci.torrance.ca.us,
- ladpw.org/wsm/conservation,
- palosverdes.com/pve/publicworks/env-resources.

Other web sites with useful information on water conservation relevant to the watershed include: http://www.bewaterwise.com, calwater.com, lbwater.org, and scwater.com. These sites include information on the following topics:

- Water saving tips.
- Water wise landscaping.
- Fire-resistant and water wise plants.
- Gardening guide.
- Low water plants.
- Turning gray water green.
- How to read your meter.
- How to adjust and set sprinklers.

Recommended WMMP Actions

Actions recommended in this WMMP to augment municipal water conservation programs and public education are described in the following subsections:

4.4.2 Actions to Reduce Potable Water Use.

4.4.3 Actions to Increase Water Reuse.

Table 4.4-4 lists the recommended program actions and projects according to report section and type of water conservation benefits they address. In addition, the potential for the action to have multiple benefits related to water quality, habitat, and/or increased public awareness is indicated. Estimated costs for the actions range from a few thousand to several million dollars. The more expensive projects would be financed with a combination of grants, low-interest loans, and partnerships. Additional information on funding sources is given in Section 4.7.

**Table 4.4-4. List of program and project actions associated with the goal to Conserve, Reuse, and Recharge Water Supply.**

| Report Section | Actions | Water Conservation Benefits | | | Other Benefits | | | | | Time Frame to Implement (Years) | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Reduce Potable Water Use | Increase Water Reuse and/or Supply | Increase Storm Water Retention and Reuse | Water Quality Benefits | Habitat Benefits | Aesthetic and/or Recreational Benefits | Public Awareness Benefits | Grant or Other Funding Available | | |
| 4.4.2.1 | Add water conservation to municipal education and outreach programs | √ | | | √ | | | √ | √ | < 2 | $-$$ |
| 4.4.2.2 | Increase water-wise landscaping | √ | | | √ | √ | | √ | √ | < 2 | $ |
| 4.4.3.1 | Increase use and expansion of recycled water system | √ | √ | | √ | | | √ | √ | 2-5 | $$-$$$ |
| 4.4.3.2 | Increase installation of rainwater harvesting systems and cisterns | √ | √ | √ | | | | √ | √ | 2-5 | $-$$$$* |
| 4.4.3.3 | Develop and construct new alternative water sources | | √ | | | | | | √ | 2-5 | $$$$ |

Notes: * Multiple activities are described for the action that vary in cost
$ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

### 4.4.2 Actions to Reduce Potable Water Use

Statement of Problem

Only a small percentage of potable water is supplied by local sources, which have been diminished by over extraction, seawater intrusion, and groundwater pollution. Approximately, two thirds of the potable water used in the Dominguez Watershed is imported.

Existing Actions

Water suppliers implement residential and commercial/industrial rebate and incentive programs and public education and outreach to minimize potable water use. Los Angeles County and a few municipalities promote water conservation through public education and outreach and/or ordinances. Local schools include water conservation in their curricula.

Issue

Only a few of the municipalities within the Dominguez Watershed include water conservation in their public education and outreach programs. Some, but not all, municipalities require use of native, drought tolerant plants in public landscaping. In addition, only a few municipalities have ordinances that require implementation of water conservation measures. Results of stakeholder outreach identified the limited and imported water supply as being a major concern to municipalities, the DWAC, and general public. Over watering was considered an issue of concern, and use of drought tolerant plants to conserve water was recommended.

Purpose

The purpose of implementing actions to reduce water use is to protect water supply, decrease water waste, and save costs to taxpayers.

Actions

The following actions, which are described in the subsections below, are recommended.

- Add Water Conservation to Municipal Education and Outreach Programs.
- Increase Water-Wise Landscaping.

### *4.4.2.1 Add Water Conservation to Municipal Education and Outreach Programs*

Issue
Only a few jurisdictions within the watershed include water conservation information on their web sites, and not all jurisdictions include water conservation in their public outreach programs.

Action
The action involves several activities to add and/or expand water conservation outreach and education in municipal programs.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Add Water Conservation Information to Municipal Web Sites*** | | | |
| Coordinate with PIPP to standardize and make available a list of basic water conservation tips and a list of links to appropriate web sites to obtain additional water conservation information, distribute to all municipalities to post on their web sites. | J (L) | Once, then update as necessary | $ |
| Include information on municipal web sites about available rebate, incentive, and distribution programs of local water suppliers and provide their web site addresses for further information. Coordinate with local water suppliers to provide updates on available programs, as appropriate. | J (L) | Once, then update as necessary | $ |
| ***Add Native Plant Landscaping and Water-Wise Gardening Information to Municipal Web Sites*** | | | |
| Include information on municipal web sites about the water use cost savings and/or habitat benefits of native plant landscaping and water-wise gardening, and include links to 888cleanLA.com, bewaterwise.com, and smartgardening.com web sites for further information. | J (L) | Once, then update as necessary | $ |
| Coordinate with PIPP to develop list of local native plant nurseries and seed sources, and distribute to all municipalities to post on their web sites. | J (L) | Once, then update as necessary | $ |
| ***Add Water Conservation Message to Media Impressions*** | | | |
| Coordinate with PIPP to incorporate the benefits of water conservation into storm water and urban runoff control messages in radio and other media impressions, and to provide incentives for those who take action. | J (L) | Once | $ |
| ***Provide Water Conservation Information at Public Places*** | | | |
| Coordinate with water suppliers to provide public education materials (e.g., poster, displays, brochures) at libraries and municipal counters. | J (L), B (P) | Annual | $ |
| ***Promote Water Awareness Month Throughout Watershed*** | | | |
| Promote May as water awareness month throughout the watershed. | Mayor (each jurisdiction) | Annual | None |
| Coordinate a planning meeting with representatives from PIPP, local water suppliers, and municipalities to develop public outreach activities and educational displays for water awareness month. Include in the planning the ways in which public response to the activities will be gauged. Coordinate a meeting after water awareness month to review public response to the activities and make adjustments to event planning for the subsequent year, as appropriate. | J (L), B (P) | Twice per year | $ |
| ***Encourage Native Plant Sales as Part of Water Awareness Month Activities*** | | | |
| Coordinate with parks and recreation departments involved in native plant propagation and/or with excess native plants to have native plant sales during the month of May as part of Water Awareness Month activities. Revenue generated from the event will be used to fund native plant propagation activities and/or purchases. | J (L) | Annual | Covered by event |

***Add Water Conservation to Municipal Education and Outreach Programs (Continued)***

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Add Trends in Water Consumption by User Categories to Municipal Web Sites*** | | | |
| Coordinate with water suppliers to provide information on water consumption by user categories (e.g., residential, commercial, industrial,), and post on municipal web sites to facilitate evaluation of conservation efforts. | J (L), B (P) | Annual | $ |
| Total Estimated Cost (first year, lower cost thereafter) | | | $-$$ |
| Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other<br>S = schools/universities, V = volunteers<br>Roles: L = lead, Ad = advisory, P = participant, R = review<br>Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000 | | | |

Note: Jurisdictions = All cities and county within watershed ; Businesses = water suppliers

Type of Action: Public education and outreach.

Goal(s) Addressed by Action

- Conserve, reuse, and recharge water supply.
- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.

Benefit(s) of Action

Increasing the availability of public education, outreach, and involvement activities has the potential to increase water conservation within the watershed. This in turn would help protect water supply.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address one of top stakeholder issues | | | | Public education and outreach |
| Reduce water use | | | | Partnership opportunities (public and/or private) |
| | | | | Regional and/or watershed benefits |

Cost Consideration(s)

- Staff reassignment and/or retraining required.

Potential Source(s) of Funds:

- Reallocation of budget.
- Partnerships and/or Sponsorships with water suppliers.

Time Frame Considerations:

- Implement in < 2 years.
- Near- and long-term benefits.

Monitoring Recommendations

Water usage in the watershed will be compiled from local water suppliers according to user categories and compared over time to evaluate the success of water conservation outreach and measures.

#### *4.4.2.2 Increase Water-Wise Landscaping*

Issue

Landscaping provides aesthetic resource and habitat values to developed land. Landscaping requires irrigation to establish plants, and depending upon the plant species requires ongoing irrigation to maintain the landscaping. Native and/or drought resistant plants (grasses, shrubs, trees) are adapted to the Mediterranean climate of southern California, and generally use less water than non-native plants used for ornamental landscaping. Turf seed mixes also have been developed for drought resistance and suitability for high traffic lawn applications. Irrigation that uses automatic timers, sensors, drip lines for shrubs and trees, and/or scheduling watering during evening or early morning hours reduces over-watering and results in cost savings.

Water-wise landscaping generally consists of the following considerations:

- Group plants with similar water requirements.
- Use native, drought tolerant plants to reduce water needs and minimize landscape maintenance.
- Install sprinklers with timers and drip emitters to give plants only the water they need.
- Mix compost with soil to improve moisture holding capacity and fertility.
- Use mulch around plants and bare dirt areas to retain soil moisture and reduce weeds.
- Raise lawn mower height; longer grass blades help shade each other and cut down on evaporation.

There are several backyard habitat programs that show ways to conserve water along with increasing habitat values. Among them are the Audubon At Home Program and National Wildlife Federation's Yard Certification program. Similarly, the California Native Plant Society provides substantial information on native plants conservation, education, and conducts native plant sales. Useful information on water-wise landscaping and native plant landscaping is provided on the following web sites:

- http://www.audubon.org/bird/at_home
- http://www.bewaterwise.com
- http://calwater.com/calwater/conservation/index.htm
- http://www.cnps.org
- http://www.mwd.dst.ca.us/mwdh20/pages/conserv01.html
- http://rsabg.org
- http://www.smartgardening.com
- http://www.theodorepayne.org
- http://treeoflifenursery.com

Action

The action involves increased use of drought resistant native plant landscaping, and use of irrigation systems and practices to reduce over-watering.

***Increase Water-Wise Landscaping (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| ***Implement Use of Water-Wise Landscaping in Municipal Projects*** | | | |
| Replace landscape plant material that must be removed (for various reasons such as disease, death, or decline) in public places with native, drought resistant plants. | J (L) | As needed | $ |
| Design new municipal landscape projects with native, drought resistant plants. | J (L) | Per project | $ |
| Use recycled water, water efficient irrigation measures (e.g., automatic sprinklers with timers, drip irrigation for shrubs and trees), and/or watering schedules (water before 8 am or after 7 pm) on municipal projects. | J (L) | Per project | $ |
| ***Increase Use of Water-Wise Landscaping in New Private Development and Substantial Redevelopment Projects*** | | | |
| Require developers to follow regional planning policy with a minimum of 50% of the landscaped area native, drought tolerant species. | J (L), B (P) | Per project | Cost borne by developer |
| Require developers to include description of irrigation systems and schedules to minimize runoff and wasting of water, and that proof of irrigation maintenance be provided along with proof of maintenance of other BMPs. | J (L), B (P) | Per project | Cost borne by developer |
| ***Increase Use of Water-Wise Landscaping at Schools*** | | | |
| Prepare letter explaining watershed implementation of water conservation measures, and request schools to use water efficient irrigation measures (e.g., automatic sprinklers with timers, drip irrigation for shrubs and trees), and/or watering schedules (water before 8 am or after 7 pm). | J (L), S (P) | Once | $ |
| Total Estimated Cost (costs will be largely offset by savings in water use) | | | $ |
| Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other<br>S = schools/universities, V = volunteers<br>Roles: L = lead, Ad = advisory, P = participant, R = review<br>Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000 | | | |

Note: Jurisdictions = All cities and county within watershed.

Type of Action: Management planning, and operations and maintenance.

Goal(s) Addressed by Action

- Conserve, reuse, and recharge water supply.

Objective(s) Addressed by Action

- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Increased water efficiency in the design and maintenance of public and private landscaping will help protect water supply by reducing water use and over-watering. Use of native, drought resistant plants also will provide habitat benefits to local wildlife.

***Increase Water-Wise Landscaping (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address one of top stakeholder issues | Enhance habitat | | | Public education and outreach |
| Reduce water use | | | | Regional and/or watershed benefits |

Cost Consideration(s): The following factors have the potential to affect the cost of the action:

- Staff reassignment and/or retraining required.
- One time implementation cost and/or limited maintenance required.

Potential Source(s) of Funds: Several sources of funds may exist, including:

- Reallocation of budget.
- MWD City Makeover Program for new municipal development projects with native and drought-tolerant themed landscapes.

Time Frame Considerations

- Implement in < 2 years.
- Near- and long-term benefits.

Potential Project Location(s)

- Municipal buildings.
- Municipal parking lots with landscaped islands.
- Parks.
- New private development projects.
- Schools.

Monitoring Recommendations

Water usage in the watershed will be compiled under Action 4.4.2.1 and used to evaluate the success of water conservation outreach and measures.

### 4.4.3 Actions to Increase Water Reuse

Statement of Problem
The cost of imported water is high, and the demand is ever present since most of the water is used and then ultimately lost through discharge to the sanitary sewer and/or discharge to the Dominguez Channel. This cost extends beyond current monetary concerns since this reliance on imported sources diminishes the self-sustainability of the watershed.

Existing Actions
The West Basin Municipal Water District recycles approximately 31,000 acre-feet of water from the Hyperion Treatment Plant and distributes the recycled water to industrial users, landscape irrigation, and for use in the West Coast Basin Barrier Project.

Issue
Only a small percentage of the used water supply is reclaimed and recycled. Stakeholder outreach identified maintenance of an independent water source as an important issue for the watershed. It was recommended that reclaimed and recycled water should be used where feasible, and the feasibility of alternative water sources should be examined.

Purpose
Actions are recommended to expand the reuse of discharged waters and to encourage alternative sources of water to reduce reliance on imported water.

Actions
The following actions, which are described in the subsections below, are recommended.

- Encourage Use and Expansion of the Recycled Water System, Where Feasible.
- Encourage Installation of Rainwater-Harvesting Systems.
- Investigate Feasibility of Alternative Water Sources.

Section 4.3 included an action to construct a DURFF to capture, treat, and reuse urban runoff. That action, if implemented, would represent another potential source of water.

### *4.4.3.1 Increase Use and Expansion of the Recycled Water System*

Issue

West Basin Municipal Water District operates one water-recycling facility in the watershed. The facility is located in the northwest portion of the watershed in the City of El Segundo. West Basin recycled water lines currently serve a small percentage of the watershed. West Basin plans to expand their pipeline delivery system throughout the watershed according to customer demand. The cost for recycled water lines varies depending upon size of pipe, flow rate, and construction schedule related to traffic interruption. Typical 2003 costs ranged from $100 to $150 per linear foot. West Basin works with the customer to minimize individual construction costs by finding other potential customers in their area to share costs and to develop favorable payment schedules. The existing and planned recycled water distribution system for the West Basin Municipal Water District is shown on Figure 4.4-1.

Action

This action encourages the use of recycled water in municipal projects and provides recognition of schools and businesses that use recycled water.

Activities, stakeholder roles, and cost estimates for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Water Recycling Planning Activities*** | | | |
| Apply for grant to obtain funds for planning study. | J (L) | Once | $ |
| Coordinate with West Basin Municipal Water District to develop costs and feasible schedule to provide recycled water to parks and other facilities within each municipality of the watershed based on considerations of planned expansion. | J (L), B (P) | Once, then update as needed | $ |
| ***Activities to Encourage the Use of Recycled Water*** | | | |
| Encourage the use of recycled water for irrigation, toilets, and urinals in the design of new municipal projects or during substantial redevelopment as the recycled water distribution system expands within the watershed. | J (L) | Ongoing | $ |
| Provide community recognition of schools and businesses that use recycled water during water awareness month activities and on county and municipal web sites. | J (L), B (P), S (P) | Annual | $ |
| ***Implement Use of Recycled Water in Municipal Projects*** | | | |
| Develop design plan for recycled water lines and fixtures in coordination with West Basin, as appropriate. | J (L), C (P) | Per project | $ |
| Apply and obtain required building and construction permits. | J (L), C (P) | Per project | $ |
| Install water lines and associated plumbing in coordination with West Basin for recycled water use in municipal projects. | J (L), C (P) | Per project | $$ |
| Subtotal Estimated Cost (will depend on pipeline size and construction requirements) | | | $$-$$$ |
| Total Estimated Cost | | | $$-$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed

Type of Action: Management planning, operations and maintenance, and public education and outreach.

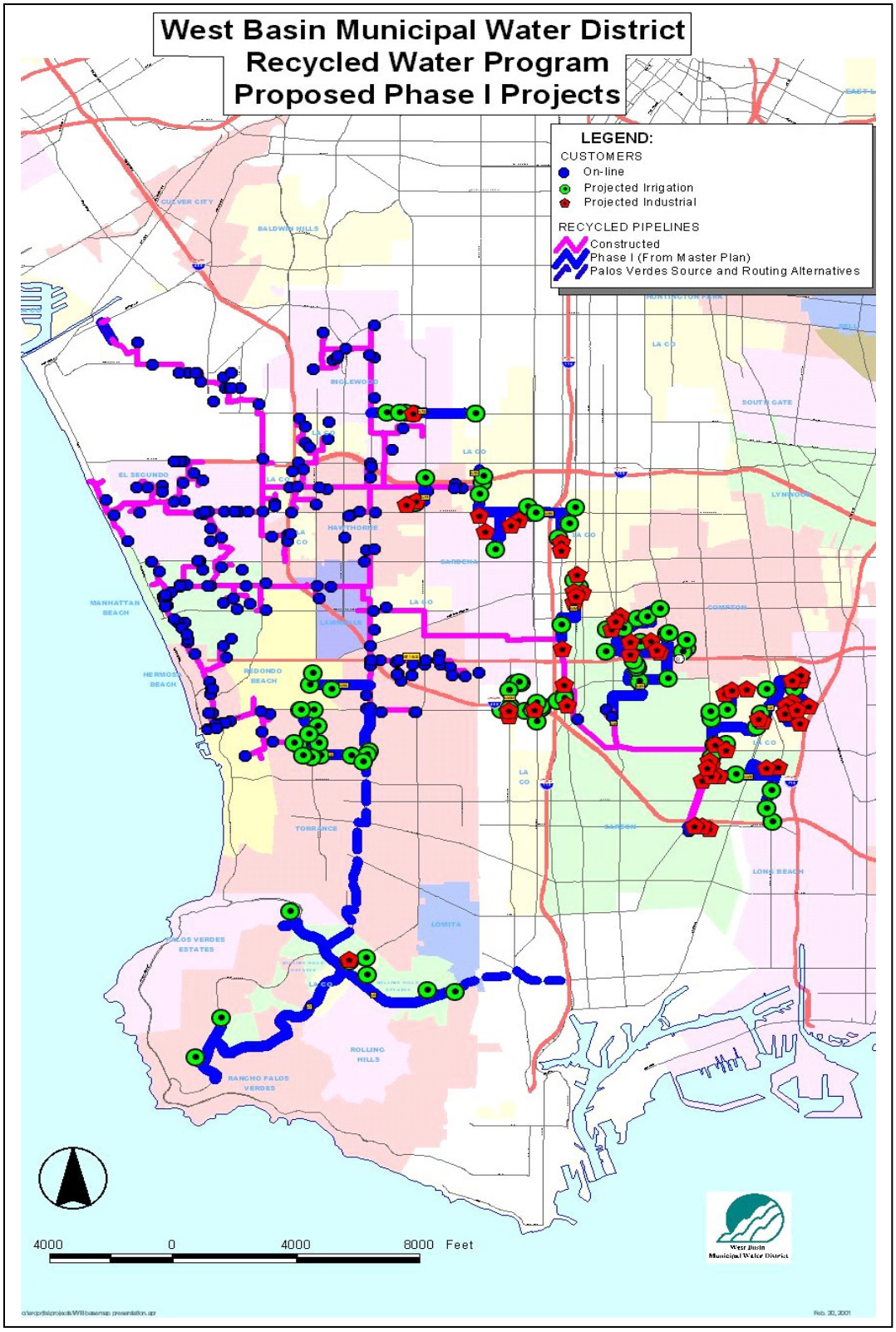



**Figure 4.4-1. Existing and planned recycled water lines of the West Basin Municipal Water District.**

***Increase Use and Expansion of the Recycled Water System (Continued)***

Goal(s) Addressed by Action
- Conserve, reuse, and recharge water supply.

Objective(s) Addressed by Action
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action
Encouraging the use of recycled water, where feasible, will help protect water supply and decrease the reliance on imported water resources.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address one of top stakeholder issues | | | | Public involvement |
| Increase water reuse | | | | Partnership opportunities (public and/or private) |
| Regional and/or watershed benefits | | | | |

Cost Consideration(s)
The following factors have the potential to affect the cost of the action:
- One time implementation cost and/or limited maintenance required.
- Design plans required.
- Permits required.
- Contractors may be required.

Potential Source(s) of Funds
Several sources of funds may exist, including:
- Reallocation of budget.
- Grants (Proposition 204).

Time Frame Considerations
- Implement in 2- 5 years.

Potential Project Location(s)
- Municipal and county parks.
- Municipal and county buildings.
- Municipal, county, and private Golf Courses.
- Industries with water-based processes.
- Commercial buildings with high public use.
- Schools.
- Cemeteries.

### *4.4.3.2 Increase Installation of Rainwater Harvesting Systems and Cisterns*

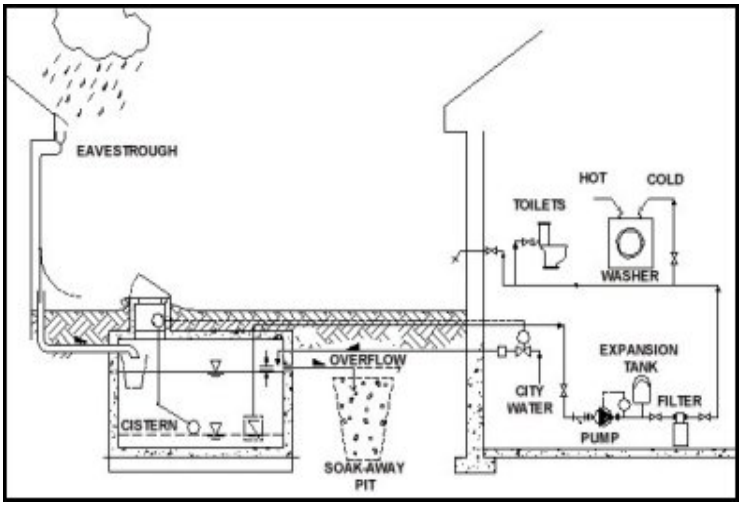
Issue

Rainwater represents an important source of water supply that is inefficiently captured for reuse within the watershed. Most rainwater is conveyed from impervious surfaces to storm drains and is ultimately lost to the watershed. In areas where the storm drain capacity is insufficient, localized flooding may occur. Rainwater collection systems can be used to harvest rainwater as water supply for later irrigation or other appropriate use. Since harvesting rainwater reduces the amount of storm water discharge it also can be used to eliminate localized flooding problems.

Action

This action includes public education and outreach to encourage the use of above-ground backyard cisterns as an additional water supply source for irrigation and limited other uses (e.g., toilet operation). While the water, with proper filtering and disinfecting would be safe to drink, its use as a potable water source would be discouraged unless under emergency conditions due to public health concerns. As part of the education and outreach activities, the actual benefits associated with use of cisterns in the watershed would be assessed and the results made public.

The action also includes investigation of the feasibility to use cisterns as a method to reduce localized flooding problems. Rainwater collection and reuse is a technically feasible method to reduce the effects of impervious surfaces and storm water runoff. However, feasibility will also need to consider public perception and cost/benefit ratios.




In addition, the action includes activities to encourage the installation of underground cisterns during new or substantial redevelopment in municipal building projects, large commercial parking lots, and residential communities. The supplemental water from the cisterns would be plumbed to recycled water lines supplying irrigation and toilet operation, where applicable.

***Increase Installation of Rainwater Harvesting Systems and Cisterns (Continued)***

The activities, stakeholder roles, and cost estimates for these different components of this action are described below.

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| ***Activities to Encourage the Use of Backyard Cisterns*** | | | |
| Coordinate with the PIPP to develop public education and outreach materials on the benefits and appropriate maintenance (including vector control) of backyard cisterns. Post on county and municipal web sites with links to other web sites for more information. | J (L) | Once | $ |
| Coordinate with PIPP to determine applicable MWD and/or LADWP rebate opportunities and tax credits, and provide information for posting on county and municipal web sites. | J (L) | Once, then as needed | $ |
| | | Subtotal Estimated Cost | $ |
| ***Activities to Document Realized Benefits From Use of Cisterns*** | | | |
| Develop a postcard-sized water survey questionnaire to obtain information on water volume and use patterns associated with use of cisterns. | J (L) | Once | $ |
| Print copies of questionnaire with return address and postage included, and coordinate with water suppliers to provide questionnaires to cistern owners claiming rebates, and/or include questionnaire with water bill. | J (L), A (P) | Annual | $ |
| Input collected information in centralized database. | J (L) | Annual | $ |
| Summarize collected information on cistern use and benefits and post on County and municipal web sites. | J (L) | Annual | $ |
| | | Subtotal Estimated Cost ($$, then $ after first year) | $-$$ |
| ***Investigate the Feasibility of Using Cisterns to Reduce Localized Residential Flooding Problems*** | | | |
| Coordinate with Los Angeles County Flood Control District to identify candidate locations where use of cisterns may be feasible to eliminate flooding problems. | J (L) | Once, then as appropriate | $ |
| Develop project description and estimate costs for project. | J (L) | Per project | $ |
| Meet with community representatives to gauge public support for project. | J (L) | Per project | $ |
| Apply and obtain matching grant funds and/or sponsorships to fund the project. | J (L) | Per project | $ |
| Apply and obtain necessary building and construction permits. | J (L) | Per project | $ |
| Remove existing ground cover (e.g., driveway, lawn), excavate where cisterns will be located, install rainwater collection system from roofs, construct underground reinforced-concrete cistern, and replace appropriate ground cover. | J (L), C (P) | Per project | $$ |
| Develop maintenance partnership between homeowner association and County Public Works Department. Maintenance would include checking and cleaning filters, control of vector access, and annual inspection of backflow prevention devices and overflow discharge capability. | J (L) | Per project | $ |
| | | Subtotal Estimated Cost (the cost will vary according to number of homes treated) | $$$$ |

***Increase Installation of Rainwater Harvesting Systems and Cisterns (Continued)***

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| ***Increase Use of Underground Cisterns in Municipal Building Projects*** *(Note: costs represent additional costs to a project without consideration of cost savings associated with use of the cistern).* | | | |
| Include underground cisterns in the design of municipal building projects (new and substantial redevelopment) that will include recycled water lines. | J (L) | Once per location | $ |
| Install rainwater roof collection system, underground reinforced-concrete cisterns, and plumb to recycled water lines. | J (L) | Once per location | $-$$ |
| Subtotal Estimated Cost (depends on number of cisterns) | | | $-$$ |
| Total Estimated Cost | | | $$$$ |
| Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other<br>S = schools/universities, V = volunteers<br>Roles: L = lead, Ad = advisory, P = participant, R = review<br>Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000 | | | |

Note: Jurisdictions = All cities and county within watershed

Type of Action: Management planning, operations and maintenance, and public education and outreach.

Goal(s) Addressed by Action

- Conserve, reuse, and recharge water supply.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Use of rainwater harvesting systems will provide a supplemental water source, decrease the effects of impervious surfaces, and reduce storm water discharge from the watershed. The action also has the potential to eliminate flood control problems in localized areas.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address one of top stakeholder issues | | Reduce flood level | | Public education and outreach |
| Increase water supply | | Local benefits | | Public involvement |
| Increase water reuse | | | | Partnership opportunities (public and/or private) |
| Address storm water runoff | | | | Regional and/or watershed benefits |
| Regional and/or watershed benefits | | | | |

***Increase Installation of Rainwater Harvesting Systems and Cisterns (Continued)***

Cost Consideration(s)
The cost of cisterns vary considerably depending upon size, type of system installed, and whether the installation is associate with new development or is a retrofit. Systems may range in cost from $1,500 to $5,000 new (http://www.sentex.net); retrofit costs could be 3 to 4 times higher.

The following factors have the potential to affect the cost of the action:

- Construction and maintenance (annual or more frequent) required.
- Contractors required.
- Equipment purchase required.
- Design plans required.
- Permits required.

Potential Source(s) of Funds
Several sources of funds may exist, including:

- Reallocation of budget.
- Grants (Proposition 13, Innovative Conservation Program).
- Water Recycling Financial Assistance Program (Proposition 204).

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

Potential Project Location(s)

- Residential backyards.
- Residential communities with flooding problems.
- Municipal buildings (new or substantial redevelopment).
- Include in design of Nature Center at Ken Malloy Harbor Regional Park.
- New school development.
- Large commercial parking lots.

Monitoring Recommendations
A water survey questionnaire will be developed to obtain information on water volume and use patterns associated with use of cisterns within the watershed. Collected information will be made available to the public on County and municipal web sites.

### *4.4.3.3 Develop and Construct New Alternative Water Sources*

Issue

Natural water supply sources are limited in the watershed and most of the water supply is imported. Water reclamation is limited in the watershed. Three wastewater treatment plants occur in the watershed; however, substantial water recycling is only associated with one of the plants. Technology exists to create freshwater from seawater through the process of desalination. The lower portion of the watershed includes the Los Angeles and Long Beach Harbors, which represents an abundant source of seawater.

Action

This action includes investigation of the feasibility of expanding reclaimed water use in the watershed by constructing a new facility and/or expanding water recycling in the lower watershed associated with either the Joint Water Pollution Control Facility in the City of Carson or the Terminal Island Treatment Plant in the community of Wilmington, City of Los Angeles. In addition, the feasibility of constructing and operating a desalination plant in the lower watershed will be examined.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Feasibility Phase*** | | | |
| Investigate the feasibility to construct and/or expand water recycling facilities in association with other wastewater treatment plants in the watershed. | J (L), C (P) | Once | $ |
| Investigate the feasibility to construct and operate a desalination plant in the lower watershed. | J (L), C (P) | Once | $$ |
| | | Subtotal | $-$$ |
| ***Implementation Phase, if Feasible (for either a water recycling facility or desalination plant)*** | | | |
| Prepare design plans and cost estimates. | J (L), C (P) | Once | $$ |
| Obtain funding. | J (L) | Once | $ |
| Acquire land or land easement, if necessary. | J (L) | Once | $$$-$$$ |
| Prepare CEQA documentation. | J (L), C (P) | Once | $$ |
| Prepare final construction plans and specifications. | J (L), C (P) | Once | $$ |
| Obtain necessary permits. | J (L), C (P), A (R) | Once | $$ |
| Construct facility (costs will vary depending upon size and volume capacity of facility). | J (L), C (P) | Once | $$$$ |
| | | Subtotal | $$$$ |
| | | Total Estimated Cost | $$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = City of Carson, City of Long Beach, City of Los Angeles

Type of Action: Management planning, and operations and maintenance.

Goal(s) Addressed by Action

- Conserve, reuse, and recharge water supply.

***Develop and Construct New Alternative Water Sources (Continued)***

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed

Benefit(s) of Action

Increased water reclamation and development of alternative water resources will decrease reliance on imported water sources and increase self-sustainability of watershed.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address one of top stakeholder issues | | | | Public education and outreach |
| Increase water supply | | | | Partnership opportunities (public and/or private) |
| Increase water reuse | | | | |
| Regional and/or watershed benefits | | | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Construction and maintenance (annual or more frequent) required.
- Land purchase may be required.
- Land easement may be required.
- Design plans required.
- Permits required.
- Equipment purchase required.
- New staff (or contractors) required.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Bond Money.
- Loans (Proposition 204, State Revolving Fund (SRF) Program).
- Partnerships and/or Sponsorships.

Time Frame Considerations

- Feasibility study in 2-5 years
- Implement in > 5 years.
- Long term benefits.

Potential Project Location(s)

*Water Recycling Facility Expansion*

- Joint Water Pollution Control Plant
- Terminal Island Treatment Plant

*Desalination Plant*

- Ports of Long Beach and/or Los Angeles

## 4.5 Actions Associated With the Goal to Protect, Enhance, and Restore Native Habitats and Biological Resources

Organization of Section

4.5.1 Introduction
4.5.2 Protect Native Habitats
4.5.3 Enhance/Restore Native Habitats
4.5.4 Control Exotic and Invasive Species

### 4.5.1 Introduction

Issues and Concerns

Native habitats (e.g., coastal salt marsh, freshwater marsh, riparian, grassland, coastal sage scrub) represent only about 7 percent of existing land use, and when waters for the harbors are considered, represent 16 percent of the watershed. Most of the native habitat acreage is concentrated in a few locations: Rolling Hills canyons, Wilmington Drain Waterway and Wildlife Area, Ken Malloy Harbor Regional Park, Madrona Marsh, Gardena Willows, and Los Angeles-Long Beach Harbors. Several small, pocket wetlands also occur throughout the watershed in association with golf courses, flood control detention/retention basins, and drainage channels. Little to no connectivity exists between the native habitats, which generally function as islands within the urban landscape. Despite the fragmented nature of the native habitats, several hundred species of plants and wildlife occur within the watershed.

Habitat quality within most native habitats varies from degraded to disturbed. Although, active restoration efforts are underway at Gardena Willows, Madrona Marsh, and some canyon areas (e.g., Linden H. Chandler Preserve). Removal of exotic, invasive species and revegetation with native species is needed in most native habitat areas. The habitat restoration plan developed for the Ken Malloy Harbor Regional Park recommends several measures to enhance and restore wetlands, riparian woodland, coastal sage scrub, and sensitive native plant habitats at the park (Parsons 2001).

The highly urbanized Dominguez Channel and its tributaries provide little function as a wildlife corridor. The Channel and its tributaries are concrete-lined in the upper watershed. In the lower watershed, the Channel is confined within riprap side slopes and the tributaries are concrete-lined. Limited vegetation occurs along the flood control easement adjacent to the Channel.

Habitats within the receiving waters of the Los Angeles and Long Beach Harbors vary from highly degraded in the contaminated Consolidated Slip to highly functional in the outer harbor. Several areas in the harbors are 303(d) listed as impaired due to contaminant concentrations. A fish consumption advisory is in effect for white croaker caught from the harbors.

The types of stressors that affect the quality of native habitat areas, are as follows:

- Channelized and concrete-lined drainages.
- Narrow buffers to urban development.
- Exotic, invasive plants and non-native animals.
- Human and pet disturbance.
- Trash and debris.
- Erosion and sedimentation.
- Eutrophication.
- Contaminated sediments.

Stakeholder outreach identified habitat degradation and loss, protection of wetlands, and restoration and enhancement of ecological systems as important issues for the watershed. The DWAC identified the following objectives of the WMMP relative to the goal to Protect, Enhance, and Restore Natural Habitats and Biological Resources:

- Promote and protect beneficial use and elimination of further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.
- Promote science-based methods for water quality and environmental assessment of the watershed.

Existing Actions

Sensitive species and habitats are protected by environmental laws that require conservation and/or mitigation actions to compensate for impacts associated with development. Sensitive habitats also are conferred protection by the Municipal Storm Water and Urban Runoff NPDES Permit (under the SQMP and SUSMP), based on their status as Environmentally Sensitive Areas (ESAs).

Under the SQMP's Development Planning Program, including SUSMP, developers must conserve natural areas, protect slopes and channels, and protect ESAs. Measures required under the SQMP and SUSMP are listed in Table 4.5-1.

Under the SQMP's Development and Construction Program, all construction-related sediments, materials, and non-storm water related runoff are required to be retained at the project site.

**Table 4.5-1. Required habitat protection measures under the SQMP and SUSMP for Los Angeles County and its Incorporated Cities.**

- Each Permittee mapped ESAs within its jurisdiction.
- Implement SUSMP for all projects located in or directly adjacent to or discharging to an ESA, where:
  - Storm water and urban runoff discharges is likely to impact sensitive biological species or habitat; and
  - A project creates 2,500 square feet or more of impervious surface.
- Conserve natural areas, including:
  - Concentrate development and limit clearing and grading to minimum needed;
  - Maximize trees and other vegetation and promote use of native and/or drought tolerant plants; and
  - Preserve riparian areas and wetlands.
- Protect slopes and channels, including:
  - Control or eliminate flow to natural drainage systems to MEP;
  - Vegetate slopes with native or drought tolerant vegetation.

Under Industrial/Commercial Facilities Control Program of the SQMP, Permittees are supposed to consider whether critical source operators should be required to implement additional controls to reduce pollutants in storm water runoff to ESAs and 303(d) listed impaired water bodies. The critical sources include: restaurants, automotive service facilities, retail gasoline outlets and automotive dealerships, Phase I facilities, and other federally-mandated facilities. In Section 4.3.3 of this WMMP, an action was recommended for additional source control at fast food restaurants adjacent to water bodies and ESAs.

Under the SQMP's Public Agency Activities Program, Permittees are required to implement requirements under the Development Planning and Development Construction Programs. In addition, the Sewage System Maintenance, Overflow, and Spill Protection element of that program requires procedures to prevent sewage spills from entering the MS4, and those preventative and response procedures are protective of water bodies within the watershed.

Recommended WMMP Actions

Environmental laws, local requirements under the Municipal Storm Water Permit, and the Conservation Elements of General Plans for the different jurisdictions within the watershed provide protection of the lands associated with natural habitat areas. However, as previously mentioned, habitats are in need of additional protection and enhancement. Because of the highly urbanized nature of the watershed, substantial benefit to biological resources could be derived from habitat restoration. Because of constraints with land acquisition, it is imperative that localized natural areas be adequately protected and enhanced to maximize their functional quality. In addition, a strategy that includes enhancement of landscaped urban areas to serve as corridors between islands of natural habitat is suggested.

Recommended programs and projects to augment existing conservation actions in the watershed are described in the following three subsections:

- 4.5.2 Protect Native Habitats.
- 4.5.3 Enhance/Restore Native Habitats.
- 4.5.4 Control Exotic and Invasive Species.

Table 4.5-2 lists program and project actions described in each subsection, and includes identification of objectives and other multi-use benefits provided by these actions. Locations where specific projects are recommended are shown in Figure 4.5-1.

Measures to address water quality impairments, including trash and contaminated sediments were described in the previous Section 4.3.

**Table 4.5-2. List of program and project actions associated with the goal to Protect, Enhance, Restore Native Habitats and Biological Resources.**

| Report Section | Actions | Habitat and Resource Benefits | | | Other Benefits | | | | | Time Frame to Implement (Years) | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Protect Habitat | Enhance/Restore Habitat | Control Exotic, Invasive Species | Water Quality | Water Conservation | Aesthetics /Recreation | Public Outreach | Outside Funding | | |
| 4.5.2.1 | Standardize Definition and Update List of ESAs | √ | | | | | | | | < 2 | $ |
| 4.5.2.2 | Target outreach within 300 feet of ESAs | √ | √ | | √ | | √ | √ | | < 2 | $ |
| 4.5.3.1 | Enhance/restore Wilmington Drain | | √ | √ | √ | | √ | √ | √ | 2-5 | $$$ |
| 4.5.3.2 | Enhance Machado Lake wetlands | | √ | | √ | | √ | √ | √ | 2-5 | $$$ |
| 4.5.3.3 | Enhance Gardena Willows | | √ | √ | | | √ | √ | √ | og | |
| 4.5.3.4 | Enhance Walteria Lake | | √ | | √ | | √ | √ | √ | 2-5 | $$$ |
| 4.5.3.5 | Enhance pocket wetlands | | √ | √ | √ | | √ | √ | √ | 2-5 | $$ |
| 4.5.3.6 | Enhance and restore canyon habitats | | √ | √ | √ | | √ | √ | √ | og | $$$ |
| 4.5.3.7 | Daylight historic streams to restore wetlands | | √ | | √ | √ | √ | √ | √ | 2- 5 | $$$ |
| 4.5.3.8 | Investigate feasibility and restore concrete-lined tributary channels | | √ | | √ | | √ | √ | √ | 2-5 | $$$$ |
| 4.5.4.1 | Develop and implement invasive species eradication program | | √ | √ | | √ | | | √ | 2-5 | $$ /year |
| 4.5.4.2 | Update landscape plant lists | | | √ | | √ | | √ | | <2 | $ |
| 4.5.4.3 | Discourage sale of non-native, invasive plants | | | √ | | √ | | √ | | 2-5 | $ |
| 4.5.4.4 | Coordinate control of non-native species and exotic pets with existing public outreach efforts | | | √ | √ | √ | | | | <2 | $ |

Notes: og = ongoing effort
$ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

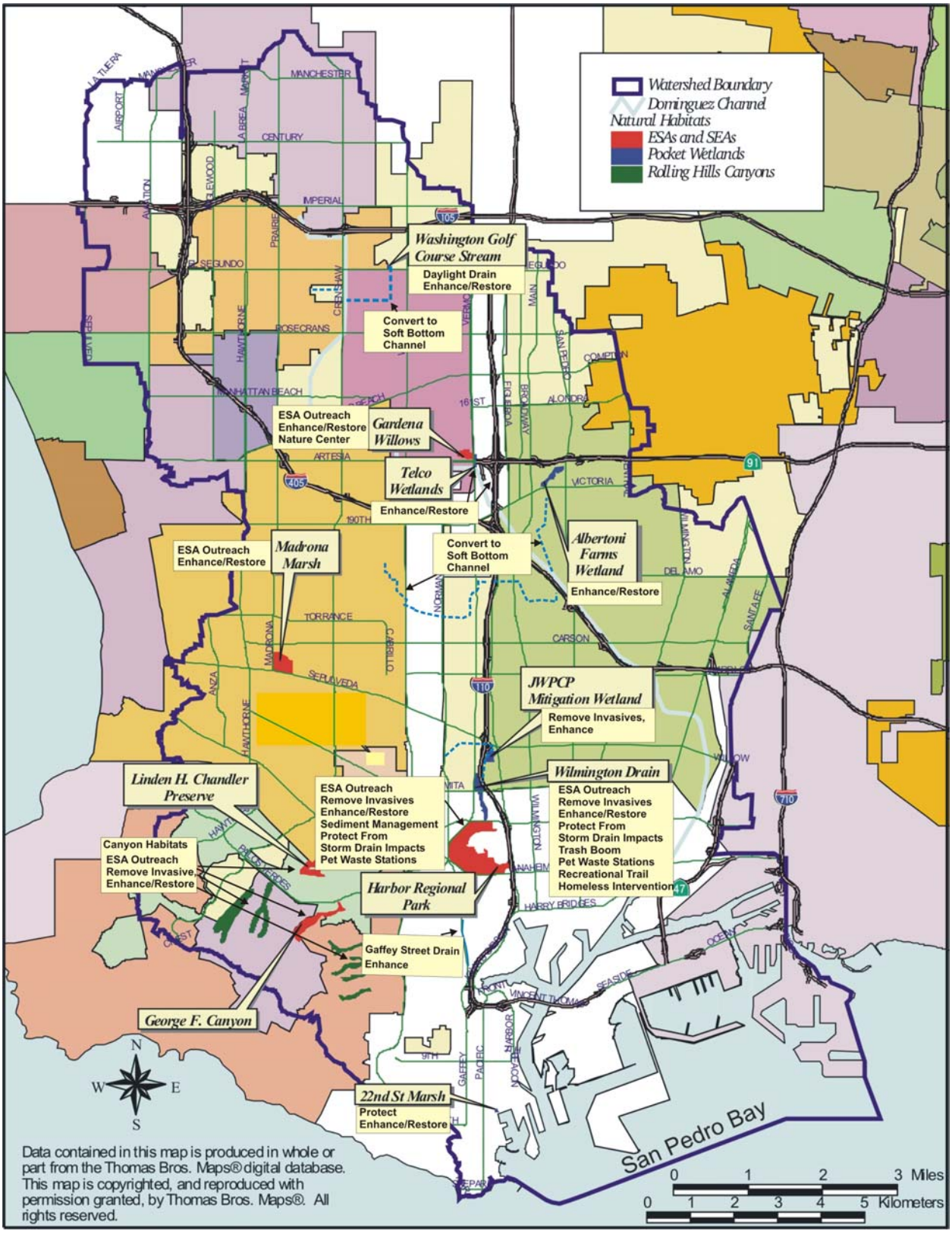



**Figure 4.5-1. Potential locations of habitat enhancement/restoration projects.**

### 4.5.2 Actions to Protect Native Habitats

Statement of Problem
Due to pressures and impacts associated with urbanization, native habitats in the watershed are disturbed and in need of additional protection to improve habitat quality.

Existing Actions
Measures required under the SQMP and SUSMP to protect ESAs were described in Subsection 4.5.1. The ESA designation is intended to provide adequate protection of natural habitat areas.

Issue
ESAs are defined differently in the Municipal Storm Water and Urban Runoff NPDES Permit and the SUSMP for Los Angeles County and its incorporated cities. The definition given in the Municipal Permit is broader than that provided in the SUSMP. These differences in definition leave room for confusion regarding what habitats require protection within the watershed.

Table 4.5-3 compares ESAs designated in the SUSMP and ones that fit the definition given in the Municipal permit. More areas qualify for ESA designation under the Municipal permit than the SUSMP.

ESAs are defined in the SUSMP for Los Angeles County, as follows:

- Area of Special Biological Significance by the State Water Resources Control Board (Los Angeles Region Basin Plan).
- Area of Ecological Significance by the County of Los Angeles.
- Area designated as a significant natural area by the California Resources Agency.

ESAs are defined in the Municipal Storm Water and Urban Runoff NPDES Permit (CAS004001) for Los Angeles County, as follows:

- Significant Ecological Area (SEA).
- Area designated as a significant natural area by the California Resources Agency.
- Area designated in the Basin Plan as having a RARE beneficial use.
- Area designated by the Permittee as sensitive.

**Table 4.5-3. Comparison of ESAs as defined by the SUSMP and Municipal Storm Water and Urban Runoff NPDES Permit of Los Angeles County and its Incorporated Cities.**

| SUSMP (Table 3A) | Municipal Permit |
|---|---|
| *Significant Ecological Area (SEA)* | |
| Harbor Lake Regional Park | Harbor Lake Regional Park |
| Madrona Marsh | Madrona Marsh |
| Rolling Hills Canyons | Rolling Hills Canyons |
| Terminal Island | Terminal Island |
| *CDFG Significant Natural Resource Area* | |
| Southern coastal sage scrub NCCP region on Palos Verdes Peninsula | Southern coastal sage scrub NCCP region on Palos Verdes Peninsula |
| *Area with designated RARE beneficial use* | |
| | Dominguez Channel |
| | Los Angeles and Long Beach Harbors |
| | Machado Lake within Ken Malloy Harbor Regional Park |
| | Madrona Marsh |
| | Wilmington Drain |
| *Additional Permittee Designated ESA* | |
| | Gardena Willows by the City of Gardena |
| | Linden H. Chandler Preserve, George F. Canyon, and the portion of Agua Amarga Canyon within the City of Rolling Hills Estates as designated by the City of Rolling Hills Estates |

Notable areas not recognized as ESAs with the SUSMP include the Wilmington Drain, which is formally known as the Wilmington Drain Waterway and Wildlife Area. The main water bodies of the watershed, Dominguez Channel and the Los Angeles-Long Beach Harbors, also are not recognized as ESAs with the SUSMP. These areas fit the definition of ESAs in the Municipal Permit based on their designated RARE beneficial use. These three areas also are 303(d) listed impaired water bodies, and therefore could benefit from the additional protection that would be conferred based on their status as recognized ESAs.

One area previously designated as a SEA on Terminal Island no longer functions as an ESA. The Terminal Island location was designated based on its use as a nesting location by the endangered California least tern. However, the nesting location was switched to Pier 400 in 1995, but the current list of SEAs (Los Angeles County Department of Regional Planning 2000) has not been updated to reflect that change.

Several pocket wetlands occur in the watershed. One of these, Gardena Willows, is recognized as an ESA by the City of Gardena. Enhancement/restoration of pocket wetlands to improve their quality and function is included as an action in this WMMP (see Subsection 4.5.2). Designation of these areas as ESAs to protect enhanced/restored ecological function should be considered once the projects are implemented.

Opportunities exist to improve protection of native habitats within the watershed by use of a standardized definition of ESAs based on the more protective language contained in the Municipal Permit. In addition, targeting public outreach to businesses and residences within 300 feet of the ESAs is recommended to improve protection of sensitive habitats and 303(d) listed water bodies.

Purpose

The purpose of protecting sensitive habitat areas is to prevent further degradation or unnecessary loss of areas where native plants and animals reside within the watershed.

Limitation

Protection of native habitats and biological resources is not intended to restrict or impede development permitted by resource and regulatory agencies.

Actions

The actions, which are described in the subsections below, include:

- Standardize Definition and Update List of ESAs.
- Target Outreach Within 300 feet of ESAs.

### 4.5.2.1 Standardize Definition and Update List of ESAs

Issue
The definition of ESAs differs between the Municipal Storm Water and Urban Runoff NPDES Permit and SUSMP for Los Angeles County and its incorporated cities.

Action
This action involves jurisdictions adopting a standardized definition for ESAs based on the more protective language provided in the SQMP. In addition, the action includes the preparation of a letter to the LARWQCB, SWRCB, and Los Angeles County Department of Regional Planning requesting that Terminal Island be removed from the list of SEAs and replaced with the California least tern nesting location on Pier 400. The action also involves annual review and update of the ESA list, as appropriate, to include sites where there has been substantial habitat enhancement and/or restoration.

Activities, stakeholder roles, and cost estimate for the action are described below.

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| Adopt definition of ESA in SQMP, and prepare memorandum clarifying that SQMP definition of ESA is to be used in implementing SUSMP. | J (L, P) | Once | $ |
| Prepare letter requesting change in SEA status of California least tern nesting site in Los Angeles Harbor. | J (L),<br>A (R) | Once | $ |
| Review and update ESA list to include substantial enhancement/restoration sites, and forward additions to list to the County. | J (L, P) | Annual | $ |
| | | Total Estimated Cost | $ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed; the County to take the lead in documentation activities
Agencies = LARWQCB, SWRCB, Los Angeles County Department of Regional Planning

Type of Action: Management.

Goal(s) Addressed by Action
- Protect, enhance, and restore natural habitats and biological resources.

Objective(s) Addressed by Action
- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.

Benefit(s) of Action
Adoption of the more protective language under the SQMP will contribute to the protection of environmentally sensitive areas in the watershed. In addition, a consistent understanding of what constitutes an environmentally sensitive area will increase public awareness and the potential for stewardship of remaining natural areas and water bodies within the watershed.

***Standardize Definition and Update List of ESAs (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | Protects habitat | | | Public education and outreach |
| | Local and/or regional watershed benefits | | | |
| | Management Measures | | | |

Cost Considerations

- Minor cost associated with staff preparation of letter and/or memorandums.

Potential Source of Funds

- Reallocate from existing budget.

Time Frame Considerations

- Implement in < 2 years.
- Near- and long-term benefits.

### *4.5.2.2 Target Outreach Within 300 feet of ESAs*

Issue

ESAs represent sensitive areas for native plants and/or wildlife. Storm drains empty into water bodies and adjacent wetlands designated as ESAs within the watershed. Water bodies are 303(d) listed as impaired by a variety of stressors.

Action

This action includes coordination with the Public Information and Participation Program (PIPP) to target outreach to businesses and residential homes within 300 feet of ESAs. The purpose of the outreach is to increase public awareness regarding the sensitivity of these areas, and to reduce discharges and disturbance that contribute to the impairment of these areas. The following topics include, but are not limited to, what should be covered in the outreach materials:

- Trash control.
- Proper maintenance of BMPs.
- Pet and pet waste control.
- Control of exotic, invasive plants and non-native animals.
- Proper application of fertilizers and pesticides to avoid predicted periods or during rain.
- Proper hazardous material disposal.
- Erosion control.
- Fire management.

Outreach materials could be periodically included with water bills to reduce the costs associated with distributing materials.

Activities, stakeholder roles, and cost estimate for the action are described below.

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| The County shall develop a list of recommendations, in consultation with other Permittees, to cover in targeted outreach to protect ESAs. | J (L) | Annual | $ |
| PIPP to prepare the public education and outreach materials. | J (L) | Ongoing | $ |
| Jurisdictions to distribute outreach materials to businesses and homes within 300 feet of ESAs. | J (L) | Once or twice per year, as appropriate | $ |
| | | Total Estimated Cost per year | $ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = County is lead jurisdiction, all cities to participate

Type of Action: Habitat protection, Public education and outreach.

Goal(s) Addressed by Action

- Protect, enhance, and restore native habitats and biological resources.
- Promote public awareness and involvement in watershed management.

***Target Outreach Within 300 feet of ESAs (Continued)***

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.

Benefit(s) of Action

The targeted public outreach and education would focus on changing behaviors to control sources of pollution to, and disturbance and degradation of ESAs. The action would address habitat degradation, which is one of the top stakeholder identified issues. Reduction of trash and other impairments in ESAs will increase the aesthetic values of those areas. Outreach to reduce disturbance factors will increase the habitat quality of the ESAs.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Addresses 303(d) listed impairment | Addresses one of top stakeholder issues | Increases aesthetic values of land | | Public education and outreach |
| Addresses one of top stakeholder issues | Local and watershed benefits | | | |
| Eliminates/reduces pollution source | Protects habitat | | | |
| | Reduces degradation | | | |
| | Reduces disturbance | | | |
| | | | | |
| | | | | |

Cost Considerations

The following factors have the potential to affect the cost of the project:

- Activities largely covered under existing PIPP program.
- Costs to distribute outreach materials to businesses and homes within 300 feet of ESAs could be offset by periodically including materials in water bill or by employing some other form of existing communication opportunity.

Potential Source(s) of Funds

- Reallocation of budget.

Time Frame Considerations

- < 2 years
- Near- and long-term benefits.

Monitoring Recommendations

The effectiveness of the action would be assessed as part of ongoing evaluations conducted as part of the PIPP program.

### 4.5.3 Actions to Enhance/Restore Habitat

Statement of Problem

Sensitive habitat areas within the Dominguez Watershed exhibit various degrees of degradation due to historic and ongoing water management and land use practices, uncontrolled invasion by non-native species, discharge of contaminants, and disturbance.

There also are areas within the watershed that are highly disturbed under existing conditions, but historically functioned as wetlands, riparian, or coastal sage scrub habitats. Degradation of these lands resulted from urbanization, channelization, and other land use practices that involved grading and/or clearing of native vegetation.

Existing Actions

Various enhancement and restoration efforts are ongoing within the watershed by jurisdictions, conservancy groups, and community groups. Habitat enhancement improves existing habitat functions, and usually involves activities such as removal of exotic, invasive species, revegetating with native plant species, and reducing levels of disturbance and degradation. Restoration returns natural biological functions to highly disturbed and/or degraded land, and may involve site-grading, re-establishment of hydrologic connections, and substantial revegetation with native species. Thus, restoration efforts typically require more extensive treatment and/or renovation of the land and cost more than enhancement efforts.

The Gardena Willows ESA is being enhanced/restored by the City of Gardena. A small, wetland area near 22nd Street in San Pedro is being enhanced/restored by the Port of Los Angeles and a local community organization after it was inadvertently impacted by maintenance personnel. Enhancement/restoration programs are being carried out by land conservancy groups in the canyons of the Palos Verdes Peninsula to restore coastal sage scrub vegetation. Restoration is being overseen by the Department of Recreation and Parks with assistance from community volunteers at Madrona Marsh, where highly disturbed land associated with oil extraction activities is being restored to native habitats.

Several enhancement/restoration projects have been carried out as part of mitigation projects at the Ken Malloy Harbor Regional Park, some of which have or have not been successful. A marshland management plan was developed to enhance vegetation and wildlife habitat as part of mitigation for modifications at the Joint Water Pollution Control Plant north of the Wilmington Drain. Past restoration projects have included creation of the Cabrillo Salt Marsh, and the recent creation of shallow water habitats within the Ports of Los Angeles and Long Beach Harbor.

Issue

Enhancement and restoration of habitats are needed to increase the viability, diversity, health and function of ecological systems of the watershed. In addition, habitat enhancement/restoration can provide other important community benefits including improvement in water quality, improvement in visual resources or aesthetics of the land, and increased recreation and education opportunities. Several opportunities exist in the Dominguez Watershed to enhance/restore habitats for wildlife and realize other community benefits.

Purpose

The purpose of enhancing habitats is to promote native diversity and to increase the quality of the habitats for wildlife. The purpose of habitat restoration is to return natural biological functions to highly disturbed and/or degraded land, and to increase the acreage of native habitat within the watershed.

Actions

The actions, which are described in the subsection below, include:

- Enhance/Restore Wilmington Drain Wetlands.
- Enhance Machado Lake Wetlands.
- Enhance Gardena Willows.
- Enhance Walteria Lake.
- Enhance/Restore Pocket Wetlands.
- Enhance/Restore Canyon Habitats.
- Daylight Historic Steams.
- Investigate Feasibility and Restore Concrete-Lined Tributary Channels.

Other activities that are being conducted to specifically reduce exotic, invasive plants and to promote use of native and/or drought tolerant vegetation in landscaping are described in Section 4.5.4.

### *4.5.3.1 Enhance/ Restore Wilmington Drain*

Issue

Lower Wilmington Drain is designated as the Wilmington Drain Waterway and Wildlife Area. This waterway is 303(d) listed as impaired for metals (copper, lead), bacteria, and ammonia. This area has moderate biological value associated with native riparian vegetation and wildlife. Habitat quality is degraded by exotic, invasive species, trash, and use of the area by homeless individuals. Flood control maintenance practices clear vegetation from banks of the channel. A trash boom (north of Pacific Coast Highway) occurs across the lower reach of the drain and helps control trash from washing downstream to Machado Lake; however, no BMPs are in place to control trash from entering Wilmington Drain. A dirt road along the west side of the channel is used for flood control maintenance, and has been used as a recreational trail; that road has been recently closed to the public because of problems with homeless use of the area.

Action

This action involves enhancement and restoration of natural habitat areas of Wilmington Drain and reducing sources of degradation. In addition, recreational use of the maintenance road along this water body will be reinstated after improvements are made.

A conceptual design will be developed for enhancement and restoration of habitat along Wilmington Drain. Implementation will involve removal of non-native, invasive plants along both the east and west banks along the entire waterway. The east bank north of Lomita Boulevard will be re-vegetated with native species. The feasibility of moving the maintenance access road further west of the waterway south of Lomita Boulevard will be investigated in order to expand riparian habitat. If feasible, the upland area adjacent to the waterway will be re-graded to wetland elevations and riparian species planted, and a new road graded along existing disturbed upland further west on the parcel. Mature willows will be preserved in the restoration design. The conceptual design would include room for an access road and concrete pad area to permit installation and maintenance of a second trash boom northeast of Lomita Boulevard. The habitat conceptual design will be coordinated with LACDPW to ensure no adverse impacts to flood control capacity or maintenance.

Recreational use of the maintenance road will be reinstated when the homeless situation is controlled. Waste receptacles and pet waste stations will be installed at each end of the maintenance road (near Lomita Boulevard and Pacific Coast Highway) to control locally generated sources of trash, nutrients, and bacteria; these waste receptacles and stations will be maintained weekly. Educational signage also will be placed at these locations. Large-scale clean up days will be organized with the public and held twice each year, before and after the rainy season to promote local stewardship of the area. Additional trash clean up within the wetland will be performed by local jurisdiction maintenance crews after each significant rain event. It is anticipated that the increased frequency of trash clean ups, use of the recreational trail, and educational signage will deter homeless from the area over the long-term. However, due to the historic pattern of use of this area by homeless individuals, continual inspections will be required for the area on a weekly basis, and code enforcement, as needed. In addition, specific solutions and alternatives need to be developed in coordination with appropriate agencies to effectively address homeless use of the area.

***Enhance/ Restore Wilmington Drain Wetlands (Continued)***

*Coordination with Other Actions*

Wilmington Drain will be recognized as an ESA (Action 4.5.2.1) to confer additional protective status to the area, and to assist with source control of contaminants on adjacent lands. Public outreach and education will be applied to residential, commercial, and industrial users of land within 300 feet of upper and lower Wilmington Drain to limit sources of degradation and to improve protection of the area (Action 4.5.2.2). Additional measures may be taken to control trash influx to the wetland, including relocation of the existing trash boom in an upstream area of Wilmington Drain (Action 4.3.3.4) and and/or use of other BMPs (see Section 4.3.3).

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Coordinate with LACDPW regarding flood control and maintenance constraints. | J (L) | Once | $ |
| Conduct hydraulic and geomorphic analysis. | J (L), C (P) | Once | $$ |
| Develop concept plan and estimate costs. | J (L), C (P), A (R) | Once | $ |
| Apply for grant funding. | J (L) | Once | $ |
| Finalize design drawings, prepare plans and specifications, prepare construction documents. | J (L) C (P), A (Ad) | Once | $$ |
| Prepare CEQA document, and obtain permits. | J (L), A (R) | Once | $S |
| Grade and prepare restoration sites and recreational trail. | J (L), C (P) | Once | $$ |
| Invite media and local politicians to ground breaking. | J (L) | Once | None |
| Organize volunteers and solicit businesses to assist with materials and snacks for volunteers during enhancement and restoration. | J (L), B (P), V (P) | Once | $ |
| Remove exotic, invasive species and coordinate with adjacent landowners to remove invasives. | J (L), C (P), V (P), S (P) | Annual | $ |
| Landscape with native vegetation (emergent wetland and riparian species). | J (L), C (P), V (P), S (P) | Once per location | $/acre |
| Develop and install watershed education signage, and monitoring observation and educational kiosk. | J (L), C (P) | Once per location | $ |
| Install trash receptacles and pet waste stations at trail heads. | J (L) | Once | $ |
| Maintain and monitor plant establishment. | J (L), C (P) | Annual for 5 years | $/yr |
| Maintain trail and signage. | J (L), V (P) | Annually | $/yr |
| Collect trash and maintain pet waste stations. | J (L) | Weekly | $/yr |
| Organize clean-up days, solicit businesses to donate materials and snacks for volunteers, collect, dispose, and recycle trash and debris. | J (L), B (P), V (P) | Before and after rainy season | $/event |
| Clean up trash from wetland after major storms. | J (L) | After major rain events | $/event |
| Coordinate with homeless agencies/social service agencies and other appropriate agencies regarding inspections to discourage homeless, to provide information regarding shelters in area, and to develop alternatives to effectively address homeless use of the area. | J (L) | Quarterly | $$$ |
| Conduct inspections and code enforcement to discourage homeless use of the area. | J (L) | Weekly | $/yr |
| Monitor for effectiveness. | J (L), V (P), S (P) | Annual for 5 yrs | $/yr |
| | | Total Estimated Cost | $$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = County of Los Angeles
Agencies = LACDPW, CDFG, RWQCB, USACE, USFWS

***Enhance/ Restore Wilmington Drain Wetlands (Continued)***

Type of Action: Habitat Protection, Enhancement, and Restoration.

Goal(s) Addressed by Action

- Protect, enhance, and restore natural habitats and biological resources.
- Protect and enhance water quality.
- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Increase the viability, diversity, health, and function of ecological systems of the watershed.
- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Habitat protection, enhancement, and restoration will improve environmental values of the area for wildlife. Source control on adjacent lands and increased frequency of trash clean up will improve water quality. Public involvement will increase awareness and stewardship of the watershed.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address one of top stakeholder issues | Address one of top stakeholder issues | Increase aesthetic values of land | Increase recreational values of land | Partnership opportunities (public and/or private) |
| Address 303(d) listed impairment | Improve 5 to 20 acres of habitat | | | Public education and outreach |
| Reduce pollutant concentration | Protect, Enhances, Restores Habitat | | | Public involvement |
| | Provide linkage to other habitat areas and/or wildlife corridors | | | |
| | Provide regional and/or watershed benefits | | | |

Cost Considerations

The cost for enhancing/restoring the Wilmington Drain was estimated at $300,000 -$500,000.
The following factors have the potential to affect the cost of the project:

- Temporary staff reassignment and/or retraining required.
- Construction and maintenance (annual or more frequent) required.
- Design plans required.
- Permits (CDFG 1601, RWQCB 401, USACE 404, Construction) required.
- Monitoring to determine effectiveness.

***Enhance/ Restore Wilmington Drain Wetlands (Continued)***

Potential Source(s) of Funds

Several sources of funding may exist, including:

- Grants (e.g., NOAA Community-based Restoration Program, Five-Star Restoration Challenge Program, Proposition 12, Proposition 13, Proposition 40, Southern California Wetlands Recovery Project Work Plan and Small Grants Programs).
- Supplemental RWQCB funds.
- Include in a mitigation bank (see Action 4.7.4.4).

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

Monitoring Recommendations

Water quality will be monitored before and after enhancement/restoration of Wilmington Drain. The success of plant establishment and relative percent cover of the native vegetation will be documented. Wildlife utilization of the wildlife corridor will be documented before and after project implementation. Water quality monitoring should be coordinated with the County and/or RWQCB surface waters ambient bay monitoring program. Habitat monitoring should be coordinated with the Palos Verdes/South Bay Audubon Society and/or local colleges/universities to provide education opportunities. Citizen-based monitoring also will provide information on the quality of the habitat.

### 4.5.3.2 Enhance Habitat at Ken Malloy Harbor Regional Park

Issue

A Master Plan for the restoration and management of the Ken Malloy Harbor Regional Park (KMHRP) was prepared by Parsons (2001, 2002). This plan recommended several measures to protect, enhance, and restore habitat at the park. The goals of the habitat restoration plan included:

- Reduction of tules and mosquito abatement.
- Dredging of the lake, creation of a sediment management basin, and creation of island nesting sites for birds and bats from dredge spoil.
- Management of non-native and feral animals.
- Inclusion of BMPs to improve stormwater quality runoff to the lake.
- Enhancement of riparian and wetland habitats.
- Restoration of sycamore-cottonwood riparian habitat.
- Restoration of coastal sage scrub habitats.
- Restoration of rare native plant populations.
- Construction of sound barrier and aesthetic landscape berms,
- Restoration of a natural connection to San Pedro Bay.
- Restoration of Wilmington Drain to include connection to riparian habitat adjacent to the JWPCP.
- Restoration of wildlife corridors linking with coastal sage scrub communities of the Naval Fuel Depot and Palos Verdes Peninsula.
- Restoration of wildlife habitat for indigenous species.
- Seeking a permanent source of tertiary treated recycled water to increase flows through the KMHRP system.
- Creation of mitigation areas that are intended to become functioning plant communities.
- Construction of a Natural Heritage Center and Botanical Garden.

Implementation of the Master Plan has proven difficult for the Task Force formed to oversee the planning, administration, management, and operation of the KMHRP. The Master Plan did not provide priorities or guidance on phasing of actions to achieve the goals of the plan. In 2003, the Task Force accepted help from the California Coastal Conservancy to help develop an integrated implementation plan for restoration. After review of the Master Plan, it was concluded that insufficient information was available for developing a prioritized and integrated implementation plan at this time. Additional study and feasibility analysis were recommended prior to undertaking most restoration actions specified in the Master Plan.

***Enhance Habitat at Ken Malloy Harbor Regional Park (Continued)***

The following actions were considered to have neutral to beneficial impact on future restoration actions or were considered independent of the restoration and appropriate to implement at any time:

- Install Trash BMPs at various storm drains discharging to the park.
- Initiate stakeholder discussions to purchase land and conservation easements for future connection with San Pedro Bay and the Naval Fuel Depot.
- Discuss with TOSCO the plan to improve vacant land along Anaheim Street to benefit both parties.
- Initiate a mitigation banking program once habitat goals are established.

Other actions that were considered independent of the restoration and therefore could proceed at any time, as follows:

- Construct nature center and ranger office provided facilities could be relocated if required based on results of future studies.
- Install perimeter security fencing.
- Relocate Day Labor Facility.
- Developing and enforcing park use guidelines.
- Improving clean up activities for the park.

Action

This WMMP includes actions that address several of the habitat restoration/enhancement goals specified in the KMHRP Master Plan. For example, BMPs to protect the KMHRP from trash and associated impairments were recommended as part of the following actions:

- 4.3.3.3 Install and maintain in-line separation units and/or end-of pipe controls along major storm drains to water bodies (including to Machado Lake).
- 4.3.3.4 Relocating, but maintaining, a trash boom on Wilmington Drain, which is tributary to KMHRP.
- 4.34.3 Install pet waste stations at parks and along trails.

An action to manage contaminated sediments at Machado Lake also was recommended (Action 4.3.5.3). In addition, actions are included in this subsection to reduce impairments by conducting outreach to residents and businesses within 300 feet of the park (Action 4.5.2.2), and conducting outreach regarding control of pets and their waste (Action 4.5.4.4).

Furthermore, actions are recommended in this plan to improve habitat quality at natural areas within the watershed, including the KMHRP, by developing and implementing an invasive species eradication program (Action 4.5.4.1). An action to provide an alternative clean water source for Machado Lake by construction of a DURFF at Walteria Lake was described (Action 4.3.4.9). In addition, an action to enhance Walteria Lake for habitat and treatment of storm water is described in this section (Action 4.5.3.4). Enhancement of the Wilmington Drain (Action 4.5.3.1) should also provide benefits to the KMHRP by improvement in wildlife corridor and water quality through that tributary.

***Enhance Habitat at Ken Malloy Harbor Regional Park (Continued)***

Results of the background study conducted as part of development of this plan concurs with the report by Parsons (2002) that enhancement and restoration of habitat areas at the KMHRP are needed to improve habitat function for wildlife. It is recommended that the design and phasing of those improvements consider the potential need for management of contaminated sediments. This plan includes an action to develop a mitigation policy and bank to focus habitat improvement within the watershed, and the KMHRP is included as a location to be included in the development of the mitigation bank.

Several other actions are recommended in this plan to increase stewardship that could benefit the KMHRP. This plan recommends continuation of clean up days at the park, implementing a citizen-based monitoring program with an observational kiosk at KMHRP, and supports the regional importance of building a nature center at KMHRP.

### *4.5.3.3 Enhance Gardena Willows*

Issue

Gardena Willows is an ecologically valuable oasis of habitat in the Upper Dominguez Watershed. The City of Gardena has an ongoing enhancement/restoration effort that successfully engages the public through voluntary participation in enhancement and restoration activities. A nature center is desired for this location by the City, and has public support.

Action

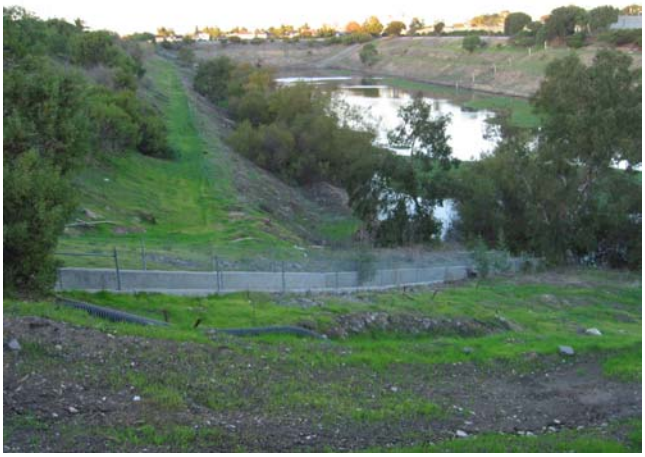
Results of the background study conducted for this WMMP recognizes the habitat value of Gardena Willows and potential benefits to wildlife from the continued enhancement/restoration efforts being conducted by the City and volunteers. Given the extremely limited amount of natural habitat in the upper watershed, restoration benefits exceed those that would be attained solely by wildlife. Public participation in the enhancement/restoration efforts, educational opportunities for local school children, and the desired plan for a nature center at this location provide substantial opportunities for increasing stewardship among residents in a highly urbanized area of Los Angeles County.

Several actions to support the enhancement efforts at Gardena Willows are recommended in this plan. These include targeted outreach to residents and businesses within 300 feet of the area (Action 4.5.2.2), and additional outreach regarding control of pets and their impacts on natural habitat areas (Action 4.5.4.4).

Construction of a nature center at this location (Action 4.6.3.5) would fill a regional need for a place of environmental study in the upper watershed. This plan also recommends continuation of clean up days, and implementing a citizen-based monitoring program with an observational kiosk at Gardena Willows to enhance public stewardship and involvement in the protection of this area.

This plan includes an action to develop a mitigation policy and bank to focus habitat improvement within the watershed (see Action 4.7.4.4), and Gardena Willows is included as a location to be included in the development of the mitigation bank. This action would help contribute funding resources to the continued improvement and long-term maintenance at this location.

### *4.5.3.4 Enhance Walteria Lake*



Issue

Walteria lake is a large detention basin (approximately 100 acres) in the City of Torrance that drains approximately 18 percent of the area within the City. The detention basin has sloped sides vegetated with non-native grass and has localized areas with non-native trees and shrubs. A relatively small, band of riparian vegetation occurs along the lake fringe. Water from Walteria Lake drains to Machado Lake in the KMHRP. The large size of the detention basin provides substantial opportunity for multi-purpose benefits to wildlife and water quality by enhancing habitat at the lake.

Action

The action involves enhancing habitat for wildlife at Walteria Lake by removal of exotic, invasive species, expanding riparian habitat, and transitioning to coastal sage scrub habitat on the upper benches. Coordination would be conducted with County Flood Control District staff to understand constraints to the enhancement design relative to flood control maintenance, and to understand the hydrology of the basin and elevation range of water associated with different flood event sizes. This information would be used to design appropriate, planting palettes for the side slopes. Because of the perennial nature of the water at the lake, there may be the potential to increase habitat function by establishing a self sustaining aquatic community including fish, which in turn would provide forage opportunities for fish-eating birds. Waterfowl were observed at the lake during reconnaissance visits conducted as part of the background study conducted for this plan.

Due to the size of the detention basin, passive recreation of the area could provide multi-use benefits and contribute to useable open space within the City of Torrance and watershed. Because of the design constraints of the side slopes relative to the functioning of the basin, there may be safety and liability concerns associated with public use of the area. Furthermore, limited public use would be desirable to minimize disturbance to the wildlife that the enhancement would be intended to attract. These concerns may be addressed by restricting access to the upper bench of the basin with fencing. Passive recreation could then be supported in appropriate areas of the basin by a perimeter trail, viewing platforms, and benches for enjoying the scenery and observing wildlife. With that type of enhancement design, the basin could also provide opportunity for public education regarding the flood control system, connection between Walteria Lake and the KMHRP, and habitat enhancement for multiple benefits. An additional protective measure, if necessary, would be to restrict recreational use of the area to weekends and using volunteer docents to contribute to the educational benefits of the recreational experience and to control public use. The action includes adding an observational kiosk for citizen-based monitoring at this location.

Monitoring would be conducted of water quality to ensure no degradation due to public use of the area, and to demonstrate potential improvement due to the enhancement with emergent wetland and riparian vegetation.

***Enhance Walteria Lake (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Coordinate with LACDPW regarding flood control and maintenance constraints. | J (L) | Once | $ |
| Develop concept plan and estimate costs. | J (L), C (P), A (R) | Once | $ |
| Apply for grant funding. | J (L) | Once | $ |
| Finalize design drawings and landscape plan. | J (L) C (P), A (Ad) | Once | $$ |
| Prepare appropriate environmental clearance documentation and obtain any necessary permits. | J (L), A (R) | Once | $ |
| Construct recreational trail, viewing platforms, monitoring and educational kiosk, and install benches. | J (L), C (P) | Once | $$ |
| Invite media and local politicians to ground breaking. | J (L) | Once | None |
| Organize volunteers and solicit businesses to assist with materials and snacks for volunteers during landscape enhancement. | J (L), B (P), V (P) | Once | $ |
| Remove exotic, invasive species | J (L), C (P), V (P), S (P) | Annual | $ |
| Landscape with native vegetation (emergent wetland, riparian, and coastal sage scrub species). | J (L), C (P), V (P), S (P) | Once per location | $/acre |
| Coordinate with CDFG and stock lake with native fish, if included in final enhancement design. | J (L), C (P), A (P) | Annual for 5 years | $/year |
| Construct and install monitoring kiosk and watershed education signage. | J (L), C (P) | Once per location | $ |
| Install trash receptacles and pet waste station. | J (L) | Once | $ |
| Maintain and monitor plant establishment. | J (L), C (P) | Annual for 5 years | $/yr |
| Maintain trail and signage. | J (L), V (P) | Annually | $/yr |
| Collect trash and maintain pet waste stations. | J (L) | Weekly | $/yr |
| Monitor for effectiveness. | J (L), V (P), S (P) | Annual for 5 yrs | $/yr |
| | | Total Estimated Cost | $$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = County of Los Angeles and City of Torrance
Agencies = LACDPW, CDFG, RWQCB, USACE, USFWS

Type of Action: Habitat Protection, Enhancement, and Restoration.

Goal(s) Addressed by Action

- Enhance and restore natural habitats and biological resources.
- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Increase the viability, diversity, health, and function of ecological systems of the watershed.
- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

***Enhance Walteria Lake (Continued)***

Benefit(s) of Action

Habitat enhancement/restoration will improve environmental values of the area for wildlife. Public involvement will increase awareness and stewardship of the watershed.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | Address one of top stakeholder issues | Increase aesthetic values of land | Increase recreational values of land | Public education and outreach |
| | Improve >50 acres of habitat | | | Public involvement |
| | Enhances/restores Habitat | | | |
| | Provide regional and/or watershed benefits | | | |

Cost Considerations

Enhancement of Walteria Lake was estimated to cost in the range of $400,000 - $500,000. The following factors have the potential to affect the cost of the project:

- Temporary staff reassignment and/or retraining required.
- Construction and maintenance (annual or more frequent) required.
- Design plans required.
- Monitoring to determine effectiveness.

Potential Source(s) of Funds

Several sources of funding may exist, including:

- Grants (e.g., NOAA Community-based Restoration Program, Five-Star Restoration Challenge Program, Proposition 12, Proposition 13, Proposition 40, Southern California Wetlands Recovery Project Work Plan and Small Grants Programs).
- Supplemental RWQCB funds.
- Include in a mitigation bank (see Action 4.7.4.4).

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

Monitoring Recommendations

Water quality will be monitored before and after enhancement/restoration. The success of plant establishment and relative percent cover of the native vegetation will be documented. Wildlife utilization will be documented before and after project implementation. Water quality monitoring should be coordinated with the County and/or RWQCB surface waters ambient bay monitoring program. Habitat monitoring should be coordinated with the Palos Verdes/South Bay Audubon Society and/or local colleges/universities to provide education opportunities. Citizen-based monitoring also will provide information on the quality of the habitat.

### *4.5.3.5 Enhance Pocket Wetlands*

Issue

Several pockets of wetland habitat occur in the watershed that contribute to wildlife habitat, but function is limited by invasive species and other disturbance factors. Due to the limited amount of natural habitat in the watershed, these areas represent islands of habitat for species within an urban landscape that should be protected and enhanced.

Action

This action involves enhancement of pocket wetlands to increase their functional value to wildlife and to contribute to improved water quality. The action also provides meaningful opportunity for increasing environmental stewardship by involving the public in the enhancement efforts. The following pocket wetlands were identified during the background study as being in need of enhancement:

- Albertoni Farms.
- Gaffey Street Drain.
- Telco wetlands.

The Albertoni Farms location, which is approximately 35 acres in size, is degraded by non-native species and trash enters the drainage from the storm drain outlet. An in-line separation or end-of pipe control is recommended in this plan (Action 4.3.3.3) upstream of the outlet to provide protection to this area. In addition, removal of exotic vegetation (e.g., castor bean and Himalayan blackberry are particularly dense) and revegetation with native riparian vegetation is recommended.

Gaffey Street Drain occurs downstream of Machado Lake connects to the harbor. Enhancement of this area could improve function as a wildlife corridor.

The Telco wetlands occur across the street from Gardena Willows and connect downstream to the Dominguez Channel. Storm drain outlets discharge substantial amounts of trash into this drainage. An in-line separation unit or end-of-pipe control is recommended at this location (Action 4.3.3.3). Enhancement of the drainage with riparian vegetation is recommended to serve as a wildlife corridor between the Dominguez Channel and Gardena Willows.

The 22nd Street wetland was inadvertently damaged by maintenance personnel and is in the process of restoration at the time of preparation of this plan. It is recommended that this habitat be protected, and possibly expanded to increase functional value associated by this small wetland.

In addition, a few areas subject to prior mitigation are in need of enhancement to improve their function. These include the JWPCP mitigation wetland and mitigation wetlands in the KMHRP.

This plan includes an action to develop a mitigation policy and bank to focus habitat improvement within the watershed (see Action 4.7.4.4), and pocket wetlands are recommended for inclusion in the mitigation bank. Although mitigation bank funds typically are not permitted to be used at prior mitigation locations, the potential for a subset of bank funds being set aside for habitat maintenance of the few remaining wetland areas in the watershed is a worthwhile objective that should be explored with resource agencies.

***Enhance Pocket Wetlands (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below. These activities would be applicable to any of the pocket wetlands.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Determine ownership of drainage structures and lands associated with wetlands. | J (L), O (L,P) | Once | $ |
| Coordinate with LACDPW regarding any flood control and maintenance constraints at location of pocket wetland. | J (L), O (L,P) | Once | $ |
| Develop concept plan and estimate costs. | J (L), O (L,P), C (P), A (R) | Once | $ |
| Apply for grant funding. | J (L), O (L,P), | Once | $ |
| Finalize design drawings and landscape plan. | J (L), O (L,P), C (P), A (Ad) | Once | $$ |
| Prepare appropriate environmental clearance documentation and obtain necessary permits. | J (L), O (L,P), A (R) | Once | $ |
| Organize volunteers and solicit businesses to assist with materials and snacks for volunteers during landscape enhancement. | J (L), O (L,P), B (P), V (P) | Once | $ |
| Remove exotic, invasive species | J (L), O (L,P), C (P), V (P), S (P) | Annual | $ |
| Landscape with native vegetation (emergent wetland, riparian, and coastal sage scrub species, where appropriate). | J (L), O (L,P), C (P), V (P), S (P) | Once per location | $/acre |
| Maintain and monitor plant establishment. | J (L), O (L,P), C (P) | Annual for 5 years | $/yr |
| Monitor for effectiveness. | J (L), O (L,P), V (P), S (P) | Annual for 5 yrs | $/yr |
| | | Total Estimated Cost | $$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = County and City of Los Angeles, City of Carson
Agencies = LACDPW, CDFG, RWQCB, USACE, USFWS
Other = Non-profit and/or non-governmental organization

Type of Action: Habitat Protection, Enhancement, and Restoration.

Goal(s) Addressed by Action

- Enhance and restore natural habitats and biological resources.
- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Increase the viability, diversity, health, and function of ecological systems of the watershed.
- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Habitat enhancement/restoration will improve environmental values of the area for wildlife. Enhancement of wetland vegetation may improve downstream water quality. Public involvement will increase awareness and stewardship of the watershed.

***Enhance Pocket Wetlands (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Reduce pollutant concentration | Address one of top stakeholder issues | Increase aesthetic values of land | Increase recreational values of land | Public education and outreach |
| | Improve <5 to > 20 acres of habitat | | | Public involvement |
| | Enhances/restores Habitat | | | |
| | Provide regional and/or watershed benefits | | | |

Cost Considerations

Costs for enhancement would range from approximately $200,000 to $500,000 depending upon size of area. The following factors have the potential to affect the cost of the project:

- Size of area.
- Temporary staff reassignment and/or retraining required.
- Construction and maintenance (annual or more frequent) required.
- Design plans required.
- Monitoring to determine effectiveness.

Potential Source(s) of Funds

Several sources of funding may exist, including:

- Grants (e.g., NOAA Community-based Restoration Program, Five-Star Restoration Challenge Program, Proposition 12, Proposition 13, Proposition 40, Southern California Wetlands Recovery Project Work Plan and Small Grants Programs).
- Supplemental RWQCB funds.
- Include in a mitigation bank (see Action 4.7.4.4).

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

Monitoring Recommendations

Water quality will be monitored before and after enhancement/restoration. The success of plant establishment and relative percent cover of the native vegetation will be documented. Wildlife utilization will be documented before and after project implementation. Water quality monitoring should be coordinated with the County and/or RWQCB surface waters ambient bay monitoring program. Habitat monitoring should be coordinated with the Palos Verdes/South Bay Audubon Society and/or local colleges/universities to provide education opportunities.

### 4.5.3.6 Enhance and Restore Canyon Habitats

Issue

Within the Palos Verdes Peninsula, many of the riparian corridors support abundant populations of bird species and much native habitat. However, many of the habitats within these corridors have been invaded by non-native plant species. Many of the dominant invasive species are giant reed, castor bean, fennel, pampas grass, mustard (*Hirschfeldia incana, Brassica nigra)*, palm trees (*Washingtonia robusta*), and tree tobacco. There are numerous canyons within this area that are in need of stewardship (e.g., Averill Canyon, Peck Canyon, Vickery Canyon, San Pedro Canyon, Miraleste Canyon, and others).

Action

The action involves identifying areas within the Dominguez Watershed located in the communities of San Pedro, Rolling Hills Estates, Rolling Hills, and Rancho Palos Verdes in which exotic plant species have invaded native riparian habitats. A strategic plan for the removal of the invasive species would be developed. Implementation would include removal and control of the exotic species, and revegetation with native vegetation. The action would include involving the local communities to assist in this process via volunteer activities during the eradication and restoration process.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Baseline map invasive species distribution and relative cover in the riparian areas. | J (L), O (L), C (P) | Once | |
| Develop eradication plan. | J (L), O (L), C (P), A (R) | Once | |
| Apply for grant funding. | J (L), O (L), C (P) | Once and as needed | |
| Remove and properly dispose of invasive species. | J (L), O (L), C (P) | Annual | |
| Restore native species to areas of invasive species removal. | J (L), O (L), C (P) | Annual | |
| Involve the public in both the invasive removal process and the restoration component. | J (L), O (L), C (P), V (P) | As needed | |
| Map areas of progress. | J (L), O (L), C (P) | Annual | |
| | | Total Estimated Cost | $$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers.
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = Cities of Los Angeles, Rancho Palos Verdes, Rolling Hills, Rolling Hills Estates
Agencies = CDFG, USFWS Other = Non-governmental organization

Type of Action: Habitat Protection, Enhancement, and Restoration.

Goal(s) Addressed by Action

- Protect, enhance, and restore natural habitats and biological resources.
- Promote public awareness and involvement in watershed management.

***Enhance/Restore Canyon Habitats (Continued)***

Objective(s) Addressed by Action

- Increase the viability, diversity, health, and function of ecological systems of the watershed.
- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Control of exotic species and restoration of native habitat will greatly improve the ecosystem and environmental values of riparian areas located within the Dominguez Watershed. Coordination with local community members will increase awareness and understanding of the importance of land stewardship activities in the community.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | Enhance/restore habitat | | | Public education and outreach |
| | Improve 5 to 20 acres of habitat | | | Public involvement |

Cost Consideration(s)

The cost to perform enhancement and restoration of canyon habitats was estimated as > $200,000.
The following factors have the potential to affect the cost of the action:

- Size of area.
- Temporary staff reassignment and/or retraining required.
- Maintenance (annual or more frequent) required.
- Monitoring to determine effectiveness.

Potential Source(s) of Funds

Several sources of funding may exist, including:

- Grants (e.g., NOAA Community-based Restoration Program, Five-Star Restoration Challenge Program, Proposition 12, Proposition 13, Proposition 40, Southern California Wetlands Recovery Project Work Plan and Small Grants Programs).
- Include in a mitigation bank (see Action 4.7.4.4).

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

Monitoring Recommendations

Plant establishment and relative percent cover of native vegetation will be documented before and after the enhancement/restoration activities.

### *4.5.3.7 Daylight Historic Streams to Restore Wetlands*

Issue

Some historic drainage areas have been contained in storm drains and covered by land. The Southern California Wetlands Recovery Project and Palos Verdes/South Bay Audubon have identified two locations where degraded wetlands are adjacent to historic tributaries that have been covered by land. Daylighting (i.e., removing the overlying land and exposing the tributary to day light) historic streams would restore natural environmental functions to the tributaries.

Action

The first step of the action would be to investigate the feasibility of daylighting the historic streams. This would include discussions with current landowners; investigation of easement requirements; and hydrologic, hydraulic, and geomorphic analysis of the site. In addition, the feasibility analysis would require coordination with the LACDPW to review project objectives, design constraints, and maintenance concerns to ensure no adverse impact on existing flood control capacity. The action would involve development of conceptual designs for the purpose of cost estimation. The feasibility analysis also would identify potential funding mechanisms.

If feasible, implementation would involve preparation of construction plans, excavation and grading, restoration of a naturalized open channel that would tie into the natural drainage, and construction of culverts where needed to convey flows under existing roads. The action also would include restoration of wetland habitat and enhancement of existing degraded wetlands by removal of exotic, invasive plants species and replanting with native plants. Temporary installation of irrigation may be required until plants are established. Native vegetation would require monitoring and maintenance to ensure successful establishment. An application would be made to obtain grant funds. CEQA documentation (a Negative Declaration is anticipated) and permit applications would be prepared and submitted to appropriate resource and regulatory agencies. A partnership would be sought with landowners for their support with maintenance activities. Depending upon agreement with existing landowners, volunteers would be enlisted to assist with the restoration to promote public involvement and education.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Feasibility Phase*** | | | |
| Investigate land ownership and easement requirements. | J (L) | Once per location | $ |
| Meet with LACDPW to discuss feasibility and constraints to maintain flood control capacity. | J (L), C (L) | Once per location | $ |
| Meet with landowner to discuss feasibility and objectives of action, and to develop partnership to implement action, as appropriate. | J (L), C (P) | Once per location | $ |
| Develop concept plan and estimate costs. | J (L), C (P), B (Ad), A (Ad) | Once per location | $$ |
| | | Subtotal Estimated Cost | $$ |
| ***Implementation Phase, if Feasible*** | | | |
| Apply for grant funding. | J (L) | Once per location | $ |
| Obtain easements and landowner agreements, as necessary. | J (L) | Once per location | $-$$ |
| Conduct hydrologic, hydraulic, and geomorphic analyses of site. | J (L), C (P) | Once per location | $$ |
| Finalize design drawings, plans and specifications, and cost estimates. | J (L), C (P), B (Ad) | Once per location | $$ |

***Daylight Historic Streams to Restore Wetlands (Continued)***

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| CEQA documents and permits. | J (L), C (P)<br>A (R) | Once per location | $$ |
| Construction - daylight historic creek, restore naturalized channel. | J (L)<br>C (P), B (Ad) | Once per location | $$-$$$ |
| Invite media to cover story. | C (L) | Once per location | None |
| Install temporary irrigation to establish plants, if necessary, remove after two years. | J (L)<br>C (P), B (P) | Annual for 2 yrs | $/yr x 2 |
| Maintain and monitor plant establishment. | J (L)<br>C (P), S (P) | Annual for 5 years | $/yr x 5 |
| Monitor effectiveness. | J (L)<br>V (P), S (P) | Annual for 5 years | $/yr x 5 |
| Maintain for flood control purposes. | J (L) | Annual | $ |
| | | Subtotal Estimated Cost | $$$ |
| | | Total Estimated Cost | $$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = County of Los Angeles, City of Inglewood, City of Rolling Hills Estates, other jurisdictions that own the underground drainage structure, as appropriate.
Agencies = LACDPW, CDFG, RWQCB, USFWS, and USACE.

Type of Action: Habitat Enhancement and Restoration.

Goal(s) Addressed by Action

- Protect, enhance, and restore natural habitats and biological resources.
- Protect and enhance water quality.
- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Increase the viability, diversity, health, and function of ecological systems of the watershed.
- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Restoration of wetland and riparian habitat will improve environmental values for wildlife and will improve water quality by slowing waters and allowing for infiltration, biological processes, chemical processes, and photovolatization to occur. This action will be particularly useful for contributing to a reduction in bacteria, nutrient, and metals impairments. Public involvement would increase awareness and stewardship in the watershed.

***Daylight Historic Streams to Restore Wetlands (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Address one of top stakeholder issues | Address one of top stakeholder issues | Increase aesthetic values of land | | Partnership opportunities (public and/or private) |
| Increases Infiltration | Improve < 5 acres to 20 acres | Restore/Enhance Habitat | | Public education and outreach |
| Reduce pollutant concentration | Provide linkage to other habitat areas and/or wildlife corridors | | | Public involvement |
| | Regional and/or watershed benefits | | | |

Cost Considerations

The cost to implement the action was estimated as being between $500,000 and $1,000,000. The following factors have the potential to affect the cost of the project:

- Construction and maintenance (annual or more frequent) required until plants established.
- Land easement may be required.
- Design plans required.
- Permits required (CDFG 1601, RWQCB 401, USACE 404, Construction).
- Monitoring to determine effectiveness.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Grants (e.g., Southern California Wetlands Recovery Project work Plan and Small Grants Programs, Proposition 13, Proposition 40).
- Supplemental RWQCB funds.

Time Frame Considerations

- Implement in 2-5 years.
- Near- and long-term benefits.

Potential Project Location(s)

- Chester Washington Golf Course.
- Historic Stream terminus from George F. Canyon near Harbor Park.
- Storm drains traversing parks and vacant areas.

Monitoring Recommendations

Water quality (bacteria, nitrogen, metals, pH, dissolved oxygen, temperature, turbidity, conductivity, flow) will be tested before and after daylighting. The stability of the creek's banks will be monitored, and adjustments made with bioengineered solutions, where possible. Photographs will be taken before and after restoration to document habitat. The success of plant establishment and relative percent cover of the native vegetation will be noted and wildlife observed during the site visit recorded. Monitoring will be performed annually for a total of five years. Monitoring activities at the Chester Washington Golf Course would be coordinated with the landowner to avoid interference with normal operations.

### *4.5.3.8 Investigate Feasibility and Restore Concrete-lined Tributary Channels*

Issue

The upper Dominguez Channel and most of its tributaries are concrete-lined, as is the upper portion of the Wilmington Drain and its tributary channels. The lower portion of the Dominguez Channel (estuary) has a soft bottom, but channel banks are covered with riprap. Only the lower portion of the Wilmington Drain has a soft bottom and soil banks. The Dominguez Channel and concrete-lined tributary channels were created for flood control, and that remains their primary function. Wildlife uses are limited along these waterways because of hardscape and general lack of adjacent natural habitat. One exception is the lower Wilmington Drain, which supports wildlife associated with its moderately degraded wetlands.

Action

This action investigates the feasibility of restoring concrete-lined tributary channels with soft bottom and riparian habitat. If feasible, the action would provide greening-linkages along waterways in order to create functional wildlife corridors and restore environmental uses. Incorporation of vegetated wetlands in the design, where feasible, has the potential to improve water quality. In addition, linkage of the restored waterways to transportation corridors such as bikeways and pedestrian/hiking trails would help meet the region's open space needs.

The feasibility analysis would require coordination with the LACDPW to review project objectives, design constraints, and maintenance concerns to ensure no adverse impact on existing flood control capacity. The analysis also would require evaluation of dry weather flow characteristics and volume to support habitat, if possible. If flood capacity precludes establishment of riparian vegetation, the soft-bottom habitat would still provide benefits for improving water quality, increasing infiltration, and providing habitat for biological resources, including foraging habitat by shorebirds. The action would involve development of conceptual designs for the purpose of cost estimation. The feasibility analysis also would identify potential funding mechanisms.

If feasible, implementation would involve preparation of construction plans, demolition and disposal of concrete, excavation and grading, restoration of a naturalized channel that would tie into existing culverts and the Dominguez Channel or Wilmington Drain. The action also would include restoration of riparian habitat. An application would be made to obtain grant funds.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Feasibility Phase*** | | | |
| Meet with LACDPW to discuss feasibility and constraints to maintain flood control capacity. | J (L) | Once | $ |
| Evaluate dry weather flow volume and characteristics of tributary channels. | J (L)<br>C (P) | Once per location | $ |
| Evaluate ability to fit soft bottom stream within existing right-of-way while maintaining flood control capacity. | J (L)<br>C (P) | Once per location | $ |
| Investigate requirements and costs for additional easements and land acquisition. | J (L) | Once per location | $$ |
| Develop concept plan and estimate costs. | J (L)<br>C (P), A (R) | Once per location | $ |
| | | Subtotal Estimated Cost | $$ |

***Investigate Feasibility And Restore Concrete-lined Tributary Channels (Continued)***

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| ***Implementation Phase, if Feasible*** | | | |
| Apply for grant funding. | J (L), J (P) | Once per location | $ |
| Obtain easements, as appropriate. | J (L), J (P) | Once per location | $-$$$ |
| Acquire land, as appropriate. | J (L), J (P) | Once per location | $$$ |
| Finalize design. | J (L), C (P), A (Ad) | Once per location | $-$$ |
| Prepare CEQA documentation and obtain permits. | J (L), J (P), A (R) | Once per location | $$ |
| Remove concrete, and dispose of concrete debris. | J (L), C (P) | Once per location | $$ - $$$ |
| Restore naturalized channel, vegetate banks with native plants. | J (L), J (P), C (P), V (P), S (P) | Once per location | $$-$$$$ |
| Install temporary irrigation to establish plants, if necessary. | J (L), J (P), C (P) | Once per location | $ |
| Invite media to cover story. | J (L), J (P) | Once per location | None |
| Maintain and monitor plant establishment. | J (L), J (P), S (P) | Annual for 5 yrs | $ |
| | | Subtotal Estimated Cost | $$$$ |
| | | Total Estimated Cost | $$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = Los Angeles County (lead), City of Los Angeles, and other jurisdictions across which the channel runs (participant).
Agencies = LACDPW, CDFG, RWQCB, USFWS, and USACE.

Type of Action: Habitat Enhancement and Restoration.

Goal(s) Addressed by Action

- Protect, enhance, and restore natural habitats and biological resources.
- Protect and enhance water quality.
- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Increase the viability, diversity, health, and function of ecological systems of the watershed.
- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.

Benefit(s) of Action, if Feasible

Restoration and enhancement of waterways will improve environmental values both for wildlife and improvement of water quality. Public involvement would increase awareness and stewardship in the watershed.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Increases Infiltration | Address one of top stakeholder issues | Increase aesthetic values of land | | Public education and outreach |
| Reduce pollutant concentration | Improve < 5 acres to > 20 acres of habitat | | | Public involvement |
| | Local benefits | | | |
| | Provide linkage to other habitat areas and/or wildlife corridors | | | |
| | Restore/Enhance Habitat | | | |

***Investigate Feasibility and Restore Concrete-lined Tributary Channels (Continued)***

Cost Considerations

The following factors have the potential to affect the cost of the project:

- Staff reassignment to investigate feasibility.
- Concrete demolition and disposal required.
- Construction and maintenance (annual or more frequent) required.
- New staff (or contractors) to implement action required.
- Land easements and/or purchase may be required.
- Design plans required.
- Permits required (CDFG 1601, RWQCB 401, USACE 404, Construction).
- Monitoring to determine effectiveness.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Grants (e.g., Five-Star Restoration Challenge Grant Program, Proposition 13, Proposition 40, Southern California Wetlands Recovery Project Work Plan and Small Grants Programs).
- Supplemental RWQCB funds.

Time Frame Considerations

- Implement in 2-5 years.
- Near- and long-term benefits.

Potential Project Location(s)

- Del Amo Lateral.
- Gaffey Street Drain.
- Torrance Lateral.
- Upper Dominguez Channel tributaries (132$^{nd}$, 135$^{th}$ Street drains).
- Upper Wilmington Drain.
- Victoria Creek and Drain

Monitoring Recommendations

Monitoring of water quality (bacteria, nitrogen, metals, pH, dissolved oxygen, temperature, turbidity, conductivity, flow) before and after construction will be coordinated with the County and/or RWQCB surface waters ambient bay monitoring program to document the effectiveness of the restored wetlands to improve water quality in the tributary. A simplified monitoring approach is recommended for the habitat, whereby photographs of the site are taken before and after restoration. The success of plant establishment and relative percent cover of the native vegetation should be noted and wildlife observed during the site visit recorded. It is recommended that monitoring be performed annually for a total of five years.

### 4.5.4 Actions to Control Exotic Species Impacts

Statement of Problem
Exotic, invasive plant and non-native wildlife species represent a moderate stressor for the Dominguez Watershed.

Existing Actions
Exotic, invasive species are removed in association with enhancement and/or restoration projects being conducted within the watershed.

Issue
Exotic, invasive species occur in public parks and other landscaped areas and are sold at nurseries and incorporated into landscaping of private residences. These sources contribute to the spread of these plants to natural areas in the watershed where they displace native species and degrade habitat quality for wildlife.

Purpose
The purpose of controlling exotic species is to promote diversity, health, and function of native habitats, and to reduce habitat degradation that results when there is a dominance by non-native, invasive species.

Actions
The actions, which are described in the subsections below, include:

- Develop and Implement Invasive Species Eradication Program
- Update Landscape Plant Lists
- Discourage Sale of Exotic, Invasive Plants
- Coordinate Control of Non-Native Species and Exotic Pets with Public Outreach

### *4.5.4.1 Develop and Implement an Invasive Species Eradication Program*

Issue

Non-native plant species are a common feature of urbanized environments and natural habitats adjacent to urban lands. Of particular concern is the occurrence of non-native, invasive species that proliferate at the expense of native plants and provide limited habitat and/or food value to wildlife. Some invasive species such as giant reed (*Arundo donax*) and salt cedar (*Tamarix* sp.) are water hungry and substantially reduce the availability of soil moisture for native species in their vicinity. Other invasive species that occur in localized areas include pampas grass, artichoke thistle (*Cynara cardunculus*), castor bean, cocklebur (*Xanthium strumarium*), fig-marigold iceplant (*Carpobrotus edulis*), myoporum (*Myoporum laetum*), and various escaped ornamentals.

Action

This action would involve development of a comprehensive invasive species eradication program by the local jurisdictions and the County. A working group comprised of representatives from planning departments and departments of parks and recreation would be convened from local jurisdictions and the County to identify species for eradication, locations and/or strategy for phasing the eradication, methods to be implemented including disposal, identification of areas where permits with resource and regulatory agencies will be required for the implementation, and identification of responsible entities to implement the eradication. Baseline information on the extent of the invasive species problem within the watershed will be gathered to support the planning effort.

It is envisioned that the plan would identify local jurisdictions and the County as having the primary responsibility to remove non-native, invasive plants at public parks as part of routine maintenance activities. In addition, the County would have primary responsibility for removal of invasive species as part of their maintenance activities of lands within the easements of the Dominguez Channel and tributaries managed as part of the flood control system. The plan would be coordinated with Caltrans, who maintains lands within the easements of the major transportation corridors.

In some cases, invasive plants occur on public lands that are not managed for recreation or flood control purposes, or occur on private property. Currently, habitat enhancement consisting of removal of invasive species from natural habitats is recognized as an appropriate way to partially meet mitigation requirements, and will continue to be encouraged to offset the economic impacts of eradication. Additionally, eradication activities may be implemented by application of grant funds to enhance/restore natural habitats. It is assumed that any areas requiring permits to conduct invasive species removal would qualify as habitat enhancement projects, and grant funding would be applied for to conduct the eradication and enhancement in those areas.

Implementation of the eradication plan will require coordination among several different stakeholders. The methods to eradicate the invasive plants will vary depending upon species and site conditions, and could involve professional as well as volunteer resources.

*Coordination with Other Actions*

Local nurseries will be requested to discontinue sale of non-native, invasive plants (Action 4.5.4.3). Public outreach will be conducted to promote public awareness, stewardship, and involvement in the removal of invasive species from private property (Action 4.5.4.4).

***Develop and Implement an Invasive Species Eradication Program (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Planning Phase*** | | | |
| Convene jurisdictional temporary working group to develop invasive species eradication plan that includes target list of species, appropriate removal techniques, and strategy for eradication. | County (L)<br>J (P), A (R) | Once | $ |
| Conduct baseline inventory of invasive species cover at parks within watershed. | J (P) | Once | $ |
| Map invasive species cover along Dominguez Channel and tributaries within flood control easement. | J (P) | Once | $ |
| Coordinate with Palos Verdes Land Conservancy to map locations of substantial cover by invasive species in canyon habitats. | J (P), V (P) | Once | $ |
| | | Subtotal Estimated Cost | $$ |
| ***Implementation Phase*** | | | |
| Encourage eradication of invasive species as part of mitigation requirements for new developments and substantial redevelopments that impact native habitats. | J (P) | Annual | $ |
| Set up mitigation bank to receive funds to be used to remove invasive species and enhance/restore open space lands. | County (L)<br>J (P) | Once | $ |
| Apply for grant funding to remove invasive species and enhance/restore open space lands. | J (P), V (P) | As needed | $ |
| Obtain permits, as appropriate. | J (P), V (P) | As needed | $ |
| Remove and properly dispose of invasive species from public parks, revegetate with native drought tolerant plants where appropriate. | J (P) | Annual | $/jurisdiction |
| Remove and properly dispose of invasive species from flood control easements, revegetate with native plants where appropriate. | J (P) | Annual | $$ |
| Remove and properly dispose of invasive species from canyon habitats, revegetate with native plants to control erosion. | J (P), V (P) | Annual | $-$$ |
| Document effectiveness of action by updating baseline inventories of parks, flood control easements, and canyon habitats. | J (P), V (P) | Every 1-2 years after eradication | $/jurisdiction |
| | | Total Estimated Cost | $$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed
Agencies = CDFG, RWQCB, USFWS, USACE

Type of Action: Planning and Habitat Enhancement.

Goal(s) Addressed by Action

Protect, enhance, and restore natural habitats and biological resources.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

***Develop and Implement an Invasive Species Eradication Program (Continued)***

Benefit(s) of Action
Reduction and eradication of exotic, invasive species will improve habitat availability and quality for native species.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Reduce water use | Enhance Habitat | | | Public education and outreach |
| | Regional and/or watershed benefits | | | Public involvement |

Cost Considerations
The following factors have the potential to affect the cost of the project:

- Staff reassignment and/or retraining required.
- New staff (or contractors) may be required.
- Permits may be required.

Potential Source of Funds

- Reallocation of existing budgets.
- Grants (e.g., California Department of Parks and Recreation Habitat Conservation Fund, Proposition 12, Southern California Coastal Wetland Recovery Project Work Plan and Small Grants Programs).

Time Frame Considerations

- Implement in 2 - 5 years.
- Long-term benefit.

### *4.5.4.2 Update Landscape Plant Lists*

Issue

The use of invasive non-native plant species for landscaping purposes contributes to the spread of non-native plants into open space areas including watersheds. Watersheds often serve as a vector for the dispersal of the non-native plant species. This issue could be addressed by identifying native alternatives for the homeowner or gardener, and updating plant lists used for urban landscaping.

Action

This action involves two major activities. One is to provide residents outreach information on invasive species that should be avoided in home gardens and landscaping. A booklet will be prepared of the most commonly used invasive species in home gardens that should be avoided in the Dominguez Watershed. Because of the substantial amount of natural habitat in the canyon areas, a separate booklet will be prepared for that area. In addition to highlighting the invasive species to avoid, the booklet will identify drought resistant, native alternatives. The environmental benefits of using native plants will be discussed such as water conservation, biodiversity, and plants which attract local butterflies, etc. The booklet will be available to the public at community events, local libraries, and municipal information counters.

**Invasive Plants That Should be Avoided Everywhere in Los Angeles County.**

- *Alianthus altissima* — Tree of heaven
- *Eucalyptus globules* — Blue gum
- *Ficus carica* — Edible fig
- *Myoporum laetum* — Myoporum, lollypop tree
- *Nicotiana glauca* — Tree tobacco
- *Olea europaea* — Olive, except seedless varieties
- *Robinia pseudoaccacia* — Black locust
- *Schinus terebinthifolius* — Brazilian pepper
- *Tamarix gallica* — French Tamarisk
- *Tamarix ramossissima* — Saltcedar

Source: Los Angeles County Department of Regional Planning

In addition, coordination will occur among representatives of the City of Los Angeles Recreation and Parks Department and County Department of Regional Planning to standardize and update their lists of plant that should be avoided in park and other municipal landscapes.

Activities, stakeholder roles, and cost estimate for the action are described below.

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| Develop a booklet that describes the most common exotic plants in landscaping and then identifies suitable native alternatives. | J (L),<br>O (P) | Once | $ |
| Coordinate between city and county representatives from the Departments of Recreation and Parks and Regional Planning to standardize and update their plant lists for species that should be avoided, and native plants that should be encouraged throughout the watershed. | J (L ) | Once | $ |
| | | Total Estimated Cost | $$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities within watershed

Type of Action: Public Education and Outreach, Management Planning.

***Update Landscape Plant Lists (Continued)***

Goal(s) Addressed by Action

- Protect, enhance, and restore native habitats and biological resources.
- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefits of Action

Reduction and eradication of exotic, invasive species will improve habitat availability and quality for native species, and in many cases help to conserve water.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Reduce water use | Enhance Habitat | | | Public education and outreach |
| | Regional and/or watershed benefits | | | Public involvement |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Staff reassignment and/or retraining required.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Reallocation of budget.
- Partnerships and/or Sponsorships.
- Grants (California Department of Education Environmental Education).

Time Frame Considerations

- Implement in < 2 years.
- Near and long-term benefits.

### *4.5.4.3 Discourage Sale of Non-Native Invasive Plants at Nurseries*

Issue

Exotic invasive species have been introduced into native habitats through seed and other dispersal mechanisms. Sale of exotic invasive plants at nurseries contributes to the dispersal capabilities of these plants. Giant reed and pampas grass are used for windbreaks and ornamental effects in gardens. Castor bean and tamarisk are sold as ornamental plants. Fig-marigold iceplant is sold as a ground cover.

Action

This action involves outreach to plant nursery owners to voluntarily discontinue the sale of exotic invasive species such as fig-marigold iceplant, giant reed, pampas grass, and tamarisk. A temporary working group of representatives from the departments of parks and recreation will prepare a list of non-native invasive species that should be discouraged from sale within the watershed. A letter will be drafted and sent to nurseries and plant growers within the watershed that requests their support in the discontinuation of the sale of the listed plants and reasons for the request. Eradication of non-native invasive species is desired throughout the watershed; therefore, this action will be coordinated among all jurisdictions of the watershed.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Convene temporary working group to prepare list of non-native invasive species whose sale within the watershed is to be discouraged. | J (L, P) | Once | $ |
| Coordinate among jurisdictions to support discouragement of sale of listed non-native invasive species. | J (P) | Once | $ |
| Coordinate with CNPS to prepare letter on behalf of watershed. | J (L) | Once | $ |
| Draft and send letter to nurseries and businesses that sell landscape materials to the public requesting voluntary discontinuing of sale of listed non-native invasive species. | J (P) | Annual for 5 years | $/jurisdiction |
| Document effectiveness of action by visits to local nurseries and businesses. | J (P) | Annual for 5 years | $/jurisdiction |
| | | Total Estimated Cost | $ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities, County within watershed

Type of Action: Management.

Goal(s) Addressed by Action

- Protect, enhance, and restore natural habitats and biological resources.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

***Discourage Sale of Non-Native Invasive Plants at Nurseries (Continued)***

Benefit(s) of Action

Reduction and/or elimination of exotic, invasive species at local nurseries will reduce the annual introduction of invasive species to the watershed.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | Protect habitat | | | Public education and outreach |
| | Regional and/or watershed benefits | | | |

Cost Considerations

- Temporary staff reassignment required.

Potential Source of Funds

- Reallocation of existing budget.

Time Frame Considerations

- Implement in 2-5 years.
- Long-term benefit.

### *4.5.4.4 Coordinate Control of Non-Native Species and Pets with Existing Public Outreach Efforts*

Issue

Non-native invasive plant species purchased from nurseries and planted in backyards of homes provide a seed source and plant stock that can disperse to and degrade environmental values of natural habitats.

Since buffers are narrow between natural habitats and urban development, pet animals can have a substantial effect on water quality within watershed. Animal wastes from horse stables and riding facilities have the potential to wash to storm drains that may empty into water bodies. Dog and cat wastes from residential neighborhoods also may wash into storm drains that empty into water bodies. Release of non-native "pet" ducks in parks create localized problems including health threats to native species and excessive levels of waste matter. Pet wastes also elevate bacteria and nutrient concentrations, and contribute to impairments of Dominguez Channel and its tributaries, Wilmington Drain, and Machado Lake.

Feral domestic cats and dogs, and exotic pets purchased from pet stores that escape and/or are released into the wild also can impact native wildlife populations. Cats prey on native birds, dogs may prey on a variety of small mammals, and exotic animals also may prey on native wildlife. This is a reported problem at Ken Malloy Harbor Regional Park.

Action

This action involves coordination with existing public outreach and education programs to prepare and distribute outreach materials regarding the negative impacts invasive species and pets can have on the environment. Coordination among jurisdictions would be performed for consistency of message and to avoid duplication of effort.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Coordinate with PIPP to prepare standardized outreach materials on invasive plants, pet wastes, and exotic animals among jurisdictions to ensure consistency of message and to avoid duplication of effort in developing materials. | J (P) | Ongoing | $ |
| Develop or update outreach materials, as appropriate. | J (L, P) | As needed | $ |
| Coordinate with PIPP to distribute outreach materials regarding control of non-native invasive plant species and control of pet animal impacts (dogs, cats, horses, exotic pets). | J (P) | Once | $ |
| | | Total Estimated Cost | $ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed.

Type of Action: Public Outreach.

***Coordinate Control of Non-Native Species and Pets with Existing Public Outreach Efforts (Continued)***

Goal(s) Addressed by Action

- Protect, enhance, and restore natural habitats and biological resources.
- Protect and enhance water quality.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.

Benefit(s) of Action

Control and reduction of non-native species within the watershed would improve the quality of habitat.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | Protect habitat | | | Public education and outreach |
| | Reduce invasive species | | | |

Cost and Funding Considerations

- Integrates with existing program.

Time Frame Considerations

- Implement in < 2 years.
- Near- and long-term benefits

## 4.6 Actions Associated With the Goal to Promote Public Awareness and Involvement in Watershed Management

Organization of Section

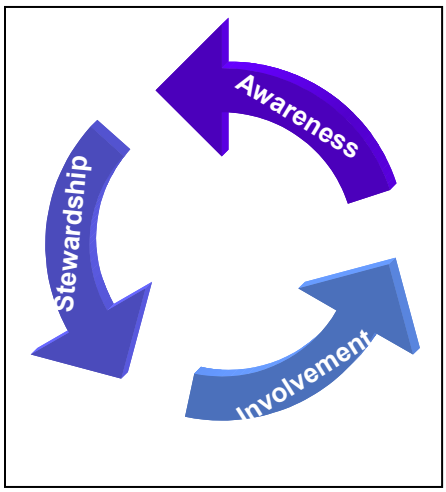
4.6.1 Introduction
4.6.2 Actions to Promote Public Awareness and Stewardship of the Dominguez Watershed Through Education and Outreach
4.6.3 Actions to Encourage Public Involvement in Dominguez Watershed Management
4.6.4 Actions to Document the Effectiveness of the Dominguez WMMP

### 4.6.1 Introduction

Issues and Concerns

Environmental stewardship is the single most important element to the success of watershed management. The only way to achieve substantial pollution reduction is to change the behaviors that have led to the impairments in the first place.

In order to be truly effective, stakeholder involvement must be woven throughout the watershed management process. The first step is to increase public awareness of watershed problems. The awareness in turn cultivates personal stewardship, which can be further encouraged with organized public involvement activities.




Stakeholder outreach, conducted during the development of this WMMP, identified the following objectives as being important to citizens of the Dominguez Watershed:

- Raise public awareness and increase personal stewardship of the Dominguez Watershed.
- Involve and encourage public participation in the management and protection of Dominguez Watershed resources.
- Document the effectiveness of Dominguez WMMP actions.
- Identify problems and issues of importance to local citizens, groups, and users of the Dominguez Watershed.

Existing Program

The foundation for promoting public awareness and involvement in management of the Dominguez Watershed is the County's Public Information and Participation Program (PIPP). This program is implemented with participation by each Permittee of the Municipal Storm Water Permit (NPDES Permit Order No. 01-82, CA5004001) (Municipal Permit). This program requires each city within the watershed to participate in countywide planning, conduct educational activities within its jurisdiction, and participate in countywide events.

**Table 4.6-1. PIPP Program Elements.**

**Residential Program**
- No Dumping message
- 888-CLEAN-LA hotline
- Outreach and Education
- Pollution-Specific Outreach

**Business Program**
- Corporate Outreach
- Business Assistance

The PIPP includes two primary program elements: a Residential Program and a Business Program (Table 4.6-1). The objectives of the PIPP program are listed in Table 4.6-2.

*Residential Program*

The Residential Program includes the following four components:

- Marking the "No Dumping" message on storm drain inlets and on signs posted at access points to water bodies.
- Implementation of the countywide hotline, 1-(888) CLEAN LA, which the public can use to report problems (e.g., clogged catch basins, illegal dumping/discharges, faded or lack of storm water stencils), and to receive storm water management information.
- Conducting Outreach and Education, which includes advertising, media relations, instructional materials, and events. The outreach and education program includes the www.888CleanLA.com web site, which provides numerous brochures and fact sheets; lists of recycling collection centers, hazardous waste collection programs and schedules, used oil collection centers; and provides links to environmental awareness education programs implemented in the County.

**Table 4.6-2. PIPP Objectives.**

- ✓ To measurably increase the awareness of target populations with respect to MS4s, impacts of urban runoff on receiving waters, and possible BMP solutions to water quality problems;
- ✓ To measurably change the waste disposal and runoff pollution generation behavior of target audiences by encouraging implementation of appropriate solutions; and
- ✓ To involve and engage socio-economic groups and ethnic communities in Los Angeles County to participate in mitigating the impacts of storm water pollution.

Pollution-Specific Outreach targets specific pollutants specified in the Municipal Storm Water Permit for the Dominguez Channel: i.e., trash, indicator bacteria, and PAHs. In addition, region-wide pollutants are included in the County's mass media outreach efforts. Each Permittee is required to make outreach materials available to the general public, target audiences (e.g., schools, community groups, contractors and developers), and at appropriate counters (e.g., municipal planning departments) and at events. Outreach materials include information on pollutants, sources of concern, and source abatement. A special outreach is required to residents and businesses related to the proper disposal of cigarette butts.

Information is organized on the 888CleanLA web site according to primary topic areas listed below. For most of these topics, there are brochures and fact sheets to inform and educate the public (Table 4.6-3).

- 3 R's: Reduce, Reuse, Recycle.
- Household Hazardous Waste.
- Industrial Waste.
- Stormwater Pollution Prevention.
- Solid Waste.
- Tire Recycling/Rubberized Asphalt.
- Used Oil.
- Yard Waste Management.
- Youth education.

**Table 4.6-3. Example fact sheets available at www.888CleanLA.com.**

- Residential recycling
- SmartBusiness recycling
- Computer & Electronics recycling
- Your guide to household hazardous waste
- Dangers of improper hazardous waste disposal
- Safe use, storage, and disposal of hazardous waste
- Used oil recycling tips
- Backyard composting
- Worm composting
- Grass recycling
- Water-wise gardening
- Fire-wise gardening
- Storm Drains are not Sewers!

The following types of recycling and disposal information are given on the web site.

- City recycling coordinators list.
- Hazardous waste collection schedule and events.
- Recycling collection center locator.
- RV sewage disposal locations.
- Solid waste facilities open to public.
- Used oil collection centers.
- Waste Tire collection events and facilities accepting tires.

Public and Youth Education include the following programs:

- Model Program for Stormwater Public Education.
- Environmental Defenders (interactive program for elementary schools).
- Generation Earth (interactive program for secondary schools).
- Plan-it Earth (environmental study unit for students grades 6-9).
- California Integrated Waste Management Board (Standards-based K-12 curriculum).
- California Integrated Waste Management Board Environmental Ambassador Pilot Program (promotes sustainable elementary and secondary school programs).
- 4 Our Planet (LACDPW and NBC4-TV environmental awareness program).

The County, in cooperation with the Permittees, provides each School District with materials, including but not limited to, videos, live presentations, and other information necessary to educate a minimum of 50 percent of all school children (K-12) every two years on storm water pollution. The County is required to measure the effectiveness of in-school educational programs by assessing student's knowledge of storm water pollution problems and solutions both before and after implementing the education program. In addition, the County is responsible for assessing changes in the behavior of the general public relative to reducing storm water pollution. Each Permittee is responsible for conducting educational activities within its jurisdiction and participating in countywide events.

In addition to the outreach and education impressions made on the 888CleanLA web site and in the schools, the Municipal Storm Water Permit requires that a minimum of 35 million impressions per year are made about storm water quality via print, local TV, local radio, and/or other appropriate media.

The County and other Permittees meet quarterly to coordinate regional and local outreach and education to reduce duplication of effort, maintain consistency of message, and to strengthen educational efforts. In addition, the County is responsible for including outreach to ethnic communities and businesses through culturally effective methods.

*Business Program*
The Business Program includes two components:

- The "Corporate Outreach" component addresses storm water regulations. This may include distribution and discussion of educational materials regarding storm water pollution and BMPs, and suggestions to facilitate employee compliance with storm water regulations.
- The "Business Assistance" component provides technical resource assistance to small businesses relative to BMP implementation to reduce the discharge of pollutants. This may include on-site technical assistance or consultation via telephone to identify and assist with implementation of SWPPPs and BMPs, and making available and distributing BMP and educational materials.

*Other Sources of Public Outreach and Education Information*
While information available from the http://www.888CleanLA web site serves as the primary source for public information materials for most jurisdictions, other education and outreach information sources are available and variously used by the different jurisdictions of Los Angeles County. Table 4.6-4 lists sources of useful public education resources information.

**Table 4.6-4. Sources of public education and outreach information.**

- http://www.888CleanLA.com
- http://www.Adopt-a-watershed.org
- http://www.adoptawaterway.com/
- http://www.americanoceans.org
- http://cfpub.epa.gov/npdes/stormwater/menuofbmps/
- http://www.generationearth.com
- http://ladpw.org/epd/envdef/index.cfm
- http://www.healthebay.org
- http://www.surfrider.org/huntington-longbeach
- http://www.water-ed.org

Recommended WMMP Actions to Integrate with the PIPP

The comprehensive PIPP covers the public outreach and education requirement under the Municipal Permit for the jurisdictions within the watershed. Recommendations to augment the PIPP are included in this WMMP to focus public awareness on problems and solutions for the Dominguez Watershed, promote public involvement in projects associated with the implementation of the WMMP, and to inform stakeholders of the effectiveness of their actions.

In addition, projects are recommended to increase watershed-based recreational amenities. Lack of open space and the low ratio of park space per residents are important concerns for residents and several city governments within the watershed.

General Plans of jurisdictions within the watershed included the following concerns relative to open space and recreation:

- Lack of useable open space in multiple family residential projects.
- Need for more neighborhood parks, open space, and community centers.

- Need for a trail plan and bikeways.
- Preserve areas of historic, cultural, and scenic significance.
- Promote landscaping along Dominguez Channel.
- Protect and link open space areas.

In a survey of neighborhoods after the 1992 violence in Los Angeles, 77 percent of the residents ranked improved parks and recreational facilities as having higher priority than health care or business development (Yankelovich 1993). Open space, connection to the natural environment, and natural or naturalized aesthetic resources all contribute to mental well being, are valued attributes that increase property value, and often are incorporated into redevelopment design to enhance economic return on investment. This WMMP recommends enhancing and/or creating open space recreational amenities, combined with watershed-friendly design (e.g., water quality control, habitat), as a "natural" opportunity for increasing public awareness and involvement in being part of the solution to watershed problems.

The recommended program and project actions to promote public awareness and involvement in the Dominguez Watershed are listed on Table 4.6-5, and are described in the following three subsections:

4.6.2 Actions to Promote Public Awareness and Stewardship of the Dominguez Watershed Through Education and Outreach.

4.6.3 Actions to Encourage Public Involvement in Dominguez Watershed Management.

4.6.4 Actions to Document the Effectiveness of the Dominguez WMMP.

It is envisioned that several of the recommended programs could be coordinated with the existing PIPP at no additional cost to the jurisdictions. Other programs and all projects will require additional funds for implementation. Additional information on applicable funding sources is presented in Section 4.7.

**Table 4.6-5. List of program and project actions associated with the goal to Promote Public Awareness and Involvement in Watershed Management.**

| Report Section | Actions | Public Awareness and Involvement Benefits | | | Other Benefits | | | | | Time Frame to Implement (Years) | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Promote Public Awareness through Education | Encourage Public Involvement | Document Effectiveness of WMMP | Water Quality | Water Conservation | Habitat | Aesthetics /Recreation | Outside Funding | | |
| 4.6.2.1 | Conduct public awareness campaign for the Dominguez Watershed | √ | | | √ | √ | √ | | | < 2 | $ |
| 4.6.2.2 | Develop curricula materials specific to the Dominguez Watershed and provide them to local schools | √ | | | √ | √ | √ | | √ | 2-5 | $-$$ |
| 4.6.2.3 | Adapt Malibu Creek's *Living Lightly in Our Watersheds* | √ | | | √ | √ | √ | | √ | < 2 | $ |
| 4.6.2.4 | Install informational kiosks at parks | √ | | | √ | √ | √ | | √ | 2-5 | $/area |
| 4.6.3.1 | Involve public in watershed cleanup days | √ | √ | | √ | | √ | √ | | < 2 | $/event |
| 4.6.3.2 | Involve public (including elected officials) in implementation of watershed projects | √ | √ | | √ | | √ | | | < 2 | $/project |
| 4.6.3.3 | Implement and/or Increase Cool Schools and Campus Forestry Program at local schools | √ | √ | | | | √ | √ | | < 2 | $ |
| 4.6.3.4 | Create watershed enhanced recreational/bike trail along Dominguez Channel | √ | √ | | | | | √ | √ | 2-5 | $$$$ |
| 4.6.3.5 | Create Additional Nature Centers | √ | √ | | | | | √ | √ | 2-5 | $$$$ |
| 4.6.4.1 | Implement a citizen-based monitoring program | √ | √ | √ | | | | | √ | 2-5 | $$ |
| 4.6.4.2 | Create centralized monitoring data base | √ | | √ | | | | | √ | 2-5 | $$ |
| 4.6.4.3 | Prepare State of Watershed Report | √ | | √ | | | | | | <2 | $ |
| 4.6.4.4 | Update WMMP | √ | √ | √ | | | | | | 5 | $-$$ |

Note:
$ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

### 4.6.2 Actions to Increase Public Awareness and Stewardship of the Dominguez Watershed Through Education and Outreach

Statement of Problem
Lack of understanding of the connections between behaviors and impairments and/or public indifference are the primary reasons for perpetuation of environmental problems.

Existing Actions
The PIPP includes a variety of methods of outreach and education within Los Angeles County. These methods include the "No Dumping" signage on storm drain catch basins and entrances to waterways, development of brochures explaining the storm water permit requirements and BMPs, outreach and assistance to businesses regarding selection of BMPs and compliance with SUSMP and SWPP requirements, outreach brochures and fact sheets addressing pollution reduction around homes, radio outreach carrying the "no dumping to storm drain" message, participation in local environmental and street fairs, and education and outreach to local schools.

Issue
The PIPP prepares public education and outreach materials that are generically applicable throughout the county. The Dominguez Watershed has some unique characteristics that distinguish it from other watersheds in the county. Results of stakeholder outreach identified the need for targeted education and outreach to increase public awareness and control of constituents of concern for the Dominguez Watershed.

Purpose
Coordination with the PIPP is recommended to develop and/or adapt outreach and education materials to promote public awareness and stewardship of the Dominguez Watershed.

Actions
The following actions, which are described below, are recommended to augment the PIPP:

- Conduct Public Awareness Campaign for the Dominguez Watershed.
- Develop Curricula Materials for Dominguez Watershed.
- Adapt Malibu Creek's "*Living Lightly in Our Watersheds.*"
- Install Informational Kiosks at Parks.

### *4.6.2.1 Conduct Public Awareness Campaign for the Dominguez Watershed*

Issue
Targeted outreach is needed to increase public awareness and stewardship to reduce impairments and issues of concern specific to the Dominguez Watershed.

Action
Several types of outreach materials will be coordinated with the PIPP in support of specific watershed actions, which were included in the description of those actions. Topics of these outreach materials include:

- Benefits and applications of pervious pavement (Action 4.3.2.1).
- Litter control outreach materials and media messages (Action 4.3.3.1).
- Reduction of green waste to storm drains (Action 4.3.4.1)
- Benefits and applications of grassy swales and vegetated areas to treat urban runoff in development and roadway improvement projects (Actions 4.3.4.4, 4.3.4.5).
- Water conservation (Action 4.4.2.1).
- Water-wise landscaping (Action 4.4.2.2).
- Control of non-native species, pets, and pet waste (Action 4.5.4.4).
- Participation in Cool Schools and Campus Forestry programs (Action 4.6.3.3).

It is recommended that the developed education and outreach materials be posted on www.888CleanLA.com, www.ladpw.com/wmd/watershed/dc/, and web sites of all municipalities within the watershed.

This action involves coordination with the PIPP to develop a public awareness campaign of beneficial uses of the Dominguez Watershed, its current impairments, and how individual behavior impacts watershed health and economy. This campaign would target the general public and include a variety of materials including a short fact sheet that could be included with the water bill mailed to each resident and business owner within the watershed. The fact sheet also could be included with a notice sent to residents when new projects will be constructed in their area. In addition, this form of communication could be used to periodically provide updates to the public regarding the effectiveness of measures taken to protect beneficial uses and reduce impairments within the Dominguez Watershed.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Develop short fact sheet on beneficial uses, current impairments, and how individual behavior impacts heath and economy within Dominguez Watershed. Mail with water bill. | J (L) | Annual | $ |
| Develop and distribute beneficial use and individual behavior campaign materials at civic centers, community centers, nature centers, libraries, and environmental fairs. | J (L), J (P), S (P) | Once, then update every five years, as needed | $ |
| Include anti-litter and water conservation messages in radio and other media impressions. | J (L) | Alternate with "No Dumping to Storm Drain" message | $ |

***Conduct Public Awareness Campaign for the Dominguez Watershed (Continued)***

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Post PIPP developed outreach materials on municipal web sites and www.888CleanLA.com. | J (L) | As prepared | $ |
| | | Total Estimated Cost | $ per year |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed

Type of Action: Public education and outreach.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Increasing public awareness of beneficial uses and impairments within the Dominguez Watershed will contribute to increased personal stewardship and involvement in watershed protection.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Reduce trash and debris to storm drains | Reduce degradation | Increase aesthetic values of land | | Public education and outreach |
| Address one of top stakeholder issues | | | | Address one of top stakeholder issues |

Cost Considerations

The action would be conducted in coordination with the existing PIPP, and would not result in extra costs, but rather allocation of a portion of the budget to watershed specific outreach. Distribution of outreach materials developed specifically for the Dominguez Watershed would be incorporated into existing outreach activities undertaken by local jurisdictions to minimize additional costs. Including a fact sheet with the water bill will incur costs to fold and place the sheets in the envelopes, but will not incur costs associated with a separate mass mailing.

- Staff reassignment required.
- Reproduction of outreach materials.

Potential Source of Funds

- Reallocation of budget.

***Conduct Public Awareness Campaign for the Dominguez Watershed (Continued)***

Time Frame Considerations

- Implement in < 2 years.

Monitoring Considerations

The effectiveness of the outreach would be evaluated as part of the existing assessment strategy incorporated into the PIPP.

### *4.6.2.2 Develop Curricula Materials Specific to the Dominguez Watershed and Provide Them to Local Schools*

Issue
Targeted outreach is needed to increase public awareness and stewardship to reduce impairments and issues of concern specific to the Dominguez Watershed.

Action
This action complements the targeted outreach campaign for the general public described above under Section 4.6.2.1. The action involves modifying existing curricula materials for educational outreach specific to the Dominguez Watershed. The materials would be developed under the PIPP in coordination with "Environmental Defenders" for grades K-6, and "Generation Earth" for grades 7-12. The curricula would focus on increasing awareness of the beneficial uses of the Dominguez Watershed, its current impairments, and how individual behavior impacts watershed health. The curricula and would be tailored to reflect the urban industrial character of the Dominguez Watershed.

Several existing educational resources are available that could be reviewed and tailored to include specific information on the Dominguez Watershed. It is envisioned that the curricula would include a combination of classroom education and field trips. Recommended field trips include locations associated with waste treatment (JWPCP), water reuse (West Basin Municipal Water District), recycling, major industry (e.g., oil refinery), and water bodies and natural area within the watershed (e.g., harbors, Dominguez Channel, Ken Malloy Harbor Regional Park, Wilmington Drain, Madrona Marsh, Linden H. Chandler Preserve). Field trips would be encouraged through coordination between the PIPP, municipal and private enterprises, County Flood Control, and school districts. In addition, a protocol would be developed to link the curricula with the citizen-based monitoring program (see Action 4.6.4.1) so that school children could participate in monitoring along with their field trip experience.

**Example resources for educational curricula.**

- http://www.creec.org
- http://www.adopt.a.watershed.org
- http://www.water-ed.org
- http://www.educationplanet.com
- http://www.epa.gov/teacher/curriculum_resources.htm
- http://www.cde.ca.gov/cilbranch/oee/

The California Regional Environmental Education Community (CREEC) has a local education program, CREEC-LA, which is a project of the California Department of Education, with local leadership from the Los Angeles County Department of Education and TreePeople. This program provides resource support with links to most of the resources listed in the above text box, as well as access to a local coordinator who acts as a "conduit of information" to help teachers by linking them with an effective curriculum, speakers, workshops, outings, etc. The CREEC local coordinator for Los Angeles can be reached at http://www.creec.org/region11. CREEC also provides links to funding opportunities, ranging from awards to educational grant programs. The action includes coordination with the local CREEC coordination to broaden resource assistance opportunities in developing curricula materials.

***Develop Curricula Materials Specific to the Dominguez Watershed and Provide Them to Local Schools (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Coordinate between PIPP and educational representatives from local school districts to develop curriculum materials to support a public awareness campaign on beneficial uses, current impairments, and how individual behavior affects environmental health of the Dominguez Watershed (K-6, 7-12). | J (L), S (P) | Quarterly during curricula development, then annual | $ |
| Coordinate with CREEC-LA for resource assistance support in developing curricula materials. | J (L) | As needed | $ |
| Coordinate between the PIPP, municipal and private enterprises, and school districts to encourage field trips that increase watershed awareness. | J (L), S (P) | Annual | $ |
| Develop protocol to link field trip experience with the citizen-based Dominguez Watershed monitoring program. | J (L), S (P) | Once, then update every three years, as necessary | $ |
| Apply for educational grants to assist with funding. | J (P), S (P) | Annual | $ |
| | | Total Estimated Cost | $-$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed in coordination with local schools

Type of Action: Public education and outreach.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Increasing school age children's awareness of beneficial uses and impairments within the Dominguez Watershed will contribute to increased awareness and stewardship by their families, and the instillation of behaviors in children that will contribute to their development of personal stewardship of the environment.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Reduce degradation | Reduce degradation | Increase aesthetic values of land | | Public education and outreach |
| Address one of top stakeholder issues | | | | Address one of top stakeholder issues |

***Develop Curricula Materials Specific to the Dominguez Watershed and Provide Them to Local Schools (Continued)***

Cost Considerations
The following factors have the potential to affect the cost of the project:

- Staff reassignment and/or retraining required.

Potential Source(s) of Funds
Several sources of funds may exist, including:

- Reallocation of budget.
- Grants (California Department of Education Environmental Education, Community Partnering Program, USEPA Environmental Education Program, William C. Bannerman Foundation).

Time Frame Considerations

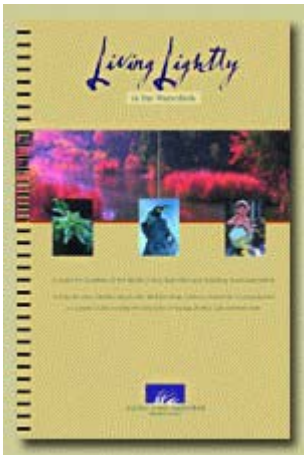
- Implement in 2 - 5 years.

Potential Project Location(s)

- Centinela Valley Union High School District.
- Compton Unified School District.
- Hawthorne School District.
- Inglewood Unified School District.
- Los Angeles Unified School District.
- Palos Verdes Peninsula Unified School District.
- Torrance Unified School District.

Monitoring Considerations
The effectiveness of the outreach would be evaluated as part of the existing assessment strategy incorporated into the PIPP.

### *4.6.2.3 Adapt Malibu Creek's "Living Lightly in Our Watersheds"*




Issue
Public education and outreach materials typically include fact sheets or small brochures on various topics. Once read, these materials often are thrown away or filed where they have limited use as a frequently used reference source.

Action
The Malibu Creek Watershed Advisory Council prepared an attractive, space saving, and useful booklet ("Living Lightly in Our Watersheds"), which includes a brief overview of that watershed and useful information compiled in one place on topics, such as: control of urban runoff; water conservation; things that can be done around the house to reduce energy and water use; proper use, disposal and storage of hazardous materials; environmentally sensitive landscaping; and links to community resources. This action involves coordinating with that watershed council to obtain permission to adopt and adapt information from the "Living Lightly in Our Watersheds" to facilitate preparation of a similar guide for the Dominguez Watershed. The adaption would include preparing an introduction on the Dominguez Watershed, obtaining and selecting photographs to enhance the guide, tailoring text from Malibu's guide for the Dominguez Watershed, and expanding text where needed to address specific concerns for Dominguez Watershed. Preparation of the guide would be led by the PIPP, but similar to Malibu's experience, corporate, municipal, and other partnerships would be sought to help defray the cost to produce, print, and make the guide available.

Activities, stakeholder roles, and cost estimate for the action are described below.

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| Coordinate with the Malibu Creek Watershed Advisory Council to obtain permission to adopt and adapt information from their "Living Lightly in Our Watersheds" guide. | J (L) | Once | $ |
| Prepare introduction on the Dominguez Watershed, obtain and select photographs to enhance the guide, tailor text from Malibu's guide as appropriate for the Dominguez Watershed, expand text where needed to address specific concerns for Dominguez Watershed. | J (L), C (P), V (P) | Once | $ |
| Coordinate among cities, environmental organizations, and industry to obtain partners to assist with funding the action. | J (L), J (P) V (P), DWAC (P) | Once | $ |
| | | Total Estimated Cost | $-$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed

Type of Action: Public education and outreach.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.

***Adapt Malibu Creek's "Living Lightly in Our Watersheds" (Continued)***

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

A Dominguez "Living Lightly in our Watersheds" guide would provide, in one place, a reference of useful information on watershed awareness, actions to increase environmental stewardship, and contact information to obtain additional information, report problems, and/or to properly dispose and/or recycle unwanted materials.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Reduce degradation | Reduce degradation | Regional and/or watershed benefits | | Public education and outreach |
| Source control | Protect habitat | | | Partnership opportunities (public and/or private) |
| Reduce water use | Reduce disturbance | | | |

Cost Considerations

The following factors have the potential to affect the cost of the project:

- Staff reassignment required.
- New staff (or contractors) required.
- One time implementation cost.

Potential Source of Funds

Several sources of funds may exist, including:

- Reallocation of budget.
- Partnerships and/or Sponsorships.
- Grants (California Department of Education Environmental Education, Community Partnering Program, USEPA Environmental Education Program, William C. Bannerman Foundation).

Time Frame Considerations

- Implement in < 2 years.

### 4.6.2.4 Install Informational Kiosks at Parks and Recreational Areas

Issue
Local parks and recreational areas provide opportunity for public education regarding watershed issues, including urban runoff, water quality, and biologically sensitive resource areas.

Action
This action involves construction of kiosks, development of watershed educational materials, and installation of kiosks at public use areas. It is recommended that the signage include educational information on beneficial uses, including biological resources, as well as watershed-based messages (similar to information provided in public outreach materials). Development of concepts for watershed signage and/or outreach materials could be coordinated with the public as an outreach activity (e.g., design contest with the business community, and/or inclusion of public awareness messages generated by local schools). Public education kiosks may range from single-panel design with a public education messages to a more elaborate three-panel design at key focal public use areas.

Activities, stakeholder roles, and cost estimate for the action are described below.

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| Finalize locations for kiosks. | J (L) | Once | $ |
| Develop design(s) for kiosks. | J (L)<br>B (P) | Once | $ |
| Coordinate with PIPP and local schools to provide outreach messages, drawings, and/or other materials to include in kiosks. | J (L), S (P) | Annual | $ |
| Construct and install kiosks. | J (P)<br>B (L) | Once | $/unit |
| Develop and maintain information materials at kiosks. | J (L), S (P) | Quarterly | $ |
| | | Total Estimated Cost | $/area |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = City or county within which park occurs will take the lead on the design of kiosks in their jurisdiction

Type of Action: Public education and outreach.

Benefit(s) of Action
Public education signage will increase public awareness and stewardship of the watershed.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Reduce degradation | Protect habitat | | Increase recreational values of land | Public education and outreach |
| Source control | | | | Partnership opportunities (public and/or private |

***Install Informational Kiosks at Parks and Recreational Areas (Continued)***

Cost Considerations

- Design plans required.
- Staff reassignment and/or retraining required.
- Equipment purchase required.

Potential Source(s) of Funds

- Reallocation of budget.
- Partnerships and/or Sponsorships.
- Fundraiser.

Time Frame Considerations

- Implement in 2-5 years.

Potential Project Location(s)

Note: Kiosks placed in association with the citizen-based monitoring program (Action 4.6.4.1) would not be duplicated by this action.

Potential locations for kiosks include:

- Alondra Park
- Bannings Landing
- Cabrillo Beach.
- Columbia Regional Park.
- Del Amo Park.
- Dominguez Channel (once recreational trail completed Action 4.6.2.4).
- Friendship County Park.
- Gardena Willows.
- Jesse Owens County Park.
- Ken Malloy Harbor Regional Park.
- JWPCP Wetland.
- Linden H. Chandler Preserve.
- Peck Park.
- Promenade in Wilmington and San Pedro.
- Rowley Park.
- Wilmington Drain (once recreational trail completed Action 4.5.3.1).

### 4.6.3 Actions to Encourage Public Involvement in Dominguez Watershed Management

Statement of Problem
Public involvement opportunities to promote environmental stewardship are limited within the Dominguez Watershed.

Existing Actions
Public involvement activities currently implemented include clean up days at Ken Malloy Harbor Regional Park and Wilmington Drain, participation in Earth Day and other environmental awareness events, and organized collections of household hazardous materials, electronics, and other recyclables.

Issue
Public involvement provides a very effective way to increase awareness and environmental stewardship of watersheds. This WMMP encourages continued organization and/or participation of the County and municipalities in clean up days, environmental awareness events, and making collection of recyclable materials and wastes as easy as possible.

Several additional opportunities for promoting public awareness and involvement are recommended. Implementation of watershed projects provides educational opportunities and experience for volunteers, including community organizations, neighborhood residents, and students. Campus tree planting educational programs available to Los Angeles schools are encouraged because of their positive benefits to environmental stewardship and potential to "green" the watershed. Outreach for school participation in these programs is limited, and many schools do not participate because of lack of information. Other projects are recommended to combine education with recreation to provide opportunities for stewardship while addressing deficiencies in open space and recreation.

Purpose
Actions are recommended to increase environmental awareness and stewardship through public involvement in watershed cleanup, projects, and recreational activities.

Actions
The following actions, which are described in the subsections below, are recommended:

- Involve Public in Watershed Clean Up Days.
- Involve Public (Including Elected Officials) in Implementation of Watershed Projects.
- Implement and/or Increase Cool Schools and Campus Forestry Program at local schools
- Create Watershed Enhanced Recreational/Bike Trail Along Dominguez Channel.
- Create Additional Nature Centers.

Another potential action that combined stewardship and recreation would be to convert abandoned railroad track areas to recreational trails. Federal Transportation Enhancement Activities (TEA) funds are available for rails-to-trails projects, and information on developing these types of projects is provided by the Rails-to-Trails Conservancy (www.railtrails.org).

### *4.6.3.1 Involve Public in Watershed Cleanup Events*

Issue

Volunteer clean-up events are organized at several locations within the watershed one or more times a year. The events have been organized by the City of Los Angeles Department of Recreation and Parks (e.g., Ken Malloy Harbor Regional Park), LACDPW (e.g., Wilmington Drain), and local neighborhood councils (e.g., Coastal San Pedro Neighborhood Council). The organizer typically coordinates supplies (e.g., gloves, bags), water and/or snacks, announces the event, and arranges for the collected material to be hauled away. These events, which are staffed by volunteers from the community, increase public awareness of watershed problems and provide opportunity for involvement and community service.

Action

This action involves recognizing the importance of community-based watershed clean-up events as an important form of public involvement in watershed management, and as such is consistent with the intent of the PIPP. Municipal and County support of these events will continue to include provision of supplies (e.g., gloves, bags), portable restrooms (if necessary), dumpsters, and haul away service for the event. For County and municipal led events, arrangements will be made with local business sponsors to provide water and/or snacks. Temporary signs will be made and, on the day of the event, they will be installed at strategic locations along local streets. Volunteers will be signed in, and volunteers desiring community service recognition will also be signed out so there is an accounting of their time spent in community service. An acknowledgment letter regarding community service time will be sent to individuals who make that request at the event. The general types and overall weight of materials collected will be recorded for each event. The County will conduct outreach among jurisdictions to submit recorded information on debris type and weight so that this information can be included, by location and event, in the Annual Report prepared in compliance with the Municipal Permit. It is recommended that events organized by the County and/or municipalities occur at least twice per year; once before the rainy season and once after the rainy season. Additional clean-up events may be organized for perennial trash collecting areas depending upon need and public interest.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Arrange County and/or municipal staff time to coordinate and/or participate in event. | J (L) | Twice per year per location | $ |
| Prepare announcement and post at libraries and community centers regarding clean-up event. Publish notices in local newspapers and over local radio or television. | J (L), V (P) | Twice per year per location | $ |
| Arrange for dumpsters, restrooms, security waivers, and haul away service. | J (L) | Twice per year per location | $ |
| Purchase supplies (e.g., gloves, hand cleaner, trash bags). | J (L) | Twice per year per location | $ |
| Obtain sponsorship supplies (e.g., water, snacks, trash cans). | J (L)<br>B (P) | Twice per year per location | $ |

***Involve Public in Watershed Cleanup Events (Continued)***

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| Contact local schools and invite students to participate | J (L), S (P) | Twice per year per location | $ |
| Create and install temporary signs announcing the event at strategic locations along local streets. | J (L) | Twice per year per location | $ |
| Sign in volunteers; their community service time, if desired; and follow up with community service acknowledgement, as appropriate. | J (L), V (P) | Twice per year per location | $ |
| Record type of material and collected weight. | J (L), V (P) | Twice per year per location | $ |
| Remove temporary signs after event, and store until next event. | J (L), V (P) | Twice per year per location | $ |
| Compile records of number of volunteers, type of collected material, and weight for each event and summarize in Annual Storm Water Report. | J (L), V (P) | Twice per year per location | $ |
| | | Total Estimated Cost | $ per event |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = County, cities, and Recreation and Parks Departments

Type of Action: Public education and outreach.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.
- Protect and enhance water quality.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Organized clean-up events increases public awareness, involvement, and personal environmental stewardship.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Reduce degradation | Reduce degradation | Increase aesthetic values of land | | Public involvement |
| | Local benefits | | | Partnership opportunities (public and/or private |

Cost Considerations

- Staff reassignment required.

***Support Watershed Cleanup Events (Continued)***

Potential Source(s) of Funds

- Reallocation of budget.
- Partnerships and/or Sponsorships.

Time Frame Considerations

- Implement in < 2 years.

Potential Project Location(s)

- Cabrillo Beach.
- Ken Malloy Harbor Regional Park.
- Wilmington Drain.

Monitoring Recommendations

Compile records of number of volunteers, general type of collected material, and collected weight of trash and debris for each event and summarize in Annual Storm Water Report.

### *4.6.3.2 Involve Public (Including Elected Officials) in Implementation of Watershed Projects*

Issue
Environmental stewardship is critical to meeting the objectives of the Municipal Permit and successful implementation of the WMMP.

Action
This action involves outreach to solicit public participation in the implementation of watershed management projects.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Prepare announcement and post at libraries and community centers regarding planned watershed project. | J (L), V (P), O (L) | Based on number of projects | $ |
| Prepare press release, invite media to cover event. | J (L) | Based on number of projects | $ |
| Conduct outreach to local schools. | J (L), S (P), V (P) | Based on number of projects | $ |
| Obtain business sponsorships to provide snacks, beverages. | J (L), O (L)<br>B (P) | Based on number of projects | $ |
| Organize and train volunteers at job site or prior to event. | J (L), C (P), O (L)<br>S (P), V (P) | Based on number of projects | $ |
| | | Total Estimated Cost | $ per project |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed
Other = Community group, non-profit organization, DWAC

Type of Action: Public education and outreach.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action
Public involvement in implementation of watershed projects provides opportunities for watershed education and an increased awareness and stewardship of the watershed. Public involvement also enhances opportunities for partnerships to implement projects.

***Involve Public (Including Elected Officials) in Implementation of Watershed Projects (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | | | | Public involvement |
| | | | | Public education and outreach |
| | | | | Partnership opportunities (public and/or private |

Cost Considerations

The following factors have the potential to affect the cost of the project:

- Staff reassignment and/or retraining required.
- Contractor assistance may be required to train volunteers at the project site.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Reallocation of budget.
- Partnerships and/or Sponsorships.

Time Frame Considerations

- Implement in < 2 years.
- Near- and long-term benefits.

Potential Project Location(s)

- Any location where watershed projects are implemented where public safety considerations do not preclude public participation.

### *4.6.3.3 Implement and/or Increase Cool Schools and Campus Forestry Program at local schools*

Issue

Many public schools in the Dominguez Channel watershed are constructed using extensive hardscape (e.g., asphalt paved playgrounds, concrete paved open areas, asphalt paved parking areas). The hardscape contributes runoff to storm drains and also contributes to higher temperatures associated with lack of shade. By planting trees, the Cool Schools Program has been able to reduce temperatures inside classrooms, provide shade and increase aesthetics values of school grounds, and provide a positive community involvement activity at the schools through parent-student involvement in tree planting.

Action

This action would be initiated by conducting outreach to schools to inform them of the opportunity, benefits, and elements of the Cool Schools and Campus Forestry programs. In addition, information on how to apply to either the Cool Schools or Campus Forestry programs will be provided. The Cool Schools program is implemented by a partnership consisting of the Los Angeles Department of Water and Power (LADWP) and tree planting organizations, including the Los Angeles Conservation Corps, Hollywood Beautification Team, North East Trees, and TreePeople. Eligible schools must be located in the service area of the LADWP. Currently the Cool Schools program is unfunded, but is expected to be reinitiated sometime in 2004. The Campus Forestry program, which involves tree planting as well as a more expanded educational experience for students, is conducted by TreePeople and represents an alternative program for schools within or outside the LADWP service area (http://www.treepeople.org).

Schools accepted for the Cool Schools program will be visited by a representative from one of the non-profit tree planting organizations that implement the program. A meeting and walk of the campus will occur with the school principle or other school representative. The design of the tree planting scheme and planting recommendations will be coordinated between the tree planting expert, teachers, and classrooms (often each classroom selects the species of tree it would like to plant). A map of the planting scheme will be prepared and submitted for approval to the school principle and LADWP. Typically, two tree planting days will be scheduled, one that is school wide and involves each classroom, and the other that is held on a weekend to involve students with their parents and other interested members of the community. The tree expert works with the school throughout a period of 6 months to 1 year to educate students on monitoring tree health and proper tree care methods. A similar set of activities are implemented by TreePeople with the Campus Forestry program. Participation in either program generally requires a matching contribution by the school, generally $10,000, which can be largely fulfilled by volunteer labor (at $10/hour) and equipment and materials. The non-profit organization usually works with the school to identify outside funding sources, if needed. Alternatively, a school may wish to implement a small-scale fund raising event as part of the educational experience.

Activities, stakeholder roles, and cost estimate. for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Coordinate with PIPP to obtain literature from the Cool Schools and Campus Forestry programs and prepare an outreach mailer describing these programs for Los Angeles Schools, including a description of each program, how they are administered, the benefits, and how to apply for the programs. Mail to each school district. | J (L) | Once, then reinsurance of the letter each year the programs are operated | $ |

***Implement and/or Increase Cool Schools and Campus Forestry Program at local schools (Continued)***

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Apply for Cool Schools or Campus Forestry program. | S (L) | Once | $ |
| Coordinate with teachers and parent associations (PTA or PTSA) regarding implementation of the tree planting and educational program. Develop strategy for obtaining required match funds (typically $10,000) through volunteer labor (typically $10/hour), materials and equipment, and/or fund raising. Coordinate with the tree planting organization regarding other funding opportunities. | S (L) | Once | $ |
| Implement Cool Schools or Campus Forestry program. | S (L), O (P), V (P) | Once per school | $ |
| Assess success of action by coordinating with LADWP and TreePeople to obtain a list of schools within the watershed where the Cool Schools and Campus Forestry programs are implemented each year. Provide map showing boundaries of watershed to these organizations. Include information on participating schools in the State of the Watershed Report (Action 4.6.4.3). | O (L) | Annual | $ |
| | | Total Estimated Cost | $ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other, S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed
Other = Non-profit tree planting organization; DWAC for the assessment activity.

Type of Action: Public education and outreach.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Planting trees provides shade to "cool" the school, reduces children's exposure to direct sunlight, improves aesthetics, contributes to better air quality, teaches children their connection with the environment through a hands-on learning experience, and fosters pride in school and community.

The project would result in the following potential benefits:

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| | Enhance habitat | Increase aesthetic values of land | | Public education and outreach |
| | Improve air quality | | | Public involvement |
| | | | | Reduce energy use |
| | | | | Regional and/or watershed benefits |

***Implement and/or Increase Cool Schools and Campus Forestry Program at local schools (Continued)***

Cost Considerations

Costs for participating in the Cool Schools or Campus Forestry programs are nominal and can be largely covered by crediting the matching fund requirement with volunteer hours applied during the tree planting and/or subsequent tree maintenance. The following factors have the potential to affect the cost of the project:

- Staff reassignment and/or retraining required.
- One time implementation cost and/or limited maintenance required.

Potential Source(s) of Funds

- Volunteer hours.
- Fund raising event.
- Los Angeles Neighborhood Cleansweep Grant.

Time Frame Considerations

- Implement in < 2 years.
- Short- and long-term benefits.

Monitoring Recommendations

Tree health will be monitored by students. Each classroom will adopt a tree and it will be their responsibility to monitor the health of the tree and to coordinate its maintenance needs. The success of this action will be determined by coordinating with LADWP and TreePeople to obtain a list of schools within the watershed where the Cool Schools and Campus Forestry programs are implemented each year, and including that information in the State of the Watershed Report.

Potential Project Location(s)

- Centinela Valley Union High School District.
- Compton Unified School District.
- Hawthorne School District.
- Inglewood Unified School District.
- Los Angeles Unified School District.
- Palos Verdes Peninsula Unified School District.
- Torrance Unified School District.

### *4.6.3.4 Create Watershed Enhanced Recreational/Bike Trail Along Dominguez Channel*

Issue

A primary issue identified during public outreach was a desire for more open space and access to it for recreation. Limited recreation use and access along Dominguez Channel was identified as an issue, and providing a greenway to the ocean was recommended by stakeholders as a project idea. Bike trails are extremely limited in the Dominguez Watershed, and only a small stretch of Dominguez Channel (between Redondo Beach and Manhattan Beach Boulevards) is designated as a bike trail (refer to Figure 2.2-4). Flood control maintenance roads occur along both sides of Dominguez Channel and, in some areas, pedestrian access is allowed. A new trail is planned to be constructed between Vermont Avenue and Main Street in 2004.

Action

This action involves improvements to the flood control maintenance roads to permit greater use as pedestrian/bicycle trails. Design plans would be developed that details all improvements. These designs would be reviewed by LACDPW to ensure no interference with flood control maintenance activities, and by the planning departments of relevant jurisdictions to ensure public safety issues are adequately addressed. Access improvements would include replacing gates with partial gates or locked access poles that permit entry for bicycles and pedestrians, but restrict vehicles unable to unlock the poles or gates. For the most part, the existing maintenance roads bisect existing streets. Therefore, provision would be made to permit safe crossing of those streets by pedestrians and bicyclists. This may include a short detour to a nearby signal crossing, installation of a new signal crossings, or construction of an underpass bike path along the channel bank underneath the bridge. Another public safety and aesthetic improvement would be the installation of adequate fencing between the maintenance road and areas of the channel. Such fencing already occurs along much of the channel, but would need to be added to areas where there is a steep drop between the maintenance road and channel. Fencing also would need to be added to block access to oil refinery pipelines that cross the channel in the lower watershed. Fencing may not be required in the lower watershed where the channel has a trapezoidal profile with sloped riprap banks.

Watershed-themed aesthetic and educational treatments would be added to the trail to increase public appreciation and use of the trail, and awareness of watershed problems and solutions. Native plants would be used to landscape portions of the trail where sufficient easements occur. Drought tolerant trees and shrubs that produce minimal leaf litter would be selected. Temporary irrigation or a water truck would be used to water plants to promote their establishment, which may require a permit from the Regional Water Quality Control Board. Educational signage would be installed at several locations along the trail. Pet waste stations and trash containers would be installed at locations adjacent to street crossings. Additionally, environmental themed murals could be printed on the channel side walls. Trail maintenance would be coordinated with existing channel maintenance activities or an Adopt-a-Trail program could be incorporated to encourage citizen participation in keeping the trail clean.

***Create Watershed Enhanced Recreational/Bike Trail Along Dominguez Channel (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Develop concept plan for improvements to flood control maintenance road to serve dual purpose of recreation along Dominguez Channel. | J (L)<br>C (P), A (R) | Once | $ |
| Obtain necessary reviews and approvals from County flood control and local jurisdictions. | J (L) | Once | $ |
| Obtain necessary environmental clearances for installation of signal crossings, if needed. | J (L) | Once | $ |
| Conduct fund raising events (e.g., bike-a-thons). Establish Adopt-A-Trail program. | J (L)<br>J (P), V (P) | As needed | $ |
| Obtain bond funding. | J (L) | Once | $ |
| Retrofit or replace access gates. | J (L)<br>C (C) | As needed | $$ |
| Add protective fencing, where needed. | J (L)<br>C (P) | As needed | $$ |
| Construct street crossing pathways and/or install signal crossings, where necessary. | J (L)<br>C (P) | Once | $$-$$$ |
| Organize volunteers and solicit businesses to assist with materials and snacks during landscaping. | J (L)<br>V (P) | Once | $ |
| Landscape easements with drought tolerant native plants. | J (L)<br>C (P), V (P) | Once | $$ |
| Install temporary irrigation or water from trucks to establish plants, and remove after two years. | J (L) | Annual for 2 years | $/yr |
| Develop and install watershed education signage. | J (L) | Once per location | $ |
| Install trash receptacles and pet waste stations at trail heads. | J (L) | Once | $ |
| Invite media to trail opening event. | J (L) | Once | None |
| Maintain and monitor plant establishment. | J (L)<br>C (P) | Annual for 5 years | $/yr |
| Maintain trail. | J (L)<br>P (P) | As needed | $/yr |
| Collect trash and maintain pet waste stations. | J (L) | Weekly | $/yr |
| | | Total Estimated Cost | $$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = Cities of Carson, Gardena, Hawthorne, Inglewood, Los Angeles, and Torrance, and County of Los Angeles to take lead where trail crosses their jurisdiction
Agencies = LACDPW

Type of Action: Land use, public education and outreach.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.

***Create Watershed Enhanced Recreational/Bike Trail Along Dominguez Channel (Continued)***

Benefit(s) of Action

The primary benefit of the action would be to substantially address the regional need for more open space in a way that promotes stewardship for the watershed. A recreational trail along Dominguez Channel would provide direct connection between the recreational user and a major impaired water body. Ample opportunity exists in this setting for watershed-based educational signage and outreach. Turning the nearly "invisible" (because of lack of access) Dominguez Channel into an integral component of recreation within the watershed should stimulate public interest in protection and care for this water body.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | | Increase aesthetic values of land | Increase recreational values of land | Public education and outreach |
| | | Contributes to General Plan goal(s) for open space | Addresses one of top stakeholder issues | Regional and/or watershed benefits |

Cost Considerations

- Design plans required.
- New staff (or contractors) required.
- One time implementation cost and/or limited maintenance required.
- Integrate maintenance with existing program.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Fund raising events (e.g., bike-a-thons).
- Establish an "Adopt-a-Trail" program that would allow businesses and individuals to donate funds to help fund improvements along different reaches of the trail. Signs listing sponsors could be incorporated with watershed signage along the trail.
- Federal Transit Administration funds for public art.
- Proposition A, Proposition C.

Time Frame Considerations

Conversion of the maintenance road to include recreational use may need to extend over a several year period due to funding constraints. Allowing for a phased approach to conversion would permit both near and long-term benefits.

- Implement in 2- 5 years
- Near and long term benefits

Potential Project Location(s)

While this action is written specifically for the Dominguez Channel, opportunities for other recreational trails should be examined for tributary channels that empty into the Dominguez Channel (e.g., 132$^{nd}$, 135$^{th}$, Del Amo, Torrance Lateral). A recreational trail is included in the Action to Enhance the Wilmington Drain (see Subsection 4.5.2.1).

### *4.6.3.5 Create Additional Nature Centers*

Issue

Nature centers occur in the watershed at Madrona Marsh, Cabrillo Beach, and George F. Canyon. The nature centers provide educational outreach and/or public involvement opportunities regarding environmental issues and biological resources. The Madrona Marsh Nature Center focuses on restoration of wetland, vernal pool, and native upland habitats within an urban setting. The Cabrillo aquarium informs students and general public about marine resources within the harbors, Cabrillo salt marsh, and adjacent ocean environment. The George F. Canyon Nature Center focuses on flora and fauna of canyon habitats. Stakeholder outreach conducted during the preparation of this WMMP identified a community desire for additional nature centers, both as an educational tool and as a recreational amenity.

Action

This action involves design and construction of additional nature centers in the Dominguez Watershed. It is recommended that the design incorporate sustainable or "green" building guidance to reduce energy and water use. Including a cistern into the design of the nature center could provide an alternative source of water for irrigation. Information on green building resources is available at http://www.lacitysan.org/lasp, http://www.buildinggreen.com; http://www.crbt.org, and/or http://www.epa.gov/optintr/epp. Another information source is the Debs Park Audubon Center, which is a self-sufficient green building at Debs Park in the City of Los Angeles. Public outreach identified locations for new nature centers at Gardena Willows in the City of Gardena, and the Ken Malloy Harbor Regional Park (KMHRP) in the City of Los Angeles. The Gardena Willows location would accommodate a small center within the approximate 5.2-hectare (13-acre) naturalized area. KMHRP encompasses 93 hectares (231 acres), which includes Machado Lake, picnic, and other recreational amenities. Another location recommended for consideration includes the California State University, Dominguez Hills (CSUDH). It is recommended that new nature centers develop displays and educational programs that complement rather than duplicate those of existing nature centers to avoid redundancy. Environmental clearance documents will be prepared, and permits will be required prior to construction. The media will be invited to a ground breaking ceremony to cover the event. Staff would be hired to work at the center(s), and volunteer docents would be used to enhance the public experience of the area within which the center is located.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Develop concept plan and obtain municipal approvals. | J (L) | Once | $$ |
| Prepare and submit grant applications, seek corporate business sponsorships. | J (L) | Once | $ |
| Draw final design, prepare plans and specifications. | J (L), C (P) | Once | $$ |
| Prepare CEQA document and obtain environmental clearance. | J (L), C (P) | Once | $$ |
| Prepare applications and obtain permits. | J (L), C (P) | Once | $ |
| Invite media and elected officials to ground breaking. | J (L) | Once | $ |
| Construct using sustainable design and materials. | J (L), C (P) | Once | $$$$ |
| Staff facility, develop and install displays, and prepare outreach curriculum and materials that complement existing nature centers. | J (L), C (P) | Once, and update as needed | $$$ |
| | | Total Estimated Cost | $$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = City of Los Angeles, City of Gardena, City of Carson, CSUDH

***Create Additional Nature Centers (Continued)***

Type of Action: Public education and outreach.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.
- Implement stewardship of the watershed in balance with economic and environmental impacts.

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Nature centers provide educational, public involvement, and recreational amenities to a community. Increased public awareness of watershed issues and potential solutions will, in turn, promote personal environmental stewardship.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | | | Increase recreational values of land | Public education and outreach |
| | | | Regional and/or watershed benefits | Public involvement |
| | | | | Partnership opportunities (public and/or private |

Cost Considerations

The following factors have the potential to affect the cost of the project:

- New staff (or contractors) required.
- One time implementation cost and/or limited maintenance required.
- Design plans required.
- Permits required.

Potential Source(s) of Funds

- Reallocation of budget.
- Grants (California Department of Education Environmental Education Grants).
- Fund raising events.
- Donations and sponsorships.

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

Potential Project Location(s)

- California State University, Dominguez Hills.
- Gardena Willows.
- Ken Malloy Harbor Regional Park.

### 4.6.4 Actions to Document the Effectiveness of the Dominguez WMMP

Statement of Problem

Several actions are recommended to augment activities conducted in compliance with the Municipal Storm Water Permit. It is important to assess whether the effort associated with these actions produce effective results so the informed decisions can be made relative to environmental benefits and economic impacts.

Existing Actions

As part of their implementation of the Municipal Permit, the County and municipalities prepare an annual assessment of all monitoring, inspections, surveys, and public outreach activities.

Issue

Additional monitoring information will be collected as part of the assessment of implemented WMMP recommended projects. In addition, citizen-based monitoring is recommended as an action in this WMMP to provide another useful set of information to augment existing monitoring programs.

Purpose

Actions are recommended to facilitate access to information regarding the environmental health of the Dominguez Watershed, and to document the effectiveness of the WMMP.

Actions

The following actions, which are described below, are recommended to augment the PIPP:

- Implement a Citizen-Based Monitoring Program.
- Create centralized monitoring data base.
- Prepare State of Watershed Report.
- Update WMMP.

### *4.6.4.1 Develop and Implement a Citizen-Based Watershed Monitoring Program*

Issue

Currently, water quality monitoring is conducted by the County, Ports, dischargers, LARWQCB, and/or contract consultants. Biological resources are periodically monitored within the harbors and at sensitive resource areas. Section 4.8 of this WMMP describes a monitoring program for the Dominguez Watershed to augment existing programs and to make the results of monitoring more widely accessible. A component of the recommended program includes citizen-based monitoring. Involving the public in monitoring of watershed characteristics and health provides an effective method to increase public awareness, education, involvement, and environmental stewardship.

Action

This action involves establishing observational stations along water bodies and natural areas of the watershed. The stations will include information kiosks with instructions on type of information desired, how the information will be used, and will provide data forms for recording information. A covered lock box will be provided to collect filled out forms. Two to three small, diameter raised tables and benches will be installed to provide writing surface and/or sitting area to facilitate recording information. A waste receptacle with plastic liner will be added to collect trash that may be generated from use of the area. Spotting scopes may be added at some locations to encourage and facilitate observations. The observation stations will be maintained on a weekly basis to resupply data forms and to collect and replace the liner in the waste receptacle. A strategy will be developed and implemented to obtain funding through corporate sponsorships and educational grant applications. Some reallocation of budget will be required to input and maintain collected information in a centralized database.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Develop funding strategy consisting of a combination of corporate sponsorships and educational grant applications, and obtain funding. | J (L) | Annual | $ |
| Develop instructional materials and data forms. | J (L), C (P), A (R) | Once | $ |
| Select locations for observation stations. | J (L) | Once | $ |
| Build and install information kiosks. | J (L), C (P) | Once, and as needed | $/unit |
| Install waste receptacles. | J (L) | Once | $/unit |
| Install bench and raised tables. | J (L), C (P) | Once | $/unit |
| Maintain observation station (collect and resupply data forms, collect trash). | J (L) | Weekly | $/year |
| Incorporate data into centralized data base. | J (L), C (P) | Weekly | $/year |
| | | Total Estimated Cost | $$ per year |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions =All cities and county within watershed
Agencies =LARWQCB

Type of Action: Public education and outreach. Monitoring and/or assessment.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.

***Develop and Implement a Citizen-Based Watershed Monitoring Program (Continued)***

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.

Benefit(s) of Action

Monitoring data collected by volunteers provides valuable supplemental data to ongoing municipal and agency monitoring programs and can be used to assist with watershed assessment. Citizen-based monitoring will contribute to public awareness and environmental stewardship.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Fill or bridge an existing information gap | Fill or bridge an existing information gap | | | Public education and outreach |
| | | | | Public involvement |

Cost Considerations

The following factors have the potential to affect the cost of the project:

- Staff reassignment and/or retraining required.
- Construction and maintenance (annual or more frequent) required.
- Equipment purchase required.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Reallocation of budget.
- Grants (319 (h), California Department of Education Environmental Education, Five-Star Restoration Challenge Program, USEPA Environmental Education Program, USEPA Environmental Monitoring for Public Access and Community Tracking, USEPA Wetland Program Development, Whail Tail).
- Partnerships and/or Sponsorships.

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

***Develop and Implement a Citizen-Based Watershed Monitoring Program (Continued)***

Potential Project Location(s)

- Bannings Landing.
- Cabrillo Beach.
- Dominguez Channel.
- Gardena Willows.
- Ken Malloy Harbor Regional Park.
- Linden H. Chandler Preserve.
- Madrona Marsh.
- Wilmington Drain.

### *4.6.4.2 Create Centralized Database*

Issue

Monitoring data are collected by a variety of entities within the watershed, and periodically by the LARWQCB. Waters and/or biological resources are within the harbors by the Ports of Long Beach and Los Angeles, City of Los Angeles Department of Water and Power, and City of Los Angeles Bureau of Sanitation. Water quality data are collected in Dominguez Channel by the LACDPW and various dischargers in compliance with their NPDES permits. Waters of Wilmington Drain and Machado Lake are monitored by the California Department of Health Services, City of Los Angeles Bureau of Sanitation, and City of Los Angeles Department of Recreation and Parks. Additional monitoring is recommended in this WMMP to assess the success of restoration projects and/or BMPs, and a citizen-based monitoring program also is recommended. No centralized system of data storage or access currently exists, which ultimately limits the usefulness of the data.

Action

This action would establish a centralized, electronic, and web-based database. Each data collection agency would submit their data in a standardized electronic format to the central data hub where it would be input into the centralized database. The database would be linked to the Geographic Information System (GIS) so that spatial patterns in data can be displayed. The database would be made available to the public via an internet web site. Appropriate quality assurance/quality control checks would be made on the data prior to submittal to the central data hub.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Develop a standardized format for data entry to the centralized database, and distribute to agencies involved in the collection of monitoring data. | J (L), C (P), A (R) | Once | $-$$ |
| Input latitude and longitude coordinates associated with monitoring stations into GIS. | J (L), C (P) | Once, update when station locations change | $ |
| Input data submitted by various monitoring entities into the centralized database. | J (L), A (P), C (P) | Quarterly | $-$$ |
| Develop a web-based program for accessing the centralized database. | J (L), C (P) | Once | $ |
| | | | |
| | | Total Estimated Cost | $$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county (lead) within the watershed
Agencies = LARWQCB

Type of Action: Monitoring and/or assessment.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.

***Create Centralized Database (Continued)***

Benefit(s) of Action

A centralized database would facilitate assessment of long-term trends in water quality improvements and reduction in impairments. It also would facilitate the identification of redundancies in monitoring requirements among dischargers, and potentially provide the basis for requests to modify monitoring requirements with the LARWQCB, as appropriate.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Fill or bridge an existing information gap | | | | Regional and/or watershed benefits |
| Regional and/or watershed benefits | | | | |

Cost Considerations

- Staff reassignment and/or retraining required.

Potential Source(s) of Funds

- Grants (Proposition 13, California Department of Education Environmental Education, USEPA Environmental Education, USEPA Environmental Monitoring for Public Access and Community Tracking).
- Supplemental RWQCB funds.

Time Frame Considerations

- Implement in 2- 5 years.

### *4.6.4.3 Prepare State of the Dominguez Watershed Report*

Issue
An Annual Report is required to document the effectiveness of actions implemented in compliance with the Municipal Storm Water Permit. Several additional actions are recommended to augment existing programs that will be monitored for their effectiveness. In addition, a citizen-based monitoring program is recommended in this WMMP.

Action
It is recommended that a section of the Annual Report address the State of the Dominguez Watershed based on the results of the various monitoring activities undertaken in the watershed. The State of the Dominguez Watershed would be posted on the project web site http://ladpw.com/wmd/watershed/dc/.

Examples of items that may be considered in the State of the Watershed Report include, but are not limited to the following:

- Number of grant applications prepared and obtained.
- Number of projects implemented.
- List of management actions taken.
- Number and type of public outreach activities.
- Summary of results of monitoring implemented projects.
- Results of citizen-based monitoring.
- Results of program assessment by individuals involved in implementation of the plan.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Summarize activities undertaken during year, and results from different monitoring programs in Dominguez Watershed. | J (L), O (P) | Annual | $ |
| Prepare State of the Dominguez Watershed Report. | J (L), O (P) | Annual | $ |
| | | Total Estimated Cost | $ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county in watershed
Other = DWAC

Type of Action: Public education and outreach.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Document the effectiveness of WMMP actions.
- Raise public awareness and increase personal stewardship of the watershed.

***Prepare State of the Dominguez Watershed Report (Continued)***

Benefit(s) of Action

An annual State of the Dominguez Watershed report will provide documentation of the effectiveness of implemented actions and projects from the WMMP. The integrated analysis of monitoring results from various data sources will provide documentation of the overall status of watershed resources.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | | | | Public education and outreach |
| | | | | Fill or bridge an existing information gap |

Cost Considerations

- Staff reassignment and/or retraining required.

Potential Source(s) of Funds

- Reallocation of budget.

Time Frame Considerations

- Implement in < 2 years.

### *4.6.4.4 Update the Dominguez Watershed Management Master Plan (WMMP)*

Issue
The WMMP is a "living document" that will require periodic updates to add and/or to modify actions. The framework for updating the plan is described in Subsection 4.2 of this section of the document.

Action
The WMMP will be updated every five years, or as necessary, using a collaborative process among the County, municipalities, and the DWAC. The update will consist of review of the continued applicability of actions and their activities, modifications to activities based on lessons learned, and the addition of new actions, as appropriate. A decision will be made at the time of the update as to whether there has been sufficient change in existing conditions to warrant an update of that information. The revised action plan will be made available for public review.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Review issues of concern and progress made in reducing impairments with public outreach meetings. | O (L), J (P) | Every 3- 5 years | $ |
| Review actions, modify activities associated with actions, and/or add new actions as appropriate. | O (L), J (P) | Every 5 years | $ |
| Prioritize actions. | O (L), J (P) | Every 5 years | $ |
| Coordinate WMMP update among County, municipalities, and DWAC (note: higher cost if existing conditions information also updated). | O (L), J (P), C (P) | Every 5 years | $-$$ |
| | | Total Estimated Cost | $-$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = County, cities within watershed
Other = DWAC

Type of Action: Management planning. Public education and outreach.

Goal(s) Addressed by Action

- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.
- Identify problems and issues of importance to local citizens, groups, and users of the watershed.
- Coordinate implementation of the WMMP among stakeholders.

***Update the Dominguez Watershed Management Master Plan (WMMP) (Continued)***

Benefit(s) of Action

Periodic review and updating of the plan will contribute to timely assessment of the effectiveness of the implemented actions, and facilitate an adaptive management decision process of what actions should continue, what actions should be modified, and what new actions should be applied. Another important benefit is that it will contribute to the adherence to a scheduled strategy for reducing and eliminating impairments and protecting, enhancing, and restoring beneficial uses.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | | | | Public education and outreach |
| | | | | Public involvement |

Cost Considerations

- Staff reassignment required.

Potential Source(s) of Funds

- USEPA Watershed Assistant Grant.
- Reallocation of budget.

Time Frame Considerations

- Implement in 5 years.

# 4.7 Actions Associated With the Goal to Implement Stewardship of the Watershed in Balance with Economic and Environmental Impacts

Organization of Section

4.7.1 Introduction
4.7.2 Actions to Promote Effective Watershed Management
4.7.3 Actions to Promote Brownfields Redevelopment and Productive Reuse of Land
4.7.4 Actions to Fund Watershed Programs and Projects

## 4.7.1 Introduction

Issues and Concerns

Sections 4.3 through 4.6 describe recommendations to increase and/or to improve stewardship to lessen impacts to the environment. This section describes actions to minimize the economic impacts associated with implementing environmental stewardship. One factor of cost relates to management and the effectiveness of coordination among municipalities, agencies, and other stakeholders involved in watershed-related activities. Another important factor concerns the availability of funds to carry out watershed programs and projects. Coordination and funding were both identified by stakeholders as being issues of concern for the watershed (refer to Section 3.0).

Stakeholder outreach identified the following objectives as being of high priority to address with the implementation of the WMMP:

- Diminish and eliminate further degradation of the watershed and its resources through better management practices.
- Obtain grant funds to implement watershed improvement projects.

As discussed in previous sections, development is responsible for many of the impairments within the Dominguez Watershed. Urbanization also can negatively influence environmental stewardship if it contributes to people feeling indifferent about where they live. Development is briefly reviewed below because the condition of development substantially influences local economies and the availability of funds to implement additional programs and/or projects.

Stakeholder outreach identified the following development related issues as being of concern for the watershed: population growth impacts; brownfields; minimal and degraded open space areas; and limited recreation access to open space, water, and the Dominguez Channel (refer to Section 3.2.7). Addressing development-related issues will be important for providing tangible reasons for personal stewardship.

Improvement to roadways as an action to decrease urban runoff and improve aesthetics was described in Section 4.3 (Action 4.3.4.5). Construction of recreational trails and nature centers to increase personal involvement and stewardship were described in Section 4.6 (Actions 4.6.3.4 and 4.6.3.5). In the case of brownfields, redevelopment improves environmental quality by removing contamination and blight, and also may contribute to economic revitalization. Thus, brownfields redevelopment represents an opportunity to enhance stewardship and improve local economies, which could increase the availability of local funds for other watershed-related programs. Because of the tie between environmental stewardship and economics, brownfields redevelopment is considered in this section of the Action Plan.

Existing Actions

Several avenues of coordination are employed by municipalities to facilitate planning, compliance with the Municipal Storm Water Permit and other environmental regulations, economic development, and to improve the quality of life. Coordination is done at the local and regional levels. Watershed-based planning is relatively new and is incorporated to different degrees in existing jurisdictional programs.

Redevelopment, retrofit, and replacement of existing structures occurs throughout the watershed depending on funding allocations and grants. Several funding programs have been established at the state and federal level to augment local funds to upgrade transportation, finance improvements in waste treatment, expand water reclamation, and to implement education and environmental programs.

Grants and low interest loans are available to assist with rehabilitation of blighted areas. Brownfields, which are abandoned or underutilized lands due to actual or perceived contamination problems, occur throughout the watershed, but few have been redeveloped to date.

Other types of grants are available to assist public agencies, non-profit organizations, and community groups to improve water quality, enhance and/or restore habitat, conduct monitoring to assess environmental health in watersheds, implement sustainable development, and improve public education regarding environmental issues. Applicants generally compete against each other to obtain the limited available funds.

Recommended WMMP Actions

The recommended program and project actions to promote stewardship in balance with economic and environmental impacts are listed on Table 4.7-1, and are described in the following three subsections:

4.7.2 Actions to Promote Effective Watershed Management.

4.7.3 Actions to Promote Brownfields Redevelopment and Productive Reuse of Land

4.7.4 Actions to Obtain Funds to Implement Watershed Programs and Projects.

**Table 4.7-1. List of program and project actions associated with the goal to Implement Stewardship of Watershed in Balance with Economic and Environmental Impacts.**

| Report Section | Actions | Balanced Stewardship Benefits | | | Other Benefits | | | | | Time Frame to Implement (Years) | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Promote Effective Watershed Management | Promote Economic and Environmental Benefits | Obtain Funds to Implement Watershed Programs and Projects | Water Quality | Water Conservation | Habitat | Aesthetics /Recreation | Outside Funding | | |
| 4.7.2.1 | Continue DWAC coordination amongst stakeholders during implementation of the WMMP | √ | | | √ | √ | √ | √ | | og | $ |
| 4.7.2.2 | Increase coordination with other advisory councils of local urbanized watersheds | √ | | | √ | √ | √ | √ | | < 2 | $ |
| 4.7.2.3 | Increase watershed management coordination with regional planning agencies | √ | | | √ | √ | √ | √ | | < 2 | $ |
| 4.7.2.4 | Develop model city codes and ordinances for the Dominguez Watershed | √ | √ | | √ | √ | √ | √ | | 2-5 | $$ |
| 4.7.3.1 | Expand local technical assistance for brownfields redevelopment | √ | √ | | √ | √ | √ | √ | √ | <2 | $$-$$$ |
| 4.7.3.2 | Increase brownfields redevelopment | | √ | | √ | √ | √ | √ | √ | 2-5 | $$$$ |
| 4.7.4.1 | Apply for grant funding to implement watershed projects | | √ | √ | √ | √ | √ | √ | √ | < 2 | $ |
| 4.7.4.2 | Implement Adopt-A-Waterway Program | | √ | √ | √ | | | | √ | < 2 | $ |
| 4.7.4.3 | Establish storm water fee | | √ | √ | √ | | | | | 2-5 | $$ |
| 4.7.4.4 | Establish mitigation bank to manage improvement in wildlife habitat quality | | √ | √ | | | √ | √ | √ | 2-5 | $$$$ |

Notes: og = ongoing
$ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

### 4.7.2 Actions to Promote Effective Watershed Management

Statement of Problem

At the community level, each municipality is involved in management activities associated with compliance with the Municipal Storm Water and Urban Runoff Permit, land use development, economic development, and operation and maintenance of public services and transportation. The management is coordinated among different municipal departments. Similarly, the County manages its activities among different departments, and also coordinates among municipalities. Coordination also occurs at the regional level relative to population growth, transportation, housing planning, and energy and environmental issues. Planning at the watershed level makes sense to reduce impairments of water bodies under the influence of lands within a geographic region defined by drainage boundaries. However, watershed planning is a recent management activity that is not as yet fully integrated into existing local and regional decision-making.

Municipal codes and ordinances associated with water conservation, protection of open space, and protection of water quality vary among communities within the Dominguez Watershed. Some of the inconsistencies pertain to language, and do not affect the intent or compliance associated with the regulation. In other cases, one or more jurisdictions may have a protective ordinance and other jurisdictions may lack a similar ordinance. In those cases, the inconsistencies in regulations contribute to differences in understanding among residents and business owners as to what types of behaviors are or are not permitted within the watershed. In addition, differences in local requirements may make it more difficult to strike an effective balance between economic and environmental considerations at the watershed level if regulations are less stringent in one city relative to another.

In order to be effective, watershed management will require greater recognition throughout all levels of government, and consistency in policies and regulations.

Existing Actions

Several avenues of coordination are used at the local level for planning and policy making (Table 4.7-2). These include city councils, commissions, and city and county planning departments. Adopted policies are included in General Plans, and enforced through municipal codes and ordinances. Watershed-based planning is not as yet incorporated in existing municipal General Plans, codes, and ordinances.

**Table 4.7-2. Avenues of coordination among jurisdictions.**

- Local government city councils, commissions, city and county departments.
- Committees under the Municipal Stormwater and Urban Runoff Permit.
- Dominguez Watershed Advisory Council (DWAC).
- South Bay Council of Governments (COG).
- Southern California Association of Governments (SCAG).

The Municipal Storm Water and Urban Runoff Permit requires changes in behavior to reduce sources of pollution and to protect beneficial uses. The SQMP and SUSMP associated with the permit provide guidance to minimize pollution conveyance from new development and redevelopment. The municipalities also will be required to meet additional water quality standards as TMDLs are developed. Three committees were established to facilitate compliance of the County and Co-Permittees with the permit's requirements.

- The Executive Advisory Committee, which meets monthly to plan efforts and to review progress.

- The Watershed Management Committee, which meets quarterly to establish goals and objectives, prioritize pollution control efforts, facilitate exchange of information, and to assess effectiveness of efforts.
- The Watershed Education Committee, which also meets quarterly to coordinate regional and local outreach and education relative to compliance with the Municipal Storm Water Permit.

The-above listed committees are focused on watershed issues related to protecting and reducing impairments of water bodies within the different watersheds covered by the permit, including the Dominguez Watershed.

The DWAC was formed to assist the development of this WMMP and is comprised of several different types of stakeholders, including representatives from different jurisdictions, governmental agencies, non-governmental organizations, and interested public. The DWAC met monthly during the development of the WMMP, addressing a variety of issues of concern including water quality, water conservation, biological resources, and public education and outreach. The DWAC also can perform an essential role in the implementation of the WMMP by continuing their coordination efforts among stakeholders.

The South Bay Council of Governments (COG) includes cities within the Dominguez Watershed as well as a few additional coastal cities. Issues of concern addressed by this group include transportation and better mobility throughout the member cities, air quality, economic development, expansion of LAX, and quality of life issues (http://www.southbaycities.com). The South Bay COG has several committees that meet monthly, every other month, or as needed (Table 4.7-3).

**Table 4.7-3. Committees of the South Bay COG.**

- Aviation Issues
- GIS
- Homeland Security Task Force
- Information Technology Committee
- Infrastructure Working Group
- Legislative Committee
- Livable Communities
- Steering Committee
- Transit Working Group
- Transportation Oversight
- Transportation Planning

**Table 4.7-4. Livable Communities General Principles of the South Bay COG.**

- Creating "integrated" places.
- Quality Design of the built environment.
- "Center focus" of development.
- Active public open spaces.
- Balanced transportation systems.
- Diversity of community.
- Respect for the natural environment.
- Enhanced public safety.
- Participation of the entire community.

The Livable Committees committee addresses land use and design strategies for making the communities of the South Bay subregion more attractive and livable. Watershed management is not a topic that is specifically addressed by the committees of the South Bay COG. However, several of the livable communities principles are consistent with watershed management objectives (Table 4.7-4).

The Southern California Association of Governments (SCAG) is comprised of cities from the following counties: Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. This group has several committees to address a variety of issues of concern, planning objectives, and legislative issues (http://www.scag.ca.gov/committees/eec.htm) (Table 4.7-5). The Energy & Environment Committee (EEC) considers environmental and energy issues of regional significance, including but not limited to air quality, water quality, solid and hazardous waste, habitat preservation, environmental justice, and environmental impact analysis. A comprehensive Water Policy Program

**Table 4.7-5. SCAG Committees.**

- Regional Council
- Administration
- Energy and Environment
- Community, Economic and Human Development
- Transportation and Communications

considers growth, stormwater runoff, and watershed management; however, these topics are only periodically considered during the monthly meetings of the EEC.

Issue

Several types of planning meetings regularly take place to address major issues of concern, including economic development, transportation, air quality, storm water quality, and quality of life. These issues are addressed on the local level by municipalities and on a regional level by planning agencies. In addition, other local watersheds address the same types of issues.

Management decisions, in order to be effective at the watershed level, must be compatible such that meeting an objective for one issue area does not compromise the ability to meet the objectives of other issue areas. Effective management and progress in meeting goals and objectives are facilitated by coordination. Opportunity exists to promote progress in the implementation of watershed-based programs and projects by continued coordination among stakeholders through the DWAC. Coordination with regional agencies regarding watershed-based goals and objectives would increase opportunities for stewardship to be incorporated into a broader base of decision-making. There also are opportunities to increase the effectiveness of decision-making by consideration of decisions made in other watersheds that face similar issues as in the Dominguez Watershed. Long-term commitment to watershed stewardship will require the adoption of municipal codes and ordinances that demonstrate a unified approach to stewardship within the Dominguez Watershed.

Purpose

The purpose of watershed-based coordination is to promote effective stewardship within the Dominguez Watershed.

Actions

The following actions, which are described below, are recommended to promote effective watershed management in the Dominguez Watershed:

- Continue DWAC Coordination Amongst Stakeholders During Implementation of the WMMP.
- Increase Coordination With Other Advisory Councils of Local Urbanized Watersheds.
- Increase Watershed Management Coordination With Regional Planning Agencies.
- Develop Model City Codes and Ordinances for the Dominguez Watershed.

#### *4.7.2.1 Continue DWAC Coordination Amongst Stakeholders During Implementation of the WMMP*

Issue

The purpose of the DWAC is to create and support implementation of the Dominguez Watershed Management Master Plan (WMMP). The DWAC was successful in coordinating the preparation of this WMMP by articulating concerns and issues regarding the watershed, recommending different types of programs and projects for consideration in the WMMP, and organizing public outreach workshops to include a broader stakeholder base in the development of this WMMP. Continued coordination by the DWAC will be necessary for successful implementation of the WMMP.

Action

Meetings will continue to be held to facilitate implementation of the WMMP. The meetings will continue on a monthly basis unless members decide to change that frequency. The meetings will be used as a forum to exchange information on the progress of implementing programs and projects, and their effectiveness.

DWAC jurisdictional representatives would be responsible for preparing, or coordinating within their jurisdiction to obtain, a summary of implemented watershed-based projects and programs undertaken in their jurisdiction. Information on projects conducted by non-profit organizations or other stakeholders would be summarized by other DWAC members, as appropriate. Summarized information on projects would include, but not be limited to project location, size, nature of project, method used, cost, source of funding, volunteer participation, partnerships, relative effectiveness, and who to contact for further information. Key information on programs would include, but not be limited to program name, nature of program, program participants, cost, source of funding, relative effectiveness, and who to contact for further information. Information on relative effectiveness would be updated on the project and program summaries, as available.

Summarized information would be shared amongst members of DWAC at regularly scheduled meetings, and would be distributed to the Municipal Watershed Management Committee during its quarterly meetings. The summarized information would support documentation for the State of the Watershed Report (Action 4.6.4.2). Members of DWAC would periodically discuss lessons learned from each other's implementation experiences, and apply relevant information to increase the cost effectiveness of their watershed management efforts, as appropriate.

Members will review the effectiveness of actions undertaken in support of WMMP goals and objectives. Results of monitoring undertaken to comply with the Municipal Storm Water Permit, and monitoring conducted in support of implemented WMMP projects will be reviewed. The meetings will provide opportunity to make recommendations to facilitate implementation of watershed programs and projects. Working groups or committees of the DWAC may be tasked with more in-depth review of issues in support of developing recommendations.

The DWAC will participate in future updates of the WMMP, as appropriate. As part of their stakeholder involvement activities, DWAC will periodically coordinate and/or participate in community outreach activities. DWAC is a voluntary organization, and costs are largely borne by the members, some of who must obtain permission from their organizations to attend meetings. Outside funding sources are available to stakeholder organizations such as the DWAC to support organizational development, efforts to build capacity, and long-term effectiveness. Application will be made to obtain grant funds to assist DWAC coordination efforts.

***Continue DWAC Coordination Amongst Stakeholders During Implementation of WMMP (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Hold coordination meetings during implementation of the WMMP. | J (P), B (P), A (P), O (P) | Monthly | $ |
| Each jurisdiction to periodically summarize key information associated with implemented watershed-based projects and programs and share with other members of DWAC; the summary also would be distributed to the Municipal Watershed Management Committee. | J (L) | Quarterly | $ |
| Review progress in implementing WMMP recommended programs and projects. | J (P), B (P), A (P), O (P) | Quarterly | $ |
| Review effectiveness, as determined by monitoring or other assessments, of implemented programs and projects. | J (P), B (P), A (P), O (P) | Annual | $ |
| Make recommendations to facilitate implementation of the WMMP. | J (P), B (P), A (P), O (P) | As necessary | $ |
| Organize and/or participate in community outreach activities. | J (P), B (P), A (P), O (P) | Annual or more frequent | $ |
| Apply and obtain grant funding to support outside expenses. | J (P), B (P), A (P), O (P) | Annual | $ |
| | | Total Estimated Cost | $ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed.
Agencies = LARWQCB
Other = Non-governmental organizations, residents

Type of Action: Management planning.

Goal(s) Addressed by Action

- Implement stewardship of the watershed in balance with economic and environmental impacts.

Objective(s) Addressed by Action

- Coordinate implementation of the WMMP among stakeholders.
- Involve and encourage public participation in management and protection of watershed resources.
- Identify problems and issues of importance to local citizens, groups, and users of the watershed.

Benefit(s) of Action

The DWAC represents the only multi-objective watershed-planning group for the Dominguez Watershed. Continued vision and attention of this broad stakeholder group will promote progress in the implementation of the WMMP. Periodic review of the effectiveness of watershed management by this group will facilitate adaptive management recommendations and updates to the plan, as necessary. Networking amongst the DWAC members has the potential to facilitate partnership opportunities in the implementation of WMMP projects.

***Continue DWAC Coordination Amongst Stakeholders During Implementation of WMMP (Continued)***

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | | | | Partnership opportunities (public and/or private) |
| | | | | Public involvement |
| | | | | Regional and/or watershed benefits |

Cost Consideration(s)

- Staff reassignment required for some stakeholder's participation.

Potential Source(s) of Funds

- Reallocation of budget.
- Grants (River Network, USEPA Watershed Assistance Grant).

Time Frame Considerations

- Ongoing action.

### *4.7.2.2 Increase Coordination With Other Advisory Councils of Local Urbanized Watersheds*

Issue

There are six major hydrologic units in Los Angeles County: Santa Monica Bay, Dominguez, Los Angeles River, Ballona Creek, San Gabriel River, and Santa Clara River. Nine watersheds comprise the Santa Monica Bay hydrologic unit, some rural and some highly urbanized. The Dominguez and Los Angles River watersheds both are highly developed. Watershed management planning is in different stages of development for each watershed, and the planning is being done independently to focus stakeholder attention on the issues and concerns associated with each watershed. This independence of effort harnesses a wide experience base, and implementation of different strategies and combinations of technologies undoubtedly will result in different levels of effectiveness. Limited, but valuable coordination, was undertaken by DWAC with the Los Angeles-San Gabriel Watershed Council during the development of this WMMP. Continued coordination with that group, as well as coordination with advisory councils associated with other local urbanized watersheds has the potential to result in more cost effective implementation of watershed management actions in the Dominguez Watershed as well as within the greater Los Angeles region.

Action

A letter would be prepared by DWAC inviting opportunities for collaboration and coordination with other local watershed councils with urbanized watersheds; i.e., Ballona Creek, Los Angeles River, San Gabriel River, and Malibu Creek. A forum for information transfer and exchange amongst these organizations would be established, including selection of representatives to periodically attend each other's meetings and to report back on those shared experiences to their respective watershed councils. Summarized information on programs and projects implemented in the Dominguez Watershed (Action 4.7.2.1) would form the basis of information shared with other watershed councils. Representatives from other watershed councils would be invited to share similar types of information about projects and programs implemented in their watersheds. Members of DWAC would periodically discuss lessons learned from other local urbanized watersheds, and make recommendations to apply relevant information to increase the effectiveness of watershed management efforts.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Prepare letter inviting a forum of information exchange and transfer with other watershed councils in Los Angeles County with urbanized watersheds. | DWAC Chair | Once, then annual follow up | $ |
| Select representatives from DWAC to periodically attend other watershed council meetings and share information regarding projects and programs implemented within the watershed based on the jurisdiction prepared summaries. | J (P), B (P), A (P), O (P) | Annual | None |
| Invite representatives from the other watershed councils to attend DWAC meetings and to report on watershed-based projects and programs within their watersheds. | DWAC Chair | Once, then annual follow up | $ |
| Discuss lessons learned from other watershed councils and how to apply relevant experience to management in the Dominguez Watershed. | J (P), B (P), A (P), O (P) | Ongoing | $ |
| | | Total Estimated Cost | $ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county in watershed Agencies = Agency members of DWAC
Other = Non-profit organizations and community representative members of DWAC

***Increase Coordination With Other Advisory Councils of Local Urbanized Watersheds (Continued)***

Type of Action: Management planning.

Goal(s) Addressed by Action

- Implement stewardship of the watershed in balance with economic and environmental impacts.

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.
- Coordinate implementation of the WMMP among stakeholders.

Benefit(s) of Action

Coordination with other watershed councils implementing projects and programs in local urbanized watersheds would increase the experience base drawn upon to benefit from lessons learned. This would increase opportunities to cost effectively apply what works throughout a broader geographic region to the benefit of residents, and ultimately to the receiving waters of Los Angeles County.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | | | | Public involvement |
| | | | | Partnership opportunities (public and/or private) |
| | | | | Regional and/or watershed benefits |

Cost Consideration(s)

- Staff reassignment required for some stakeholder's participation.

Potential Source(s) of Funds

- Reallocation of budget.

Time Frame Considerations

- Implement in < 2 years.
- Near- and long-term benefits.

### *4.7.2.3 Increase Watershed Management Coordination With Regional Planning Agencies*

Issue

The South Bay COG's Livable Communities Committee and the SCAG's Energy and Environment Committee represent venues for increased coordination of watershed management on a regional scale.

Several communities, most of them from the Dominguez Watershed, comprise the South Bay COG. The South Bay COG meetings represent opportunities to increase awareness of watershed management activities being undertaken in the Dominguez Watershed, and how those activities complement and/or should be incorporated into planning efforts of the South Bay COG's Livable Communities Committee.

Several watersheds from different counties comprise the SCAG, and face many of the same watershed management issues of the Dominguez Watershed. The SCAG meetings provide opportunities to network and transfer information regarding successful multi-benefit projects and watershed management implementation strategies so that there is a leveraging of this experience to benefit communities within a broader geographic range of southern California.

Action

The Executive Advisory Committee would develop a plan for increased representation and discussion of watershed management issues relevant to the Dominguez Watershed at South Bay COG and SCAG meetings. A letter would be prepared and distributed to the jurisdiction representatives within the Dominguez Watershed who currently attend the South Bay COG Livable Communities Committee meetings, and the SCAG Energy and Environment Committee (EEC) meetings. The letter would communicate that watershed management is an important consideration for regional planning, and it would be advantageous to increase opportunities to discuss this topic at these respective meetings. The letter would solicit support to contact the Chair of the South Bay COG's Livable Communities Committee and the Chair of the SCAG's EEC regarding this issue.

A similar letter would be prepared and distributed to the Chair of South Bay COG's Livable Communities Committee, and the Chair of SCAG's EEC. The letter would request that watershed management issues be added as a standing item to the meeting agendas of those committees to foster opportunities for increased coordination, and integration of watershed-based objectives into regional planning. A brief summary of Dominguez Watershed management issues and goals would be included with the letter. The summary also would list types of programs and projects undertaken and planned to meet the goals.

**Table 4.7-6. Example watershed-based agenda items for South Bay COG meetings.**

- Strengthening the linkage between SUSMP requirements, WMMP actions, and Livable Communities principles.
- The role of brownfields redevelopment as opportunities to implement Livable Communities principles.
- Leveraging experience to improve success rate for obtaining grants to implement multi-benefit projects.
- Coordinating Livable Communities and watershed-themed outreach and education.
- Cooperative actions to address homeless impacts on Livable Communities and watershed management objectives.
- Showcasing sustainable and multi-benefit projects.

Potential watershed related topics would be recommended for the South Bay COG's and the SCAG's consideration in developing their meeting agendas each year (Table 4.7-6 and 4.7-7).

***Increase Watershed Management Coordination With Regional Planning Agencies (Continued)***

**Table 4.7-7. Example watershed-based agenda items for SCAG meetings.**

- Coordinated watershed management and regional planning.
- Maximizing redevelopment to minimize urban sprawl and to revitalize local economies.
- Showcasing successful multi-benefit projects that protect beneficial uses.

Based on the response by the South Bay COG and the SCAG, the Executive Advisory Committee would select representatives among its members to attend South Bay COG and SCAG meetings, as appropriate.

Activities, stakeholder roles, and cost estimate for the action are described below.

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| Prepare letters to jurisdictional representatives that attend the South Bay COG Livable Communities Committee and the SCAG EEC meetings for their support in increasing opportunities to coordinate relative to watershed management issues at those meetings. | J (L), J (P) | Once | $ |
| Prepare letters to Chair of the South Bay COG Livable Communities Committee and the Chair of SCAG EEC meetings requesting additional coordination relative to watershed management issues at those meetings. | J (L), J (P) | Once | $ |
| Prepare summary of Dominguez Watershed issues and goals, and list of types of actions undertaken and/or planned to meet the goals; include in letter to South Bay COG and SCAG. . | J (L), J (P) | Once | $ |
| Make recommendations for watershed related topics to be taken into consideration during development of agendas for the South Bay COG Livable Communities Committee and the SCAG EEC meetings. . | J (L), J (P) | Once | $ |
| Select representatives of the Executive Advisory Committee to attend South Bay COG's Livable Communities Committee and the SCAG's EEC meetings, as appropriate. | J (L), J (P) | Once | $ |
| | | Total Estimated Cost | $ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = Members of the Executive Advisory Committee

Type of Action: Management planning.

Goal(s) Addressed by Action

- Implement stewardship of the watershed in balance with economic and environmental impacts.

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.
- Coordinate implementation of the WMMP among stakeholders.

***Increase Watershed Management Coordination With Regional Planning Agencies (Continued)***

Benefit(s) of Action

Coordination with regional planning agencies would facilitate incorporation of measures into the design of livable communities to protect beneficial uses and to reduce impairments. It also would increase the opportunity to network, increase awareness regarding the importance of integrating watershed management into regional planning, and to compare watershed management techniques among a broader experience base.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | | | | Public involvement |
| | | | | Partnership opportunities (public and/or private) |
| | | | | Regional and/or watershed benefits |

Cost Consideration(s)

- Staff reassignment required.

Potential Source(s) of Funds

- Reallocation of budget.

Time Frame Considerations

- Implement in < 2 years.
- Near- and long-term benefits.

### *4.7.2.4 Develop Model City Codes and Ordinances*

Issue

Each municipality and the county approach their management activities in similar, but also different ways, and language in General Plans and local ordinances differ among the jurisdictions within the Dominguez Watershed. These differences in local requirements may make it more difficult to strike an effective balance between economic and environmental considerations at the watershed level if regulations are less stringent in one city relative to another. In addition, there may be new ordinances that should be implemented to assist compliance with the Municipal Storm Water and Urban Runoff Permit.

Action

This action involves developing a set of Model City codes and ordinances for Los Angeles County. The Executive Advisory Committee will select among its members a Code and Ordinance Committee, which will be comprised of jurisdictional representatives. The Committee will review watershed-based codes and ordinances from each jurisdiction within the watershed that pertain, but are not limited to, the following topics: protection of water quality, water conservation, definition and protection of environmentally sensitive areas, and conservation of open space (Table 4.7-8). Similar ordinances from other relevant cities also may be reviewed, as appropriate. Model City codes and ordinances will be drafted based on this review.

**Table 4.7-8. Example measures to be considered in developing Model City Codes and Ordinances.**

- Runoff shall be infiltrated on property.
- Streets shall be designed to infiltrate runoff to landscaped medians and/or parkways.
- Pervious pavement shall be used in public parking lots and walkways.
- Recycled and/or rain harvested water shall be used to irrigate public parks, golf courses, schools.
- Public landscaping shall use native, drought resistant plants.
- Catch basin inserts shall be required to be installed downstream of markets and restaurants.
- Outdoor trash and cigarette receptacles shall be required at bus stops, commercial areas, and fast food restaurants.
- Water bodies and wetlands shall be considered as Environmentally Sensitive Areas (ESAs).

A letter will be prepared to assist jurisdictional representatives in their coordination with their city councils and/or commissions regarding the need for a unified approach and consistency in watershed-based codes and ordinances. The County will coordinate with the PIPP to inform the public of the need for consistency in codes and ordinances relative to watershed management throughout the watershed. The Model City codes and ordinances will be submitted for review and comment to city councils, and made available for public review and comment. The final language of the Model City codes and ordinances will be submitted for approval by appropriate legal counsel and local city councils.

***Develop Model City Codes and Ordinances (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Establish a Code and Ordinance Committee to review codes and ordinances related to watershed management. | J (L, P) | Once | $ |
| Coordinate with appropriate city councils and commissions regarding the need for consistency throughout the watershed in codes and ordinances related to watershed management. | J (L, P) | Once, then as needed | $ |
| Develop a matrix that compares the language of similar watershed-based codes and ordinances among the different jurisdictions within the watershed. | J (L, P) | Once | $ |
| Develop a matrix that compares the language of similar codes and ordinances from other relevant cities, as appropriate. | J (L, P) | Once | $ |
| Draft the language for Model City codes and ordinances based on review of the above-described matrices and consensus of the committee. | J (L, P) | Once | $ |
| Conduct a financial impact analysis of adoption of the Model City codes and ordinances. | J (L, P)<br>C (P) | Once | $-$$ |
| Present the draft Model City codes and ordinances and financial impact analysis to appropriate city councils and commissions for review and comment. | J (L, P, R) | Once | $ |
| Coordinate with the PIPP to develop public education materials regarding the need for consistent codes and ordinances relative to watershed management. | J (L) | Once | $ |
| Revise Model City codes and ordinances based on input from city councils and appropriate commissions, and submit to city attorneys, as appropriate. | J (L, P) | Once | $ |
| Provide revised draft Model City codes and ordinances for public review and comment. | J (L, P),<br>B (R), O (R) | Once | $ |
| Schedule a public hearing to discuss codes and ordinances of concern, if necessary. | J (L, P),<br>B (P), O (P) | Once | $ |
| Finalize Model City codes and ordinances based on the results of coordination with the public and additional guidance provided by appropriate city councils and commissions. | J (L, P) | Once | $ |
| Submit finalized Model City codes and ordinances to city councils and appropriate commissions for formal adoption. | J (L, P) | Once | $ |
| | | Total Estimated Cost | $$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = Members of the Executive Advisory Committee

Type of Action: Management planning.

Goal(s) Addressed by Action

- Implement stewardship of the watershed in balance with economic and environmental impacts.

***Develop Model City Codes and Ordinances (Continued)***

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Increase the viability, diversity, health and function of ecological systems of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.
- Coordinate implementation of the WMMP among stakeholders.

Benefit(s) of Action

A unified approach to municipal codes and ordinances related to decreasing and improving the quality of urban runoff, water conservation, and protection of environmentally sensitive areas will increase the effectiveness of watershed management. The consistency will contribute to balance between environmental and economic considerations in implementing environmental stewardship throughout the watershed.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address one of top stakeholder issues | Address one of top stakeholder issues | Increase aesthetic values of land | Increase recreational values of land | Public education and outreach |
| Reduce water use | Reduce invasive species | | | Public involvement |
| Source control | | | | Regional and/or watershed benefits |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Staff reassignment and/or retraining required.

Potential Source(s) of Funds

- Reallocation of budget.

Time Frame Considerations

- Implement in 2-5 years.
- Near- and long-term benefits.

### 4.7.3 Actions to Promote Brownfields Redevelopment and Productive Reuse of Land

Statement of Problem

Historically, development focused on meeting the needs of growing industry, housing, transportation, flood protection, public safety, and education. The importance of protecting and conserving environmental resources was not well understood, and the social importance of aesthetics and recreation took back seat. This pattern of development was typical throughout the United States and for older cities and communities, in particular, led to substantial urbanization and contamination of air, land, and waters. In many of the older urbanized areas, a substantial number of commercial and industrial businesses relocated to growing communities or closed their doors, leaving lands abandoned or underutilized and often times contaminated. Many of these lands, termed brownfields, have not been redeveloped because of actual or perceived contamination, and contribute to urban blight. In response to environmental pollution, state and federal agencies promulgated environmental regulations that have become increasingly stringent to protect air quality, natural resources, fish and wildlife, and water quality.

The Dominguez Watershed encompasses communities that range from low-to middle-income neighborhoods, which have grown up around contaminated industrial sites and sprawling commercial and residential developments, to the more affluent rural neighborhoods tucked in amongst hills and canyons. At the local level, communities have developed General Plans to guide and improve development, conservation, and public safety. However, for the more heavily urbanized areas of the watershed, planned development represents only a small part of the response to meet environmental regulations. Retrofit, rehabilitation, replacement, and redevelopment are the challenges many of the municipalities of the watershed face as infrastructure and development ages, and new technologies and design are needed to meet current environmental regulations. One of the biggest issues expressed by many jurisdictions is how to fund needed programs and projects to the benefit of the watershed while dealing with the above-stated challenges, and the obligation to meet local service needs.

Most of the Dominguez Watershed is developed and opportunities are limited for new development and economic growth of the area. Brownfields that currently contribute to urban blight represent available land for development. The term "brownfields" generally is used to describe vacant, abandoned, or underutilized commercial or industrial property that has or is perceived to have hazardous waste contamination that may require cleanup before the land can be redeveloped. From a market perspective, anything that makes a brownfield property less competitive with other available land serve as barriers, such as added time, cost, uncertainty regarding risk of liability to buyers, uncertainty over cleanup standards, and less choice among lending institutions willing to finance mortgages on brownfield sites. As a consequence brownfields have been generally overlooked and left abandoned. Estimates indicate that in 2000 over 600,000 brownfields representing more than 80,000 acres contributed to urban blight in cities in the United States (http://www.csa.com/hottopics/brown/overview.html).

Existing Actions

Several federal and state legislative measures have been passed to help communities with brownfields redevelopment. These measures were passed because initial environmental regulation required that cleanup liability be assumed by whoever owns or buys the property regardless of whether they were responsible for the contamination. Programs now exist to assist prospective buyers assess the potential for contamination and whether cleanup will be required, provide oversight over the cleanup to reduce liability to the buyer, and to provide financial assistance and incentives to put these stigmatized lands back into productive use. Relevant legislation is briefly reviewed below to provide background on how the

liability issue has changed, and what it is today for prospective buyers of brownfields property. Following this review are brief summaries of the different federal, state, and local programs that provide technical and financial assistance for brownfields redevelopment.

*Legislative Review*

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), enacted in 1980, also known as the Superfund Program, governs the cleanup of abandoned hazardous waste disposal facilities. Under CERCLA, the EPA may order parties deemed to be responsible for contamination at a site to pay for its remediation. Alternatively, CERCLA permits EPA to undertake remediation itself, finance the cleanup through the Superfund Program, and recover the cost from the responsible parties in a lawsuit. A database was established under the Superfund Program of potentially hazardous sites, known as the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Inventory. Superfund's National Priorities List ranks sites according to their remediation needs. However, Superfund's benefits have been partially offset by liability problems. Many brownfields sites were not considered contaminated enough to qualify for cleanup according to the National Priorities List, and responsibility of the cleanup remained with the property owner or passed to the investors and/or new owners if the property was purchased. Concern over this liability hindered brownfields cleanup and redevelopment for over a decade. In 1995, EPA launched its Brownfields Initiative to promote and support local approaches to brownfields issues. In addition, EPA removed thousands of lower-risk properties from the CERCLIS Inventory.

The following legislation was passed to alleviate some of the concerns with liability and to promote brownfields redevelopment.

- Senate Bill (SB) 1285 provides limited liability exemption for lenders and fiduciaries for releases of hazardous materials on property in which they have a legal interest, but did not directly cause or contribute to the release or potential release of hazardous substances. Extends to petroleum contamination from underground storage tanks.
- The Polanco Legislation for Redevelopment Agencies (AB 3192 & SB 1425) grants local redevelopment agencies authority to conduct cleanups and provides limited liability exemption if the cleanup is conducted pursuant to a remedial action plan approved by the Department of Toxic Substance Control (DTSC), RWQCB, or qualified local agency. The limited immunity then extends to property successors and lenders.
- The California Land Environmental Restoration & Reuse Act (SB 32) establishes a new hazardous materials investigation and cleanup program to be administered by local agencies with state oversight to help promote the cleanup and reuse of brownfield properties.
- The Brownfields Tax Incentive, was passed by Congress as part of the Taxpayer Relief Act, enacted in 1997 and amended in 2000. This incentive makes environmental cleanup costs fully deductible for the taxpayer in the year they are incurred for properties with demonstrated contamination (i.e., hazardous substance release, threat of release, or disposal at the property).
- The Small Business Liability Relief and Brownfields Revitilization Act (42 USC 9601 (39)), Brownfields Law, was passed in 2002. The law expands potential federal financial assistance for brownfield revitalization, including grants for assessment, cleanup, and job training. The law limits the liability of certain contiguous property owners and prospective purchasers of brownfield properties, and clarifies innocent landowner defenses to encourage revitalization and reuse of brownfield sites. It also amends the CERCLA by adding Section 128(a), which authorizes a $50 million grant program to establish state and tribal response programs.

*Program Review*

Several programs have been developed to help local governments, school districts, developers, and non-profit organizations redevelop brownfields. Substantial programs are administered by the Department of Toxic Substances Control (DTSC), EPA, and the Department of Housing and Urban Development (HUD). The California Recycle Underutilized Sites (Cal ReUSE) Program provides risk-free financial assistance to assess properties. A local technical assistance program is offered for brownfields sites within the City of Los Angeles. These programs provide technical and/or economic, and are briefly described below.

The Department of Toxic Substances Control (DTSC) (http://www.dtsc.ca.gov/sitecleanup/brownfields/) has several programs to assist with brownfields redevelopment, as follows:

- Voluntary Cleanup Program – allows DTSC to provide "oversight" to parties to assess and/or cleanup lower priority sites; i.e., non-state or federal Superfund sites.
- Expedited Remedial Action Program (ERAP) – Pilot voluntary cleanup program that provides incentives for responsible parties to accelerate remediation.
- Local Cleanup Agreements (SB 1248) – allows DTSC recognition of qualifying local agency cleanup programs. Allows local agencies to supervise cleanups, set remedial goals, and provide certification of cleanup completion.
- Private Site Management Program (AB 1876) – allows qualified individuals to oversee site assessments and remediation at "less complex" hazardous substance release sites.
- Site Designation Committee (AB 2061) – allows responsible party to request that a single administering agency be designated to oversee site investigation and remedial action.
- Prospective Purchaser Agreements and Liability Relief – a person who will be the responsible party upon the purchase of a brownfields site releases the purchaser from environmental liability when the site is cleaned according to DTSC's direction.
- The California Financial Assurance and Insurance for Redevelopment (FAIR) Program makes comprehensive and cost-effective environmental insurance available for redevelopment of brownfield properties.
- Funding is provided through DTSC through two programs: CLEAN Brownfields Loan Program and the Targeted Site Investigations Program (TSI). Funds are currently unavailable for CLEAN loans.

The EPA Brownfields Program has evolved to include technical and financial assistance and guidance to promote brownfields development (http://www.epa.gov/brownfields/). EPA also provides mapping of brownfields sites (http://www.epa.gov/scripts/esrimap?name =enviroMapper Nbf&cmd). Financial assistance is in the form of grants (assessment, cleanup) and loans (revolving loan fund). EPA estimates that $100 million will be available for 200 grant awards contingent upon the availability of funds in FY2004. The Region 9 coordinator is Tim Brincefield (brincefield.timothy@epa.gov).

EPA also operates an independent Targeted Brownfields Assessment (TBA) Program, which provides funding and/or technical assistance for brownfields assessment. Other EPA grant programs that may be applicable to brownsfields redevelopment include Smart Growth Grants, and the Environmental Justice Small Grants Program.

The Department of Housing and Urban Development (HUD) has several programs that provide financial assistance to communities (http://www.hud.gov/offices/cpd/economicdevelopment/programs/bedi/bfieldfinance.cfm), including: Community Development Block Grants, Section 108 Loan Guarantee Program, and Brownfields Economic Development Initiative (BEDI) grants that are used in conjunction with Section 108 loans. HUD also provides assistance for communities to obtain financial incentives associated with federally approved Empowerment Zone/Enterprise Communities (EZ/EC). No approved EZs or ECs occur in the Dominguez Watershed.

The California Recycle Underutilzed Sites (Cal ReUSE) Program was established in 2001 by the California Pollution Control Financing Authority (CPCFA). This state program grants forgivable loans for site assessments, technical assistance, and remedial action planning. Repayment of the loan may be "forgiven" if the prospective buyer decides against development based on results of the assessments.

The City of Los Angeles Brownfields Program (http://www.cityofla.org/ead/labf) provides assistance to facilitate brownfields redevelopment within the City. The Team works to identify brownfield sites that may be turned into parks to meet regional open space needs and to provide important greening linkages to existing natural amenities. The Team also provides on-call technical assistance, exploratory site assessments, and assists with major economic development sites, special purpose capacity building sites, brownfield demonstration sites, and showcase community matching fund sites.

Other programs that may apply depending on the design of the brownfields redevelopment are offered by the Department of Commerce (DOC) and the Department of Transportation (DOT). The Department of Commerce (DOC) has an Economic Development Assistance Program (http:www.doc.gov/eda), which provides assistance to build and rehabilitate public works infrastructure, attract private investment in economically distressed areas and small and medium-sized towns, and to support locally created partnerships that focus on regional solutions for economic development.

The Livable Communities Initiative of the Department of Transportation (DOT) (http://www.fta.dot.gov/library/planning/livbro) funds projects that strengthen the link between transit and communities. The DOT funded project must promote more livable communities that are customer-friendly, community-oriented and well designed resulting from a planning and design process with active community involvement. The project must (1) result from community planning process; (2) increase access to jobs, education opportunities, or social services, (3) incorporates community services or other transit and pedestrian-oriented mixed use developments, and (4) provides opportunities for small or disadvantaged business participation in the planning, design, and implementation phases of the project.

Issue

Over 200 potential brownfields sites are located within the Dominguez Watershed according to the DTSC list. However, brownfields redevelopment largely represents an untapped resource. Some examples of activities recently and/or currently underway in the watershed regarding brownfields include:

- The City of Carson received an EPA Assessment Pilot Grant to conduct assessment of several brownfields sites within the City along a transportation corridor. The City also applied for a Revolving Loan Fund grant.
- The City of Los Angeles received an EPA Assessment Pilot Grant to assess brownfields along the 20-mile Alameda Corridor.
- The City of Long Beach has received EPA Assessment Pilot Grants to assess brownfields.

- Economic redevelopment of the 232-acre Wilmington Industrial Park at Anaheim and Alameda Streets.
- Redevelopment of a 50-acre parcel adjacent to the Ken Malloy Harbor Regional Park to include a soccerfield, dog park, nature trails, habitat restoration, wetland restoration, and groundwater cleanup.

Addressing the problem of brownfields provides opportunity for business, government, and community leaders to foster economic growth in depressed areas while improving the quality of the local environment. Brownfields redevelopment provides substantial opportunity to revitalize communities and stimulate economic growth. It also provides opportunity to reduce impairments in the watershed with better land use practices, and to contribute to open space and recreation General Plan goals. Affordable technical and financial assistance and liability protections makes brownfields redevelopment an attainable goal for motivated communities. While redevelopment is more complicated with brownfields than with other lands, local experience exists in the watershed that could be leveraged to assist redevelopment throughout the watershed.

Actions

The following actions are recommended to facilitate the redevelopment of brownfields to benefit the watershed both from an environmental and economic perspective.

- Expand Technical Assistance for Brownfields Redevelopment.
- Increase Brownfields Redevelopment.

#### *4.7.3.1 Expand Local Technical Assistance for Brownfields Redevelopment*

Issue

Brownfields occur throughout the Dominguez Watershed, and provide opportunity for redevelopment that would serve environmental objectives on a watershed basis while contributing to local economic objectives. The City of Los Angeles Brownfields Program provides technical assistance to facilitate the redevelopment of brownfields within that city's boundaries. The City of Los Angeles was selected by the EPA in 1998 as a Showcase Community, to serve as a model for demonstrating the benefits of focused, coordinated attention on brownfields. Showcase Communities receive special technical, financial, and other assistance from EPA. Other communities within the Dominguez Watershed do not have a local source to obtain assistance with brownfields redevelopment. The watershed and all its member cities would benefit from increased technical assistance to facilitate brownfields redevelopment.

Action

A watershed-based Brownfields Redevelopment Committee would be established to promote and assist brownfields redevelopment within the watershed. The committee would consist of representatives from each jurisdiction, and possibly include other strategic partners (e.g., redevelopment agencies, non-profit organizations). The Committee would be responsible for informing their city councils and mayors of the importance of watershed-based brownfields redevelopment, and coordinating through meetings with the South Bay COG and other appropriate venues to seek support for expanding brownfields redevelopment assistance within the watershed.

Each jurisdiction would compile information on brownfield sites within its boundaries to assist with redevelopment planning. Information would be gathered from available sources such as the DTSC Deed List and CalSites database from which information can be obtained regarding site identification number, name, location, DTSC status, and deed restrictions (http://www.dtsc.ca.gov/ sitecleanup/brownfields/). The deed restrictions identify land use restrictions recorded pursuant to specified sections of the California Health and Safety Code, which can be used in a planning context to establish cleanup goals that are compatible with the intended use of the property; e.g., industrial, commercial. In addition, information would be gathered on parcel size, assessor parcel number, ownership, current use, adjacent land use and zoning, type and proximity of public infrastructure, and other information judged important for identifying potential redevelopment opportunities.

Additional community related information also would be prepared by each jurisdiction to facilitate grant applications (e.g., http://www.epa.gov/brownfields/pg/fy04_proposal_guidelines.htm), such as:

- Characterization of the impact of brownfields on the community.
- Description of community need (including demographic and environmental justice factors).
- Description of sustainable reuse/development potential.
- Ways in which the community is working to prevent future brownfields.
- Plan for community involvement.

***Expand Local Technical Assistance for Brownfields Redevelopment (Continued)***

The Brownfields Redevelopment Committee would coordinate with the Municipal Watershed Management Committee to develop strategies to incorporate watershed-based objectives in the redevelopment plans (Table 4.7-9). The aim would be to achieve multiple benefits associated with meeting broader community goals, in addition to the economic benefits of cleanup and reuse of brownfield sites. The preliminary watershed-based objectives for brownfields redevelopment presented in this action would be finalized in coordination with the Watershed Management Committee. The committee would coordinate with the PIPP to develop materials to enhance community education and involvement in brownfields redevelopment, including target audiences consisting of developers and lending institutions.

**Table 4.7-9. Preliminary Watershed-Based Objectives for Brownfields Redevelopment**

*Goal: Combine economic and watershed improvement objectives into brownfields redevelopment projects.*

Small Sites

- Incorporate SUSMP BMPs into project design.
- Landscape with drought-resistant, native plants.
- Use water-wise landscaping.

Large Sites

- Incorporate SUSMP BMPs into project design.
- Minimize hardscape and incorporate pervious pavement and walkways, where practicable.
- Use water-wise landscaping.
- Landscape with drought-resistant, native plants.
- Use recycled or rain-harvested (e.g., from cisterns) water for landscaping.
- Incorporate greenbelts, vegetated swales, parks, pocket parks, treatment wetlands, and/or recreational fields to help attain open space and recreational goals, and to minimize urban runoff.
- Enhance buffers to native habitat and/or water bodies with appropriate native vegetation.
- Include watershed-themed kiosk for public education.

An important activity of the Committee would be to leverage the experience of the City of Los Angeles Brownfields Resource Team to other cities within the Dominguez Watershed. This may be accomplished by expanding the role of the City of Los Angeles Brownfields Resource Team county-wide or developing a cooperative arrangement for information transfer and exchange, and establishing a corresponding Los Angeles County Brownfields Resource Team. Once responsibilities were expanded or a new group established, technical assistance with brownfields redevelopment would be made available to all cities within the Dominguez Watershed.

A record of activities and brownfield redevelopment accomplishments would be compiled on an annual basis, a summary fact sheet would be prepared, and distributed and/or communicated to city councils within the watershed, South Bay COG, business community, lending institutions, and in a letter to DTSC, EPA, and RWQCB. The purpose of these communications would be to demonstrate that the redevelopment and reuse of brownfields is worth funding and supporting within the Dominguez Watershed.

The committee would apply for EPA Brownfields Training, Research, and Technical Assistance Grant(s) to fund technology and information transfer amongst local governments, expand brownfields technical assistance throughout the watershed, expand brownfields inventory tools, and to enhance community involvement in brownfields redevelopment. A portion of redevelopment fees and/or tax revenue would be used to fund ongoing brownfields technical assistance.

***Expand Local Technical Assistance for Brownfields Redevelopment (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Establish a watershed-based Brownfields Redevelopment Committee with representatives from all jurisdictions within the watershed. | J (L, P), B (P), O (P) | Once | $ |
| Communicate benefits of watershed-based brownfields redevelopment to city councils and mayors, the South Bay Cog, and other appropriate organizations and community groups. | J (L, P) | Multiple, and ongoing | $ |
| Coordinate with Municipal Watershed Management Committee to finalize a list of watershed-based objectives to be incorporated into brownfields redevelopment. | J (P) | Quarterly | $ |
| Coordinate with PIPP to develop education and outreach materials regarding objectives and benefits of brownfields redevelopment. | J (P) | Once | $ |
| Coordinate with DTSC, EPA, HUD, and RWQCB regarding objectives of watershed-based Brownfields Redevelopment Committee. | J (L, P) | Once | $ |
| Leverage experience of City of Los Angeles Brownfields Resource Team to Dominguez Watershed. | J (L, P) | Ongoing | $ |
| Apply for EPA Brownfields Training, Research, and Technical Assistance Grant and Cooperative Agreement to facilitate information transfer and exchange, expansion of technical assistance throughout watershed, and to enhance community involvement in brownfields redevelopment. | J (L, P) | As Needed | $/application |
| Each jurisdiction to compile list of brownfields sites with key information such as site name, location, DTSC status, size, adjacent land use, ownership, assessor parcel number, etc. | J (P | Once, Update as necessary | $ |
| Implement brownfields technical assistance resources throughout Dominguez Watershed. | J (P), B (P), O (P) | Ongoing | $$/year |
| Coordinate marketing strategy to highlight brownfields redevelopment opportunities and to attract developers and non-profit organizations. | J (P), C (P) B (P), O (P) | Once, then update as needed | $-$$ |
| Network and identify supporters from banking and lending institutions. | J (P), B (P), O (P) | Ongoing | $ |
| Use a portion of development fees and/or tax revenues to make the brownfields technical assistance program self-sustaining. | J (L, P) | Ongoing | Revenue generating |
| Prepare fact sheet that summarizes activities and brownfield redevelopment accomplishments. Distribute and/or communicate to city councils, South Bay COG, business community groups, lending institutions, and to DTSC, EPA, and RWQCB. | J (L, P) | Annual | $ |
| | | Total Estimated Cost (until self-sustained) | $$-$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed
Other = non-profit organizations

Type of Action: Management planning.

Goal(s) Addressed by Action

- Implement stewardship of the watershed in balance with economic and environmental impacts.

***Expand Local Technical Assistance for Brownfields Redevelopment (Continued)***

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.
- Obtain grant funds to implement watershed improvement projects.

Benefit(s) of Action

Expanding technical assistance resources for brownfields redevelopment will facilitate the progress of this redevelopment. Brownfields redevelopment reduces urban blight, potential contamination in urban areas, productive reuse of land, and contributes to economic revitalization of communities.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address storm water runoff | Revegetation | Reduce degradation | Enhance open space | Address one of top stakeholder issues |
| | | Reduce pollutant concentration | | Partnership opportunities (public and/or private) |
| | | Increase aesthetic values of land | | Public involvement |
| | | Increase economic value of land | | Regional and/or watershed benefits |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Staff reassignment and/or retraining required.
- New staff (or contractors) may be required.
- Implementation and maintenance (annual or more frequent) required.

Potential Source(s) of Funds

Several sources of funds may exist, including:

- Reallocation of budget.
- Grant (EPA Brownfields Training, Research, and Technical Assistance Grant)

Time Frame Considerations

- Implement in < 2 years.
- Near- and long-term benefits.

#### *4.7.3.2 Increase Redevelopment of Brownfields*

Issue

Over 200 brownfields sites have been identified within the watershed (http://www.dtsc.ca.gov). Less than a third of these sites either have been certified as remediated or no clean up is needed. The remaining sites are either in the process of being remediated or require clean up. Thus, there is a substantial number of brownfields with the potential for redevelopment within the watershed.

Action

The action covers three phases of project involvement, including the initial assessment phase to determine the nature and extent of contamination, cleanup to remove contamination, and redevelopment to return the property to productive use. An application would be made to obtain a grant to conduct the Phases 1 and/or Phase 2 assessment(s). Results of the assessment would be provided to DTSC, who would updating their database, as appropriate. Depending upon the assessment results, a decision would be made relative to going forward with a clean up.

Brownfields redevelopment may be undertaken by the property owner, local governments, developers, non-profit organizations, and school districts. This action assumes that the activities would be undertaken by any of the listed entities with the exception of the current property owner, who it was assumed would be a willing seller. Prior to clean up, applications would be made to the DTSC to limit liability by obtaining a Prospective Purchaser Agreement and by being accepted by DTSC in their Voluntary Cleanup Program. Obtaining FAIR environmental insurance also would be considered. Application(s) would be made for a cleanup grant and/or a revolving loan fund depending upon the estimated cost of the clean up. Remediation would be undertaken under the oversight by the DTSC, who would certify the site once the cleanup activities were completed to their satisfaction. A tax specialist would be consulted regarding eligible deductible expenses associated with the cleanup. During this period, networking would be done to identify supporting lending institutions for the redevelopment phase of the project.

A conceptual design for redevelopment would be prepared that incorporates SUSMP BMPs and other watershed-based measures, such as listed in Table 4.7-9, as appropriate. The design of the redevelopment would be coordinated with and revised based on community input. Cost estimates would be prepared based on the acceptable design. Application would be made to obtain a grant and/or revolving loan fund. Environmental documentation would be prepared and necessary permits obtained. Final plans, specifications, and costs would be prepared. Contractors would be hired to construct the redevelopment project.

Community outreach would be carried out through all phases of the project. Photographs would be taken during the different project phases to demonstrate work progress and to keep the public informed. Photographs would be posted on municipal internet sites, as appropriate. The media (and politicians) would be invited to attend a ground-breaking event to celebrate and advertise the redevelopment effort. After redevelopment was complete, watershed-based signage would be installed to increase public awareness of the benefits from the redevelopment and/or other environmental stewardship messages. The property would be maintained, as appropriate.

***Increase Redevelopment of Brownfields (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| ***Planning Phase*** | | | |
| Coordinate with Brownfields Redevelopment Committee to obtain assistance, as necessary. | J (L), B (L), O (L), S (L) | As needed | $ |
| Apply for assessment grant to conduct Phase I and Phase II (if necessary) site assessment(s). | J (L), B (L), O (L), S (L) | Once | $ |
| Report findings to DTSC for sites determined to not require cleanup. | J (L), B (L), O (L), S (L) | Once | $ |
| Develop partnerships, as necessary, for brownsfields redevelopment of sites where cleanup will be required. | J (L), B (L), O (L), S (L) | Once | $ |
| ***Cleanup Phase*** | | | |
| Apply to DTSC for Prospective Purchaser Agreement to limit environmental liability. | J (L), B (L), O (L), S (L) | Once | $ |
| Purchase brownfield site(s). | J (L), B (L), O (L), S (L) | Once | $$$-$$$$ |
| Apply to DSTC for Voluntary Cleanup Program oversight for site(s) determined to require cleanup. | J (L), B (L), O (L), S (L | Once | $ |
| Develop cleanup strategy in coordination with DTSC based on land restrictions, adjacent land use, and appropriate land use options. | J (L), B (L), O (L), S (L) | Once | $ |
| Apply for Cleanup Grant and/or Revolving Fund Loan. | J (L), B (L), O (L). S (L) | Once | $ |
| Obtain FAIR insurance, as appropriate. | J (L), B (L), O (L), S (L) | Once | $ |
| Contract with qualified contractors to conduct site remediation. | J (L), B (L), O (L), S (L), C (P) | Once | $$-$$$$ |
| Document and photograph cleanup activities, provide to appropriate municipality and Brownfields Redevelopment Committee to post on internet web sites, and to DTSC. | J (L), B (L), O (L), S (L) | Once | $ |
| Obtain certification of cleanup completion. | J (L), B (L), O (L), S(L) | Once | $ |
| Consult with tax council regarding eligible deduction of expenses associated with cleanup costs under the Brownfields Tax Incentive. | J (L), B (L), O (L), S (L), C (P) | Once | $ |
| Network to identify supporting lending institutions. | J (L), B (L), O (L), S (L) | Once | $ |
| ***Redevelopment Phase*** | | | |
| Prepare conceptual design for redevelopment that combines economic and watershed-based objectives, such as listed on Table 4.7-9, and present to community. | J (L), B (L), O (L), S (L), C (P) | Once | $$ |
| Revise design based on community input, prepare cost estimates. | J (L), B (L), O (L), S (L), C (P) | Once | $$ |
| Apply for Grants, Revolving Loan Fund, and/or obtain other funding source(s). | J (L), B (L), O (L), S (L), | Once | $ |
| Prepare CEQA documentation. | J (L), B (L), O (L), S (L), C (P) | Once | $$ |
| Obtain necessary permits. | J (L), B (L), O (L), S (L), C (P), A (R) | Once | $-$$ |

***Increase Redevelopment of Brownfields (Continued)***

| Activities | Stakeholder (Role) | Frequency | Cost Estimate |
|---|---|---|---|
| Prepare finalize construction plans and specifications. | J (L), B (L), O (L), S (L), C (P) | Once | $$ |
| Construct redevelopment project. | J (L), B (L), O (L), S (L), C (P) | Once | $$$$ |
| Document and photograph cleanup activities, provide to appropriate municipality and Brownfields Redevelopment Committee to post on internet web sites, and to DTSC. | J (L), B (L), O (L), S (L) | Once | $ |
| Invite media and politicians to ground breaking of large sites. | J (L), B (L), O (L), S (L) | Once | $ |
| Install watershed-based signage to provide public education on objectives incorporated in brownfields redevelopment. | J (L), B (L), O (L), S (L), C (P) | Once | $ |
| Operate and maintain property. | J (L), B (L), O (L), S (L), C (P) | Annual as needed | $-$$/yr |
| | | Total Estimated Cost | $$$$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed with brownfields
Agencies = May include: CDFG, DTSC, EPA, HUD, RWQCB, USACE, USFWS
Other = Non-profit organization

Type of Action:

- Assessment, Remediation, Redevelopment.

Goal(s) Addressed by Action

- Implement stewardship of the watershed in balance with economic and environmental impacts.
- Promote public awareness and involvement in watershed management.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Raise public awareness and increase personal stewardship of the watershed.
- Involve and encourage public participation in management and protection of watershed resources.
- Obtain grant funds to implement watershed improvement projects.

Benefit(s) of Action

Brownfield redevelopment provides needed opportunity for revitalizing cities, fostering economic growth in depressed areas, and improving the quality of the urban environment. Benefits of brownsfields redevelopment include tax base growth, job creation, removal of harmful chemicals from urban communities, reduction in watershed impairments, and improved aesthetics. Depending upon the proposed land use, redevelopment also has the potential to contribute to open space, recreation, and/or habitat enhancement/restoration goals, and/or to improve population capacity through neighborhood revitalization.

***Increase Redevelopment of Brownfields (Continued)***

The types of multiple benefits that potentially would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address storm water runoff | Provide habitat and/or wildlife corridor linkage | Reduce pollutant concentration | Increase recreational values of land | Address one of top stakeholder issues |
| Source control | | Reduce degradation | | Partnership opportunities (public and/or private) |
| Increase water reuse | | Increase aesthetic values of land | | Public involvement |
| Regional and/or watershed benefits | | Local benefits | | |
| | | Enhance open space | | |
| | | Contribute to General Plan goal(s) | | |
| | | Increase economic value of land | | |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Brownfields Tax Incentive – allows deduction of environmental remediation expense in year it is incurred.
- Land purchase required.
- New staff (or contractors) required.
- Measures may be required to protect groundwater from hazardous materials.
- Design plans required.
- Permits required.
- Equipment (and/or materials) purchase required.
- One time implementation cost and/or limited maintenance required.

Potential Source(s) of Funds

It is recommended that a mix of public funding (e.g., tax incentives), federal or state grants, and private funding be used to fund projects. Sources of funds include:

- DTSC – CLEAN Brownfields Loan Program – due to state budget restrictions, funds are currently unavailable.
- EPA Brownfields Grants (Assessment, Cleanup).
- EPA Brownfields Grants (Subtitle A) – for school districts.
- EPA Brownfields Revolving Loan Fund.
- EPA Smart Growth Grants – emphasize multiple benefits including redevelopment, clean air and water, multiple transportation options, quality of life.
- HUD Community Block Grants, Section 108 Loan Guarantees, BEDI Grants.
- Los Angeles Brownfields Revitalization Fund – can be used for assessment, acquisition, remediation, and community involvement activities.
- Community Development Bank (e.g., Los Angeles Community Development Bank).
- Mello-Roos community facilities Act Amendments.

***Increase Redevelopment of Brownfields (Continued)***

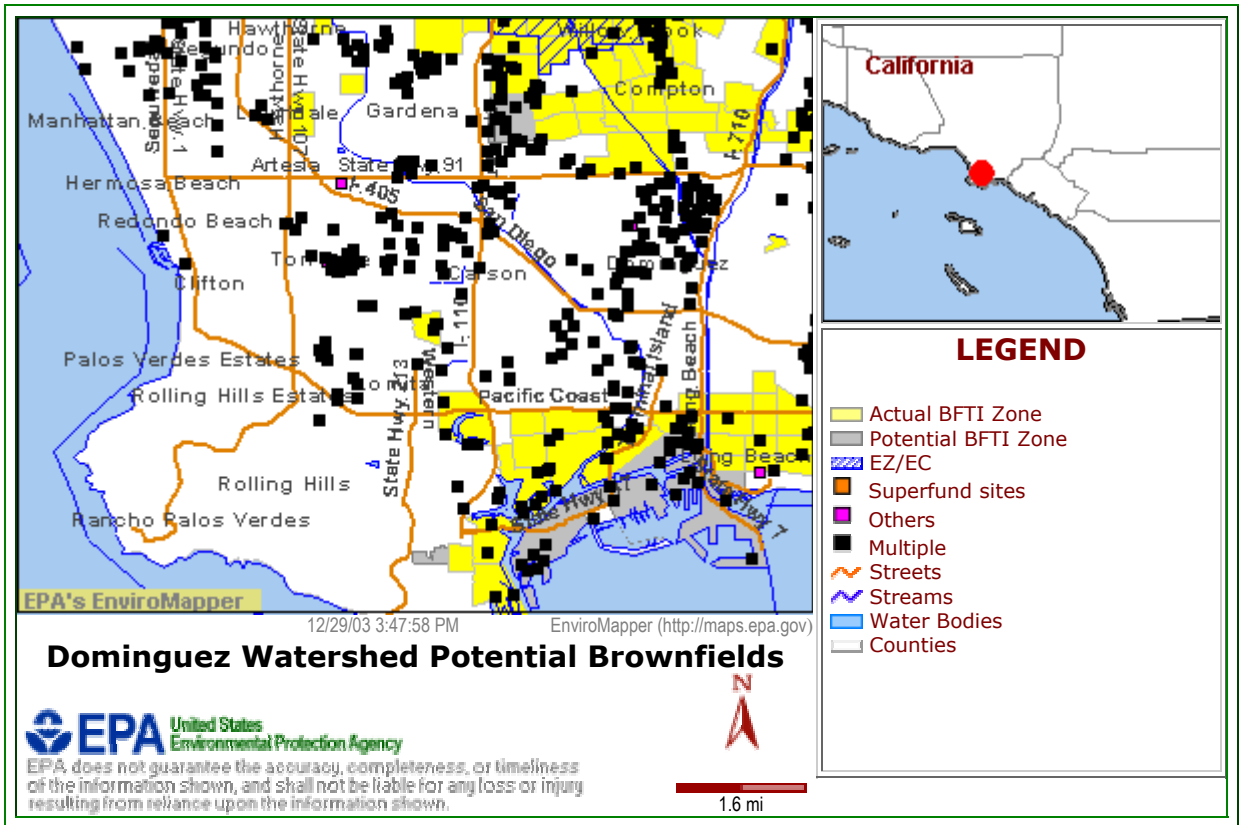
- Real Estate Investment Trust (REIT) – funds comprised of revenues from private investors; when applied to brownfields, the REIT acts as the owner, thereby shielding investors from liability in excess of the investors' initial monetary input.
- Tax Incentives – credit or defer taxes to be paid on property, income, or sales to provide businesses with incentives to facilitate redevelopment opportunities.
- Trust funds – special accounts established to receive and disburse revenues from taxes and/or fees for dedicated purposes.

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

Potential Project Location(s)

The EPA Brownfields Enviromapper database identifies sites with current, past, and/or suspected releases of toxic substances. The EPA database does not indicate the current use of a site; i.e., whether it is potentially available for redevelopment nor the current status of the site as reported by the DTSC. For illustrative purposes, the following figure was generated from the EPA EnviroMapper database of potential brownfields where the use of multiple contaminants have been reported. Additional investigation of site records (Action 4.7.3.1, in part) would be necessary to determine the redevelopment availability of these sites. Brownfields that have been identified for the Dominguez Watershed are listed in Appendix C. The table includes the site ID number, which can be used to view available data on the site in DTSC database. The status of the sites are defined at the end of the table in Appendix C.



***Increase Redevelopment of Brownfields (Continued)***

Monitoring Recommendations

Activities undertaken during cleanup and redevelopment would be documented and photographed to provide a record for information transfer and exchange.

### 4.7.4 Actions to Obtain Funds to Implement Watershed Programs and Projects

Statement of Problem

Several programs and projects are recommended in the Action Plan based on results of the watershed study, public outreach, and coordination with the DWAC. All the identified actions will yield environmental benefits and incrementally contribute to the goals of reducing and eliminating impairments, and protecting, enhancing, and restoring beneficial uses in the watershed. Watershed management projects often do not yet "fit" into the traditional framework of existing municipal departments such as planning, engineering, or public works. While many of the proposed programs and projects would be appropriate for municipalities to implement, local funds are often earmarked. Reallocation of funds may be possible for funding some of the proposed watershed programs. However, implementation will not be possible for many of the programs and projects due to insufficient budget, limitations in staff resources, and/or other constraints (e.g., property ownership). Outside sources of funding and/or other agencies and groups will be needed to implement many of the proposed watershed projects. Other appropriate groups include non-profit organizations, community groups, school districts, public agencies, and state agencies. Outside funding also would be necessary by those groups to implement proposed watershed actions.

Existing Actions

Several sources of funding for watershed-based programs and projects are available, and include the following:

- Reallocation of jurisdictional budgets.
- Disbursements from sale of bonds.
- Disbursements from taxes.
- Fees.
- Grants from federal, state, and non-governmental agencies.
- Low interest loans from federal and state agencies.
- Partnerships and/or sponsorships.
- Supplemental RWQCB funds.
- Trust accounts and/or funds.

**Helpful sources of information regarding grant programs.**

- Catalog of Federal Funding Sources for Water Protection (http://cfpub.epa.gov/fedfund/)
- Environmental Grantmakers Association (http://www.ega.org/)
- Money matters (http://www.epa.org/)
- Resources for Global Sustainability (http://www.environmentalgrants.com)

Many of the more commonly used sources of funds are listed in Table 4.7-10 at the back of this section. The funding type, agency program name, purpose of the funding source, eligible entities, match requirements, and contact information are given for each funding source. The table is organized according to the following issue areas:

- Water quality improvement.
- Roadway improvements for water quality.
- Water conservation, recycling, and reclamation.
- Habitat Enhancement and/or Restoration.
- Monitoring.
- Public Education.
- Recreation.

- Brownfields Redevelopment.
- Watershed Plan Implementation.

Generally obtaining funds is through a competitive process involving preparation of an application, which is reviewed by the funding agency. There are no assurances that submission of an application will result in acquisition of funds. In addition, many funding sources have funding cycles that span only a few years, and either must be supplemented with additional funds or the fund is discontinued. Loans provide more certainty in obtaining funds at the funding level desired, and low interest revolving loan funds minimize the financial impact of the loan. Other strategies involving selling sponsorships or establishing fees also have been used to provide a reliable funding source.

Issue

Opportunities exist to obtain funds from a variety of different sources to implement watershed based programs and projects. Because of uncertainties and/or limitations associated any one source of funds, a strategy that includes a mix of public funding, federal and state grants, and self-generating funds are recommended to obtain the needed funds for implementing WMMP programs and projects.

Purpose

The purpose of obtaining outside funding is to promote progress in the implementation of watershed programs and projects.

Actions

The actions, which are described in the subsections below, include:

- Apply for Grant Funding to Implement Watershed Projects.
- Implement Adopt-A-Waterway Program.
- Establish Storm Water Utility Fee.
- Establish Mitigation Bank to Manage Improvement in Wildlife Habitat Quality.

### *4.7.4.1 Apply for Grant Funding To Implement Watershed Projects*

Issue

Local jurisdictional funding may not be available or the best choice to implement some of the actions described in this Action Plan. Several projects are identified that involve enhancement and/or restoration of native habitats to improve water quality and to increase biological resource values. Implementation of some of these types of projects may be possible as part of mitigation for new developments. Other projects will require separate funding sources to implement. Many projects are appropriate for funding through federal, state, and local grants. Often information about each grant, such as the Application Reference Document (ARD), is published and available to the public to help guide the grant writing process.

Action

This action involves obtaining grant funding to implement watershed management actions. Contact would be made with the agency grant coordinator to verify applicability of the grant for the proposed project and to obtain assistance with the grant application, as necessary. The description of the action, issue that it addresses, and benefit(s) of the action shall be described from the Action Plan and augmented with additional information, as needed. First order cost estimates provided in the Action Plan shall be refined based on additional project analysis. The grant application process will consider the potential for public involvement and developing of partnerships with other stakeholders to implement the project, if possible. Grants can be more successful if there are multiple stakeholders involved in the project implementation. The grant application shall be submitted to the appropriate agency, and follow up shall be conducted to ascertain the status and success of the application, as appropriate.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Obtain grant information (e.g., Application Reference Document). | J (L), C (L) | Annual | $ |
| Consider collaboration and define agreements with other stakeholders. | J (L)/(P)<br>C (P)<br>A (P)/(Ad)<br>O (L)/(P) | Annual | $ |
| Obtain grant Request for Proposal (RFP). | J (L), C (P),<br>O (L) | Once per grant type/ annually | $ |
| Apply for grant funding. | J (L), C (P),<br>O (L), A (R) | Once per grant application | $ |
| Determine reasons for non-selection, if appropriate, and rectify any deficiencies and resubmit at appropriate time | J (L), C (P),<br>O (L), A (R) | As Needed | $ |
| | | Total Estimated Cost per grant application | < $10,000 |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed
Agencies = Varies according to grant

***Apply for Grant Funding To Implement Watershed Projects (Continued)***

Type of Action:

- Management planning.
- Fund raising.

Goal(s) Addressed by Action

- Implement stewardship of the watershed in balance with economic and environmental impacts.

Objective(s) Addressed by Action

- Obtain grant funds to implement watershed improvement projects.
- Develop an effective approach to meeting water quality regulations for the watershed.

Benefit(s) of Action

Obtaining grant funding to help implement projects will contribute to substantial environmental benefits in balance with economic impacts.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | | | | Partnership opportunities (public and/or private) |
| | | | | Address one of top stakeholder issues |

Cost Consideration(s)

The following factor has the potential to affect the cost of the action:

- Staff reassignment and/or retraining required.

Potential Source(s) of Funds

- Reallocation of budget.

Time Frame Considerations

- Implement in < 2 years.

### *4.7.4.2 Implement Adopt-A-Waterway Program*

Issue

Local governments are responsible for controlling sources of pollution and reversing impairments associated with storm water and urban runoff. Local budgets are insufficient, and grant funding must be sought and competed for along with numerous other cities.

Action

This action involves encouraging cities within the Dominguez Watershed to implement the Adopt-a-Waterway Program (AAW) as an effective means to provide educational outreach, as well as to raise funds for pollution prevention programs. The AAW creates corporate and business sponsored signage, which integrates watershed messages with companies' logos. The signs are then placed along high traffic areas to provide an educational message along with promotional advertising for the sponsor. Sponsors can select in advance the location where signs will be placed with city or county approval. AAW provides 50 percent of the sponsorship funds to the city where the signs are placed. The funds can only be spent on urban storm water pollution prevention programs.

In addition, participating municipalities receive the "The Clear Solution" community outreach program at no additional cost. That program includes broadcast promotional recognition on AAW produced commercials and public service announcements on local television, cable, and radio shows, and collateral materials (e.g., newsletters, educational community brochures, educational business brochures, FAQ sheets, children's activity books, lists of links and resources, and educational displays for special events).

The Adopt-A-Waterway Program has been implemented in localized areas within the watershed (e.g., City of Long Beach, City of Redondo Beach, Port of Long Beach), and has gained positive comments from a variety of corporate sponsors, mayors of coastal cities from Orange County to Los Angeles, and environmental agencies (http://www.adoptawaterway.com).

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Implement the Adopt-a-Waterway Program | J (L) | Annual | $ |
| Seek corporate sponsors to purchase the signs | J (L) | Annual | $ |
| | | Total Estimated Cost | $ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed

Type of Action**:** Public education and outreach. Fund raising.

Goal(s) Addressed by Action:

- Promote public awareness and involvement in watershed management.
- Implement stewardship of the watershed in balance with economic and environmental impacts.

***Implement Adopt-A-Waterway Program (Continued)***

Objective(s) Addressed by Action

- Raise public awareness and increase personal stewardship of the watershed.
- Obtain funds to implement watershed improvement projects.

Benefit(s) of Action

The use of attractive signs for public outreach of watershed-themed messages along high traffic areas will increase public awareness of watershed problems, issues, and solutions. Half the funds generated from the sponsored signage will be available to jurisdictions for use in pollution prevention. The Clear Solution education and outreach program is provided freely to participating local governments.

The project would result in the following potential benefits:

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| Obtain funds to reduce degradation | | | | Public education and outreach |
| | | | | Regional and/or watershed benefits |
| | | | | Obtain funding |

Cost Considerations

Minimal cost in the form of staff time is required to implement the program.

- Staff reassignment.

Potential Source(s) of Funds

- The program generates its own revenue.

Time Frame Considerations

- Implement in < 2 years.

Potential Project Location(s)

High traffic streets and highways, including but not limited to the following streets.

- Artesia Boulevard.
- Gaffey Street.
- Hawthorne Boulevard.
- Imperial Highway.
- Main/Wilmington Avenue.
- Manchester Boulevard.
- Normandie Avenue.
- Pacific Coast Highway.
- Redondo Beach Boulevard.
- Rosecrans Avenue.

### *4.7.4.3 Establish Stormwater Utility Fee*

Issue

Some communities have successfully established a stormwater utility user fee to help fund solutions to stormwater and urban runoff problems. The key consideration in developing an acceptable fee is to develop a rate structure that is fair and easy to understand. In addition, the rate structure should generate sufficient revenue to cover the projected budget for stormwater management.

Action

This action involves developing a stormwater utility fee for the Dominguez Watershed. Public acceptance of the fee will require outreach and education to increase public awareness of the magnitude of the stormwater quality issue, funding constraints of local budgets, and the variety of existing methods used to obtain grant funding that is still insufficient for the task. The Executive Advisory Committee will select a subgroup from its members to spearhead the effort to develop an acceptable stormwater utility rate structure. This group will conduct a stormwater program needs assessment and utility feasibility study. Input from each jurisdiction will be gathered for the needs assessment. Stormwater utility fees successfully implemented by other communities will be reviewed and that experience will be applied to the utility study. A preliminary rate structure based on property owner's contribution to runoff will be developed. Typical fees for the average homeowner will be computed, and the revenue generated from applying the fees to the watershed also will be computed. Results of the needs assessment and utility study will be presented to the city councils, County Department of Regional Planning, and appropriate legal counsel. A fact sheet will be prepared, in coordination with the PIPP, that explains the need for the fee, proposed rate structure, how the money will be spent, and opportunities to review and comment on the proposed stormwater utility fee. The fact sheet will be included as a mailer in a regularly scheduled water bill. Public hearings will be held to discuss the proposed fee. The final language of the stormwater utility fee will be prepared after coordination with the public, and submitted to the city councils for adoption.

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Communicate need for reliable revenue source to implement storm water improvement projects to city councils. | J (L, P) | Repeated occasions | $ |
| Conduct stormwater program needs assessment and utility feasibility study. | J (L, P) | Once | $$ |
| Develop draft stormwater utility fee rate structure based on property owner's contribution to runoff. | J (L, P) | Once | $ |
| Present results of needs assessment and draft rate structure to city councils and to the County Department of Regional Planning. | J (L), C (P) | Once | $ |
| Coordinate with the PIPP to develop public education materials regarding the need for a consistent and fair stormwater fee to fund necessary water quality improvement programs. | J (L) | As Needed | $ |
| Revise draft stormwater utility fee rate structure based on received comments, and submit to city attorneys, as appropriate. | J (L, P) | As Needed | $ |
| Provide revised draft of stormwater utility fee description for public review and comment. | J (L, P) | As Needed | $ |
| Schedule a public hearing to discuss the stormwater utility fee. | J (L, P) | As Needed | $ |

***Establish Stormwater Utility Fee (Continued)***

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Finalize language of stormwater utility fee based on results of coordination with the public and additional guidance provided by appropriate city councils. | J (L, P) | As Needed | $ |
| Submit final stormwater utility fee to city councils and appropriate commissions for formal adoption. | J (L, P) | As Needed | $ |
| Implement Stormwater utility fee. | J (L, P) | As Needed | $ |
| | | Total Estimated Cost | $$ |

Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other
S = schools/universities, V = volunteers
Roles: L = lead, Ad = advisory, P = participant, R = review
Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

Note: Jurisdictions = All cities and county within watershed

Type of Action: Fund raising.

Goal(s) Addressed by Action

- Implement stewardship of the watershed in balance with economic and environmental impacts.

Objective(s) Addressed by Action

- Develop an effective approach to meeting water quality regulations for the watershed.
- Raise public awareness and increase personal stewardship of the watershed.
- Obtain funds to implement watershed improvement projects.

Benefit(s) of Action

Establishment of a stormwater utility fee would provide a reliable funding source to help implement needed programs to improve water and habitat quality in the watershed.

The types of multiple benefits that would result from the action are listed below.

| **Water** | **Habitat** | **Land** | **Recreation** | **Stewardship** |
|---|---|---|---|---|
| Address 303(d) listed impairment | Reduce degradation | | | Public involvement |
| Address mandated, permit required objective | | | | |
| Address one of top stakeholder issues | | | | |
| Address dry weather runoff | | | | |
| Address storm water runoff | | | | |
| Reduce pollutant concentration | | | | |
| Regional and/or watershed benefits | | | | |

***Establish Stormwater Utility Fee (Continued)***

Cost Consideration(s)

- Staff reassignment and/or retraining required.

Potential Source(s) of Funds

- Reallocation of budget.

Time Frame Considerations

- Implement in 2- 5 years.
- Near- and long-term benefits.

Potential Project Location(s)

- Entire watershed

### *4.7.4.4 Establish Mitigation Bank To Manage Watershed-Based Habitat Enhancement/Restoration*

Issue

The County and municipalities within the watershed carry out a variety of projects that serve the public. These include, but are not limited to, road construction and improvement, park construction and improvement, construction and maintenance of public buildings, sewage treatment and solid waste facilities, water reclamation facilities, and airports. In addition, private development projects for residential, commercial, and industrial purposes are regularly processed through the County and incorporated cities within the watershed. These public and private projects may cause the disturbance of habitat for sensitive species, resulting in the need to mitigate project impacts.

Natural habitat areas are limited in the watershed, and include islands of habitat surrounded by urban land uses and a more extensive mix of upland and riparian habitats in canyons of the Palos Verdes peninsula. Many of these lands are in need of enhancement and/or restoration to improve biological functions.

A mitigation bank is a technique whereby lands are managed as open space for the benefit of wildlife, and mitigation credits can be established for that management and then applied to projects as they proceed. Establishment of a mitigation bank is a method to focus enhancement/restoration in areas of need, and to streamline the CEQA process and mitigation for approved development projects.

Action

A county-wide mitigation banking policy would be adopted, and a Dominguez Watershed Mitigation Bank would be established. The bank would include oversight by a Mitigation Bank Technical Committee, including representatives from the County Department of Regional Planning, and appropriate parks and recreation departments (e.g., City of Los Angeles, County of Los Angeles, City of Carson, City of Gardena, City of Rolling Hills, City of Rolling Hills Estates, City of Rancho Palos Verdes, City of Torrance). Other relevant city and/or county Departments also may be included, as appropriate. The purpose of the committee would be to select land to be designated and/or acquired through conservation easement as the Dominguez Watershed Mitigation Bank. The Committee would select a Chairperson from its members, who would be responsible for coordination among members, communication with legal counsel, and communication with resource agencies.

Lands to be potentially included in the watershed mitigation bank would be selected based on agreed upon criteria. Lands initially under consideration would include city and/or county owned public land. In addition, private lands for which a conservation easement could be obtained also would be considered. Acquisition of private lands from a willing seller would be considered after the mitigation bank was established and funded. Properties would not be appropriate for inclusion in the mitigation bank if they had been acquired for past mitigation purposes, or if they had been acquired with funds that restrict their use to certain purposes (e.g., park property acquired with State Bond Act Funds that restrict the use of the land). Due to the requirement for mitigation sites to be maintained in perpetuity, conservation easement of properties included in the mitigation bank would be granted to an appropriate non-profit organization and/or the CDFG.

**Example Land Selection Criteria.**

- The property should include sensitive and/or listed plant and animal species, and/or has the potential for revegetation of sensitive habitat.
- The property should be large enough to sustain biological viability of the resources present or should be adjacent to other permanently protected land so that, in combination, the viability of the resources will be ensured.
- The property owner must be willing to sell or donate the property, or to grant a conservation easement on the property in perpetuity.

***Establish Mitigation Bank To Manage Watershed-Based Habitat Enhancement/Restoration (Continued)***

After potential sites were selected, an environmental review of the type, quality, and extent of biological resources present at each site would be performed and summarized in a letter report, which would also include the size of the land parcel and a map of its location. A meeting would be held with wildlife resource agencies (CDFG, USFWS) to informally negotiate credits based on location of the properties and resources present on site consistent with the Policy on Conservation Banks, adopted April 7, 1995. Different credit amounts would be established for habitat enhancement, restoration, and creation.

A watershed mitigation banking agreement (Agreement) would be prepared, in a form approved by County Counsel, which would specify the number of credits available for the properties proposed for inclusion in the mitigation bank and a management plan for the properties. The management plan would include description of the baseline environmental resources, description of the number of credits available, description of appropriate types of vegetation management, enhancement, and/or restoration techniques, description of access control measures, description of management techniques necessary to maintain the resources, listing of reporting requirements, estimate of annual administration and management costs, and estimate of amount necessary to capitalize a trust account to establish and support the bank in perpetuity. The Agreement would be submitted to the resource agencies for review and approval of the negotiated credits and management plan. The agency approved Agreement would be submitted to the County Board of Supervisors and appropriate City's for approval.

The initial capitalization of the mitigation bank would be paid back as credits are allocated to County, municipal, and/or private projects. The costs associated with the mitigation bank would be borne by the entities using credits. A trust account would be established by Auditor and Controller, with the interest from the account being used to fund administration and management costs. A separate Resource Replacement Fund could be established for acquiring land with a portion of the funds acquired from sale of credits being allocated to this fund.

Enhancement and/or restoration of the lands would occur according to available funding in the mitigation bank trust account. Monitoring would be performed for a period of five years after implementation of enhancement/restoration to ensure resource values were attained. A master compiled list of the properties and status of credits within the mitigation bank would be prepared and updated as credits were used. A master list of planned projects, including an estimate as to the type and amount of habitat likely to be impacted by each project, for the upcoming five years would be compiled from the planning departments of the county and cities within the watershed. That information would be used to determine the need and type of habitat that should be acquired either through conservation easement or by purchase.

***Establish Mitigation Bank to Manage Watershed-Based Habitat Enhancement/Restoration (Continued)***

Activities, stakeholder roles, and cost estimate for the action are described below.

| **Activities** | **Stakeholder (Role)** | **Frequency** | **Cost Estimate** |
|---|---|---|---|
| Establish committee to prepare draft mitigation bank policy. | J (L, P) | Once | $ |
| Select properties for potential inclusion in mitigation bank. | J (P) | Once, then as needed | $ |
| Update and/or perform environmental review of property. | J (L), C (P) | Once per property | $ |
| Negotiate with resource agencies to establish the type and number of credits available for each property. | J (L), A (P) | Once, then when additional properties added | $ |
| Prepare mitigation bank agreement. | J (L, P) | Once | $-$$ |
| Obtain approvals from appropriate legal counsel, resource agencies, and Board of Supervisors. | J (L), A (R) | Once | $ |
| Establish trust account for mitigation bank. | J (L) | Once | $$-$$$ |
| Maintain master compiled list of planned projects for upcoming 5 years in watershed. | J (L, P) | Annual | $ |
| Maintain master compiled list of debiting credits according to property and project. | J (L, P) | Annual | $ |
| Implement habitat enhancement, restoration, and/or creation projects. | J (L), C (P) | According to mitigation bank funding level. | $-$$$ |
| The effectiveness of the enhancement, restoration, and/or creation be monitored over a five year period after implementation to ensure resource values were attained. | J (L), C (P) | Annual for five years after projects implemented | $-$$/year |
| Total Estimated Cost (initial capitalization, which would be paid back to the fund account(s) initially used to establish the trust account, as projects were implemented) | | | $$$ |
| Stakeholders: A = resource/regulatory agencies, B = businesses, C = contractor/consultant, J = Jurisdiction, O = other S = schools/universities, V = volunteers<br>Roles: L = lead, Ad = advisory, P = participant, R = review<br>Estimated cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000 | | | |

Note: Jurisdictions = All cities and county within watershed
Agencies = CDFG, USFWS

Type of Action: Management planning.

Goal(s) Addressed by Action

- Implement stewardship of the watershed in balance with economic and environmental impacts.
- Protect, enhance, and restore native habitats and biological resources.

Objective(s) Addressed by Action

- Promote and protect beneficial uses and eliminate further degradation of the watershed.
- Obtain funds to implement watershed improvement projects.

***Establish Mitigation Bank to Manage Watershed-Based Habitat Enhancement/Restoration (Continued)***

Benefit(s) of Action

A mitigation bank would streamline planning for public and private projects because off-site mitigation credits to meet state and federal Endangered Species Acts and CEQA requirements would be readily available. Additionally, the mitigation bank would further the goal of protecting, enhancing, and restoring biological resources by directing mitigation to areas in the watershed with the highest and/or with the potential for high biological value.

The types of multiple benefits that would result from the action are listed below.

| Water | Habitat | Land | Recreation | Stewardship |
|---|---|---|---|---|
| | Acquisition | | | Streamline CEQA |
| | Create sensitive habitat | | | |
| | Enhance/restore habitat | | | |
| | Protect habitat | | | |
| | Reduce invasive species | | | |
| | Regional and/or watershed benefits | | | Regional and/or watershed benefits |

Cost Consideration(s)

The following factors have the potential to affect the cost of the action:

- Staff reassignment and/or retraining required.
- Land easement may be required.

Potential Source(s) of Funds

- Reallocation of budget.
- Enterprise Fund.

Time Frame Considerations

- Implement in 2- 5 years.

Potential Project Location(s)

- Ken Malloy Harbor Regional Park.
- Wilmington Drain.
- County owned lands adjacent to Gardena Willows.
- Areas within Rolling Hills Canyons available through conservation easements.

Monitoring Recommendations

Baseline environmental conditions would be established to determine available credits for properties, and monitoring would be done after implementation of enhancement, restoration, and/or creation projects to ensure project objectives were attained.

**Table 4.7-10. Sources of funding for watershed programs and projects according to issue area.**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Water Quality Improvement** | | | | | |
| Federal Grant | USEPA<br>Superfund Technical Assistance | Provides funds to permit community groups to hire technical advisors who can assist in interpreting technical information concerning the assessment of potential hazards and the selection and design of appropriate remedies. | Community group | Yes, unless waived | USEPA<br>http://www.epa.gov/superfund/tolls/tag/<br>(415) 744-2182 |
| Federal Grant | USEPA<br>The Wetland Program Development Grant (WPDG) | Projects that promote the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. | State, tribal and local governments | Yes | USEPA, Cheryl McGovern<br>(415) 972-3415 |
| State Grant | California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002 (Proposition 40) | Clean beaches, watershed protection and water quality projects. | Public agencies and nonprofit organizations | | State of California |
| State Grant | California Department of Water Resources<br>Flood Protection Corridor Program<br>(Proposition 13) | Acquire, restore, enhance, and protect real property for the purposes of flood control protection, agricultural land preservation, and wildlife habitat protection utilizing nonstructural approaches to flood management. | Public agencies, nonprofit organizations, Department of Water Resources | No | California Department of Water Resources<br>Earle Cummings<br>(916) 653-8912,<br>earlec@water.ca.gov |
| State Grant | California Department of Water Resources<br>Urban Streams Restoration Program<br>(Proposition 13, Proposition 40) | Address flooding and erosion, and restore environmental values on urban streams and encourage cleanups, re-vegetation, and land acquisition in the floodplain to promote community stewardship. Emphasis: Flood protection and management. | Local agencies, nonprofit organizations, local community conservation corps. | Yes | Division of Planning and Local Assistance<br>(916) 327-1664<br>http://www.dpla.water ca.gov/environment/habitat/stream/usrp.html |
| State Grant | LARWQCB<br>Administrative Civil Liabilities (ACL) Grant, Supplemental Environmental Projects (SEP) | Fines for violations may be applied for the use of supplemental environmental projects that involve pollution prevention. Preference given to projects in area of violation. | Community groups, nonprofit organizations | No | LARWQCB<br>www.swrcb.ca.gov/rwqcb4 |
| State Grant | SWRCB<br>Clean Beaches Initiative<br>(Proposition 40) | Project implementation to reduce health risks and increase the public's access to clean beaches. | Public agencies and nonprofits | Yes | State Water Board<br>CBI Grant Program<br>Christopher Stevens<br>(916) 341-5698 |
| State Grant | SWRCB<br>Nonpoint Source Implementation Program<br>CWA Section 319(h) | Implement measures and practices to reduce or prevent groundwater and surface water pollution. Implement projects consistent with TMDLs and local watershed management plans. | Local and public agencies, educational institutions, municipalities | 15% | SWRCB<br>Regional Programs Unit<br>Lauma Jurkevics<br>916-341-5498;<br>www.swrcb.ca.gov/owow /nps |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Water Quality Improvement (Continued)** | | | | | |
| State Grant | SWRCB<br>Nonpoint Source Pollution Control Program (Proposition 13) | Implement management measures and practices pursuant to SWRCB/RWQCB nonpoint source program. | Local public agencies, nonprofit organizations, municipalities, state agencies | Yes, capital costs | LARWQCB<br>Raymond Jay<br>(213) 576-6689 |
| State Grant | SWRCB<br>Water Quality Planning grant Program<br>CWA Section 319(h) | Projects to improve water quality that is impaired or threatened by non-point source pollution. | State and local agencies, nonprofit organizations | Yes | SWRCB<br>www.swrcb.ca.gov/owow /nps |
| State Loan | Clean Water State Revolving Fund (SRF) Program | Low interest loans to implement nonpoint source and stormwater pollution control activities. Example funded programs include pilot BMP projects, urban runoff programs, and developing and implementing an estuary conservation and management plan. | Municipalities, public agencies | 20% | SWRCB<br>http://www.swrcb.ca.gov/ prop13/htm/srf_bond |
| **Roadway Improvements for Water Quality** | | | | | |
| Federal Funding | Federal Transit Administration (FTA) | Funds are distributed by MTA by formula allocation. Funds may be used for landscaping, pedestrian access and walkways, public art, bus shelters, historic preservation | Cities and county in LA County | No | Metropolitan Transportation Authority, Los Angeles County<br>http://mta.net/trans_ planning/cpd/local_returns/ TransportationFunding |
| Federal Funding | Federal Transportation Enhancement Activities Funds Regional Transportation Enhancement Activities (TEA) | MTA ranks projects in the Call for Projects. Funds may be used for the design and construction of improvements that beautify or enhance the interface between transportation systems and adjacent communities. Funds may be used for landscaping or other scenic beautification, mitigation of water pollution due to highway run-off, acquisition of abandoned rail rights-of-way for public use, and other eligible uses. | Municipalities | No | Federal Highway Administration (FWHA) and Caltrans<br>Metropolitan Transportation Authority, Los Angeles County<br>http://mta.net/trans_ planning/cpd/local_returns/ TransportationFunding |
| Federal Funding | Transportation Equity Act of the 21st Century (TEA-21) Funds | Capital improvements to transportation system and for natural habitat mitigation. | Municipalities | No | Federal Highway Administration (FWHA) and Caltrans<br>http://www.fhwa.dot.gov/ tea21 |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Roadway Improvements for Water Quality (Continued)** | | | | | |
| Federal Funding | Surface Transportation Program (STP)<br>Surface Transportation Program Local (STPL) | Funds are allocated by MTA to each city and county within LA County by population. The funds are to be used for construction, reconstruction, rehabilitation, resurfacing, restoration and operational improvements for roads, fringe and corridor parking, bicycle & pedestrian walkways. | Cities and county in LA County | No | Metropolitan Transportation Authority, Los Angeles County http://mta.net/trans_planning/cpd/local_returns/TransportationFunding |
| State Gas Tax and Federal Funds | STIP reform (SB-45) County Transportation Improvement Program (CTIP)- Regional Choice | Regional Choice Program projects are nominated and programmed by the MTA, who funds the project through the Call for Projects. Funds to used for capital acquisition and construction of state highways, freeways, local roads, public transit, pedestrian & bike facilities, grade separation, sound wall, intermodal facilities and safety products. | Cities and county in LA County | No | Metropolitan Transportation Authority, Los Angeles County http://mta.net/trans_planning/cpd/local_returns/TransportationFunding |
| State Sales Tax Funds | Proposition A | Funds distributed by MTA directly to cities and county to develop and/or improve local public transit, paratransit, and related transportation infrastructure, including but not limited to park-n-ride lots, congestion management, bike lanes/bikeways, street improvement. | Cities and county within Los Angeles County | No | Metropolitan Transportation Authority, Los Angeles County http://mta.net/trans_planning/cpd/local_returns/TransportationFunding |
| State Sales Tax Funds | Proposition C | Funds distributed by MTA directly to cities and county to develop and/or improve local public transit, paratransit, and related transportation infrastructure, including but not limited to park-n-ride lots, congestion management, bike lanes/bikeways, street improvement. | Cities and county within Los Angeles County | No | Metropolitan Transportation Authority, Los Angeles County http://mta.net/trans_planning/cpd/local_returns/TransportationFunding |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Water Conservation, Recycling, and Reclamation** | | | | | |
| Non-Governmental Grant | City Makeover Program | Provides funding for new, native and drought-tolerant themed landscapes in prominent public locations. | Municipalities | No | Metropolitan Water District (MWD) http://www.mwd.dst.ca.us |
| Non-Governmental Grant | Innovative Conservation Program | Provides funding grants to explore water savings potential and practicality of new water conservation technologies. | Unrestricted | No | Metropolitan Water District (MWD) http://www.mwd.dst.ca.us |
| State Grant | California Department of Water Resources Flood Protection Corridor Program (Proposition 13) | Acquire, restore, enhance, and protect real property for the purposes of flood control protection, agricultural land preservation, and wildlife habitat protection utilizing nonstructural approaches to flood management. | Public agencies, nonprofit organizations, Department of Water Resources | No | California Department of Water Resources Earle Cummings (916) 653-8912, earlec@water.ca.gov |
| State Grant | Water Recycling Financial Assistance Program (Proposition 204) | Grants for water recycling facilities planning studies, recycling research, and studies. | Public agencies | 50% | SWRCB http://www.swrcb.ca.gov/ noticies/watrec.htm |
| State Loan | Water Recycling Financial Assistance Program (Proposition 204) | Low interest loans for the design and construction of water recycling facilities. | Public agencies | | SWRCB http://www.swrcb.ca.gov/ noticies/watrec.htm |
| State Loan | Clean Water State Revolving Fund (SRF) Program | Low interest loans to construct water reclamation facilities. Example funded projects include expansion of recycled water system, conjunctive use projects, water reclamation. | Municipalities, public agencies | 20% | SWRCB http://www.swrcb.ca.gov/ prop13/htm/srf_bond |
| **Habitat Enhancement and/or Restoration** | | | | | |
| Donation | California Wildlife Conservation Board – Natural Heritage Preservation Tax Credit Program | Provides tax credits to private landowners interested in donating qualified lands to state resource departments, local governmental entities, and qualified nonprofit organizations for conservation. | Private landowners | Not Applicable | California Wildlife Conservation Board 916-445-8448 |
| Federal Conservation Easement | USDA Natural Resources Conservation Services Wetlands Reserve Program | Voluntary program provides landowners with financial incentives to restore and protect wetlands in exchange for retiring agricultural land. Landowners sell a conservation easement or enter into a cost-share restoration agreement; landowners retain ownership of land. | Business, community group, nonprofit group, schools, private landowner, local government, state agency, tribal agency | No | USDA State NRCS Office (202) 720-1067 http://www.nrcs.usda.gov |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Habitat Enhancement and/or Restoration (Continued)** | | | | | |
| Federal Grant | National Oceanic and Atmospheric Administration (NOAA) Community-based Restoration Program | Provides funds for small-scale, locally driven habitat restoration projects that foster natural resource stewardship within communities. The program seeks to bring together partners to implement habitat restoration. | Business, community groups, nonprofit groups, schools, local government, state agency, tribal agency | 1:1<br>Match may be in cash, salary, equipment, labor, in-kind services | alison.ward@noaa.gov or robin.brucker@noaa.gov (301) 713-0174<br><br>http://www.csc.noaa.gov/text/grants.html |
| Federal Grant | USEPA<br>Rivers, Trails, and Conservation Assistance Program (RTCA) | Provides technical staff assistance to assist with planning river conservation plans, trails, greenways. | Local or state agency, conservation group | No | http://www.nps.gov.rtca/ |
| Non-Government Grant | The National Association of Counties, the National Fish and Wildlife Foundation, and Wildlife Habitat Council in cooperation with USEPA and NOAA<br>Five-Star Restoration Challenge Grant Program | Funds community-based wetland, riparian and coastal habitat restoration projects that build on diverse partnerships and foster local natural resource stewardship through education and outreach. | Community groups, schools, youth organizations, Conservation Corps, County job training program | No | http://nfwf.org/programs/5star-rfp.htm. |
| State Grant | California Department of Parks and Recreation – Riparian/Riverine Habitats Program<br>(Proposition 12) | To improve or acquire and restore riparian habitat, riverine aquatic habitat, and other lands near rivers and streams for river and stream trail projects. Minimum grant is $20,000 and the maximum is $400,000. | Cities, counties, districts, local agencies formed for park purposes, California Indian tribes | | Dave Smith<br>(916) 651-8576,<br>dsmith@parks.ca.gov |
| State Grant | California Department of Parks and Recreation – Habitat Conservation Fund | Acquire, restore, and enhance wildlife habitat and significant natural areas including riparian and wetlands areas. | Local agencies and districts | Yes | Office of Grants & Local Services<br>(916) 653-7423,<br>localservices@parks. ca.gov |
| State Grant | California Department of Water Resources – Flood Protection Corridor Program (Proposition 13) | Acquire, restore, enhance, and protect real property for the purposes of flood control protection, agricultural land preservation, and wildlife habitat protection utilizing nonstructural approaches to flood management. | Public agencies, nonprofit organizations, Department of Water Resources | No | Earle Cummings<br>(916) 653-8912,<br>earlec@water.ca.gov |
| State Grant | California Department of Water Resources – Urban Streams Restoration Program (Proposition 13, Proposition 40) | Address flooding and erosion, and restore environmental values on urban streams and encourage cleanups, re-vegetation, and land acquisition in the floodplain to promote community stewardship. Emphasis: Flood protection and management. | Local agencies, nonprofit organizations, local community conservation corps. | Yes | Division of Planning and Local Assistance<br>(916) 327-1664<br>http://www.dpla.water ca.gov/environment/habitat stream/usrp.html |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Habitat Enhancement and/or Restoration (Continued)** | | | | | |
| State Grant | LARWQCB<br>Administrative Civil Liabilities (ACL) Grant,<br>Supplemental Environmental Projects (SEP) | Fines for violations may be applied for the use of supplemental environmental projects that involve environmental restoration. Preference given to projects in area of violation. | Community groups, nonprofit organizations | | LARWQCB<br>www.swrcb.ca.gov/rwqcb4 |
| State Grant | Southern California Wetlands Recovery Project (WRP) Program and Small Grants Program | Provides funds for restoration of wetlands, and community-based restoration projects in coastal wetlands and watersheds. The WRP periodically updates its Work Plan to include additional restoration projects. The Small Grants Program provides funding opportunities for smaller projects (generally < $30,000) not included in the Work Plan. | Local agencies, nonprofit organizations, community groups | Encouraged | Shawn Kelly, WRP Grants Administrator<br>(805) 984-9531<br>http://www.coastalconservancy.ca.gov/swcrp |
| State Grant | SWRCB<br>Watershed Protection Program<br>(Proposition 13) | Protect and enhance greenbelts and riparian and wetlands habitats; restore or improve habitat for aquatic or terrestrial species. | Municipalities, local agencies, nonprofit organizations | No | LARWQCB<br>Shirley Birosik<br>(213) 576-6679 |
| State Loan | Clean Water State Revolving Fund (SRF) Program | Low interest loans for estuary enhancement activities. | Municipalities, public agencies | 20% | SWRCB<br>http://www.swrcb.ca.gov/prop13/htm/srf_bond |
| **Monitoring** | | | | | |
| Federal Grant | USEPA,<br>Environmental Education (EE)Program | Provides funds for projects which design, demonstrate, or disseminate environmental education practices, methods, or techniques. Two funding levels, include: $25,000 or less, and >$25,000. | Local, state, or tribal education agencies, colleges, nonprofit organizations, state environmental agencies | Yes | http://epa.gov/environed<br>(202) 260-8819 |
| Federal Grant | USEPA<br>The Wetland Program Development Grant (WPDG) | Projects that promote the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. | State, tribal and local governments | Yes | USEPA, Cheryl McGovern<br>(415) 972-3415 |
| Federal Grant | USEPA<br>Environmental Monitoring for Public Access and Community Tracking (EMPACT) | To provide public access to clearly-communicated, time-relevant, useful, and accurate environmental monitoring data in an ongoing and sustainable manner in major U.S. metropolitan areas. | | Yes | EMPACT or USEPA, Office of Strategic Planning and Emerging Issues, Wienke Tax,<br>(520) 622-1622,<br>tax.wienke@epa.gov |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Monitoring (Continued)** | | | | | |
| State Grant | California Coastal Commission Whale Tail Grants Program | Projects undertaken in the coastal zone, may include citizen monitoring. | Governmental entity, nonprofit organization | No | http://www.coastal.ca.gov/publiced/plate/plgrant.html<br>(800) Coast 4U<br>(800) 262-7878 |
| State Grant | SWRCB<br>Coastal Nonpoint Source Program<br>(Proposition 13) | Provide comprehensive capability for monitoring, collecting, and analyzing ambient water quality. | Municipalities, local agencies, educational institutions, nonprofit organizations | No | LARWQCB<br>Raymond Jay<br>(213) 576-6689 |
| State Grant | SWRCB<br>Nonpoint Source Implementation Grant Program CWA Section 319(h) | Water quality monitoring to promote citizen monitoring, monitoring to determine effectiveness of management practices and extent of water quality improvement. | Local agencies, special districts, nonprofit organizations, schools, Indian tribes | 15% | SWRCB<br>Regional Programs Unit<br>Lauma Jurkevics<br>(916) 341-5498;<br>www.swrcb.ca.gov/owow /nps |
| State Grant | SWRCB<br>Watershed Protection Program<br>(Proposition 13) | Monitor water quality and assess environmental health of watersheds. Use GIS to display and manage environmental data describing the watershed. | Municipalities, local agencies, nonprofit organizations | No | LARWQCB<br>Shirley Birosik<br>(213) 576-6679 |
| **Public Education** | | | | | |
| Non-Government Grant | The National Association of Counties, the National Fish and Wildlife Foundation, and Wildlife Habitat Council in cooperation with USEPA and NOAA<br>Five-Star Restoration Challenge Grant Program | Funds community-based wetland, riparian and coastal habitat restoration projects that build on diverse partnerships and foster local natural resource stewardship through education and outreach. | Community groups, schools, youth organizations, Conservation Corps, County job training program | No | http://nfwf.org/programs/5star-rfp.htm. |
| Non-Government Grant | Community Partnering Program | Provides sponsorships for promotion of discussion and interaction in regional water quality, conservation, and reliability issues. | Nonprofit organizations | No | Metropolitan Water District (MWD)<br>http://www.mwd.dst.ca.us |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Public Education (Continued)** | | | | | |
| State Grant | California Coastal Commission Whale Tail Grants Program | Projects undertaken in the coastal zone. Eligible projects must fall in one of three categories: (1) Adopt-A-Beach, (2) youth programs, (3) programs for the general public. Grants may be any amount up to $50,000, 25-50% of funding will be allocated to small grants up to $10,000. | Local governmental agency, nonprofit organization | No | http://www.coastal.ca.gov/public ed/plate/plgrant.html (800) Coast 4U (800) 262-7878 |
| State Grant | California Department of Education Environmental Education Grants | Funds to promote environmental education, develop program facilities, and organize regional or statewide communications programs. | School districts, colleges, nonprofit organizations, local agencies, state agencies | No | Bill Andrews (916) 322-9503 http://www.cde.gov/cilbranch/oe e/comgrtrfa.htm |
| State Grant | SWRCB Nonpoint Source Implementation Grant Program CWA Section 319(h) | Water quality monitoring to promote citizen monitoring, monitoring to determine effectiveness of management practices and extent of water quality improvement. | Local agencies, special districts, nonprofit organizations, schools, Indian tribes | Yes | SWRCB Regional Programs Unit Lauma Jurkevics (916) 341-5498; www.swrcb.ca.gov/owow /nps |
| Federal Grant | USEPA, Environmental Education Program (EEP) | Environmental education teaching skills, environmental education | Local, state, or tribal education agencies, colleges, nonprofit organizations, state environmental agencies | Yes | http://epa.gov/environed/ grants.html (202) 260-8819 |
| Private Grant | William C. Bannerman Foundation | Seed money for environmental education, children, secondary school education, women programs | Los Angeles area | Yes or No | http://ghgmume.org/units/cim/n m/grantinfo/124011. htm |
| **Recreation** | | | | | |
| Federal Grant | Federal Transportation Enhancement Activities (TEA) funds | Funds distributed to local jurisdictions by formula allocation for acquisition of abandoned right-of-way for conversion to pedestrian/bike trails, rails-to-trails program, preservation of abandoned railway corridors, pedestrian/bikeway improvement, safety education for pedestrians and bicyclists, and public art | Cities and county in LA County | No | http://fhwa.dot.gov |
| Federal Grant | USEPA Rivers, Trails, and Conservation Assistance Program (RTCA) | Provides technical staff assistance to assist with planning river conservation plans, trails, greenways | Local or state agency, conservation group | No | http://www.nps.gov.rtca/ |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Recreation (Continued)** | | | | | |
| State Grant | California Department of Parks and Recreation Recreational Trails Program (RTP) | The RTP funds recreational trails and trails-related projects. | Municipalities, nonprofit organizations, state agencies | Yes | California State Parks http://www.parks.ca.gov |
| State Grant | California Department of Parks and Recreation Riparian/Riverine Habitats Program (Proposition 12) | To improve or acquire and restore riparian habitat, riverine aquatic habitat, and other lands near rivers and streams for river and stream trail projects. | Cities, counties, districts, local agencies formed for park purposes, Indian tribes | | California Department of Parks and Recreation Dave Smith (916) 651-8576, dsmith@parks.ca.gov |
| State Sales Tax | Transportation Development Act (TDA) Funds | Funds allocated to local jurisdictions according to formula allocation. TDA Article 3 Funds are used for bicycle and pedestrian facilities. | Cities and county in Los Angeles County | No | Transportation Authority, Los Angeles County http://mta.net/trans_planning/cpd/local_returns/TransportationFunding |
| **Brownfields Redevelopment** | | | | | |
| **Training, Research, Technical Assistance** | | | | | |
| Federal Grant | Brownfields Training, Research, and Technical Assistance Grant | Provides funding for brownfields related training, research, or technical assistance. | Local governments, state agency, tribal agency | No | U.S. EPA Brownfields Program http://www.epa.gov/brownfields/ |
| **Assessments** | | | | | |
| Federal Grant | Assessment Grants | Provides funding to inventory, characterize, assess, and conduct planning and community involvement related to brownfields (up to $200,000 per grant, or $350,000 with waiver). | Property owner, nonprofit organizations, Local governments, land clearance agency, state agency, tribal agency | No | U.S. EPA Brownfields Program http://www.epa.gov/brownfields/ |
| Federal Grant | Targeted Brownfields Assessment (TBA) Program | Funding and/or technical assistance for assessment at brownfields is provided. A TBA may encompass one or more of the following activities: screening Phase I assessment, full Phase II assessment, establishment of cleanup options and cost estimates. TBA funding is on a case by case basis. | Municipalities, states, tribes | No | U.S. EPA Brownfields Program http://www.epa.gov/brownfields/ |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Brownfields Redevelopment (Continued)** | | | | | |
| **Assessments (Continued)** | | | | | |
| State Grant | California Recycle Underutilized Sites (Cal REUSE Program) | Forgivable loans for site assessment and characterization, technical assistance, and development of remedial action plans and site access to facilitate brownfields redevelopment. Loans available up to $125,000. | Cities, counties, school districts, redevelopment agencies, financial institutions, development agency, nonprofit development agency | 25% | California Pollution Control Financing Authority (CPCFA) California Environmental Redevelopment Fund (CERF) (916) 326-5225 or California Center for Land Recycling (CCLR) (415) 398-1080 |
| State Grant | Targeted Site Investigations Program (TSI) | DTSC will use funds for CAL/EPA Departments to perform environmental site investigations at no cost to the applicant. Applicants may include state and local governments, school districts, redevelopment agencies, or non-profit organizations interested in gaining more information about a site's condition prior to making decisions on property acquisition or cleanup strategy. The funding amount for FY2003-2004 is $1.5 million. | Governmental agencies, nonprofit organizations | No | DTSC Megan Cambridge (916) 255-3727 http://www.dtsc.ca.gov/siteclean up/brownfields |
| State Loan | Cleanup Loans and Environmental Assistance to Neighborhoods (CLEAN) Program | Provides low interest loans of up to $100,000 to conduct preliminary endangerment assessments; up to 75% of loan amount can be waived if redevelopment of property determined to not be economically feasible. No loans being made at this time due to State budget reduction. | Business, developers, Schools, local governments | No | DTSC (916) 324-0706 http:www//dtsc.ca.gov |
| **Redevelopment** | | | | | |
| Federal Grant | Cleanup Grants | Provide funding to property owners to carry out cleanup activities at brownfields (up to $200,000 per site with an application limit of no more than five sites). | Property owner, nonprofit organizations, Local governments, land clearance agency, state agency, tribal agency | 20% | U.S. EPA Brownfields Program http://www.epa.gov/ brownfields/ |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Brownfields Redevelopment (Continued)** | | | | | |
| **Redevelopment (Continued)** | | | | | |
| Federal Grant | Community Development Block Grants (CBDG) | These grants may be used to revitalize distressed areas, and must meet one of the program's three national objectives: (1) benefit to low and moderate income persons, (2) prevent or eliminate slums or blight, or address conditions that present a serious and immediate threat to the health and safety of the community. Grant amount varies, up to $500,000. | Business, nonprofit groups, community /watershed group, educational institution, private landowner, local government, state agency, tribal agency | No | The Department of Housing and Urban Development (HUD) http://www.hud.gov/offices/cpd/economicdevelopment/programs/bedi/ bfield finance.cfm |
| Federal Grant | Brownfields Economic Development Initiative (BEDI) | BEDI Grants are awarded on a competitive basis and must be used to enhance or improve the viability of projects financed with Section 108 loan guarantees. The funds are to be used for the cleanup and economic redevelopment of brownfields. Maximum grant amount is $2 million. | CBDG entitlement communities, non-entitlement communities eligible to receive loan guarantees | No | The Department of Housing and Urban Development (HUD) http://www.hud.gov/offices/cpd/economicdevelopment/programs/bedi/ bfield finance.cfm |
| Federal Grant | Economic Development Assistance (EDA) Program | Provides assistance to build and rehabilitate public works infrastructure, attract private investment in economically distressed areas and small and medium-sized towns, and support locally created partnerships that focus on regional solutions for economic development. | Municipalities | No | The Department of Commerce (DOC) http:www.doc.gov/eda |
| Federal Grant | Environmental Justice Small Grants Program | Funding provided to eligible community groups (e.g., organizations, local governments) to carry out projects to address environmental justice issues. | Community groups, tribal governments | | U.S. EPA Environmental Justice (202) 564-0152 http://www.epa.gov/compliance/environmentaljustice/grants/ej_smgrants.html |
| Federal Grant | Smart Growth Grants | Funding will be provided to projects that emphasize multiple benefits including cleanup and redevelopment, clean air and water, multiple transportation options, and quality of life. | | | U.S. EPA website not yet available. |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Brownfields Redevelopment (Continued)** | | | | | |
| **Redevelopment (Continued)** | | | | | |
| Federal Grant | Livable Communities Initiative | Funding is available for projects that strengthen the link between transit and communities. The project must promote more livable communities that are customer-friendly, community-oriented and well designed resulting from a planning and design process with active community involvement. Funding amount varies; brownfields redevelopment may be eligible depending on project elements. | Transit operators, metropolitan planning organizations, city and county governments, states, planning agencies | No | Department of Transportation (DOT) http://www.fta.dot.gov/ library/planning/livbro |
| Federal Loan | Section 108 Loan Guarantee Program | The economic development loan guarantee program provides communities with a source of financing for economic development, public facilities, large scale physical development projects, and brownfields redevelopment activities. | Business, nonprofit organizations, community groups, schools, private landowner, local government, state and tribal agencies | No | The Department of Housing and Urban Development (HUD) http://www.hud.gov/offices/cpd/economicdevelopment/programs/bedi/ bfield finance.cfm |
| Federal Loan | Revolving Loan Fund | Provides funding to capitalize a revolving loan fund and to provide subgrants (up to $1 million available). | Landowner, nonprofit organizations, Local governments, land clearance agency, state and tribal agencies | 20% | U.S. EPA Brownfields Program http://www.epa.gov/ brownfields/ |
| State Loan | CLEAN Brownfields Loan Program | The Cleanup Loans and Environmental Assistance to Neighborhoods (CLEAN) Program (SB 667) was passed in 2000 to establish new financial incentives to encourage property owners, developers, community groups, and local governments to redevelop abandoned and underutilized urban properties in California. Provides low interest loans up to $2.5 million. Due to State budget reductions, funds are currently unavailable for CLEAN loans. | Business, developers, schools, local government | No | DTSC http://www.dtsc.ca.gov/ sitecleanup/brownfields (916) 324-0706 |
| Federal Grant | USEPA Sustainable Development Challenge Grants | Funds to encourage community groups, businesses, and government agencies to work together on sustainable development efforts that protect the environment, conserve resources, support a healthy economy, and an improved quality of life. | Local governments, incorporated nonprofit organizations, schools | To be determined | http://www.epa.gov/ ecocommunity/sdcg/ (415) 744-1624 |

**Table 4.7-10. (Continued)**

| Funding Type | Agency/Program | Purpose | Eligible Entities | Match | Contact/Info |
|---|---|---|---|---|---|
| **Watershed Plan Implementation** | | | | | |
| Federal Grant | River Network | Support innovative efforts that build the capacity of community-based partnerships to conserve or restore watersheds. | Community groups | No | http://www.rivernetwork.org |
| Federal Grant | USEPA Watershed Assistance Grants (WAG) | Small grants to local watershed partnerships to support their organizational development and long-term effectiveness. Awards generally range from $1,500 to $30,000. | Community/ watershed group, nonprofit groups, education institution, local government | Desired In kind and cash, not required | http://www.rivernetwork.org/howwecanhelp/howwag.cfm#wag |

## 4.8 Monitoring Plan Recommendations

The Dominguez Watershed presents a unique opportunity for coordinated and thorough watershed assessment. Because the watershed is fully developed, many entities have historically monitored the receiving water bodies and the few undisturbed or natural areas are closely guarded and monitored by local activists. Rather than a new and coordinated sampling program, what is needed for the Dominguez Watershed is:

- Assessment of behavior,
- Strategic observation, and
- Coordination of current efforts.

The Dominguez Watershed Management Master Plan has been developed around the following five specific goals:

- Protect and enhance water quality.
- Conserve, reuse and recharge water supply.
- Protect, enhance and restore native habitats and biological resources.
- Promote public awareness and involvement in watershed management.
- Implement stewardship of the watershed and its resources in balance with economic and environmental impacts.

An approach is recommended for coordinated assessment of the health of the watershed that involves providing greater access to monitoring data collected under existing programs, including public involvement in watershed assessment, and conducting site specific monitoring to determine the success of implemented projects. In addition, the assessment approach includes monitoring the status of land availability and use to assist with future watershed management decisions.

The recommended monitoring approach for the assessment of water quality, land, habitat, and implemented project locations are described in the following subsections.

### 4.8.1 Water Quality

The goals identified by the DWAC for this receiving water quality monitoring program are to:

- Link pollution impacts to pollution sources,
- Link trends in pollutant loading to pollution control measures,
- Assess the condition of the watershed's receiving water bodies and compare it to existing and historic conditions, and
- Support development and implementation of TMDLs and the designated beneficial use of REC-1, in the event that the designation does not change.

Any sampling conducted in the watershed should include analysis for the 303 (d) listed pollutants for the Dominguez Watershed namely ammonia, bacteria, pesticides, metals, nutrients, algae, eutrophic, odors, PAHs, PCBs, benthic effects, and sediment toxicity. In addition, it should be noted that any sampling performed in an impaired water body in the Dominguez Watershed should be done in such a way that it supports the development of TMDLs for the watershed.

The water quality monitoring will include three components, outreach, observation, and overall assessment. Each of these are described below.

Outreach Efforts

*Goal: link pollution impacts to pollution sources*

*Mechanism: outreach to businesses, industries and residents on the stormwater pollution prevention, recycling, solid waste management, and water conservation*

In-stream sampling done for the purpose of identifying sources of pollution in the watershed would require extensive and costly monitoring to trace each elevated level to its source of pollution. Instead this sampling plan proposes to proactively put information into the hands of those who are unfamiliar with the impacts of their day to day activities in order to effect change in behavior and ultimately eliminate pollution sources. Informational materials that may be used for this purpose have already been produced as part of permit requirements (for instance the MS4 stormwater permit) for Los Angeles County. These materials are available online for anyone to use. The key to success in this endeavor is proactive outreach with a consistent and multifaceted message.

Historically, outreach to the general public has been done for the most part on a reactive basis. Materials were delivered by inspectors prior to or during construction or in response to a complaint placed by an observer. With the addition of a public education model program to the MS4 stormwater permit, efforts are being made to reach the general public, corporations and small business with consistent "how to" information. This plan proposes to continue strategically targeting businesses, commercial districts, industries, community groups, and school districts with a consistent message addressing stormwater pollution prevention, recycling, solid waste management and water conservation and environmental protection. This outreach program will communicate what the impacts of pollution are, and that people and the things they do are the sources.

The targeted pollutants of this campaign are the non-legacy 303 (d) listed pollutants for the Dominguez Watershed. In regard to PAHs the consistent message communicated should be keeping cars in good repair and properly recycling used oil and other petroleum based products. To target a reduction in bacteria levels in the channel, the information should detail steps to take in order to prevent sewer line clogs or breaks and eliminate dry weather runoff to the storm drain system. Bacteria may be introduced to the storm drain network by improperly disposed of material where it grows in cool, moist environments.

Observation Stations

*Goal: link trends in pollutant loading to pollution control measures.*

*Mechanism: Regular visitors to the receiving water bodies in the watershed record visual and olfactory observations that agency personnel regularly respond to.*

The first step in linking trends in pollutant loading to control measures is to identify the trends in pollutant loading over time. To accomplish this, a regular and ongoing visual and olfactory survey of the receiving water bodies in the watershed should be initiated. It is recognized that observational information is inherently

subjective and, therefore, cannot be used to demonstrate water quality improvements in a regulatory context (e.g., to provide adequate justification to delist a 303(d) listed impaired water body). However, visual and olfactory observations of a water body, by its users, is a good indicator of how those users perceive the beneficial use and/or impairment of the water body.

This sampling program will establish observation stations along the water bodies and in the natural areas of the watershed. These stations will include informational kiosks with instructions on type of information desired, how the information will be used, and will provide data forms for recording information. A covered lock box will be provided to collect filled out data forms. The collected information will assist local agency representatives in identifying pollution sources. As sources are identified and control measures put in place, these observation stations can continue to be used to document the improvements to the area and assure that visual and olfactory aspects of the water are acceptable to people. This provides an opportunity for public involvement and participation in stewardship of the watershed and will allow for focused response by agency representatives. It also will provide additional information aside from discrete quantitative sampling. Information provided in the observation books would we collected and reviewed by the same people who take on the proactive public outreach described above.

In order to minimize the subjectivity of this type of survey, the data forms should clearly define the type of information requested and provide for concrete analysis by observers. For example, rather than indicating there were lots of birds in the channel, an observer could be asked to indicate the number of different species and approximate count. If algae or foul odors are observed in the area, the observer could be requested to indicate the approximate size of the bloom or radius in which odors can be detected.

<u>Overall assessment</u>

*Goal: Assess the baseline condition of the watershed's receiving water bodies and compare it to existing and historic conditions.*

*Mechanism: Coordinated compliance monitoring that reduces and eliminates redundancies.*

As new regulations are established for receiving water quality, there is a growing need for an accurate and consistent assessment of water quality in the Dominguez Watershed. Such a monitoring program would be used to verify the pollutants of concern, levels of contamination, and anticipated improvements in water quality.

Although no TMDLs have been developed for the Dominguez Watershed to date, it is important to accurately establish baseline conditions for the watershed and track improvement. Performing coordinated sampling prior to the release of any TMDLs will assure that they are developed based upon sound data and address actual problems. Samples should be taken of the water column and sediment (at soft bottom locations) at the following locations and analyzed for (at a minimum) acute and chronic toxicity, indicator bacteria, metals, nutrients, PAHs, PCBs, and pesticides:

- Dominguez Channel at Artesia Boulevard (water only)
- Dominguez Channel at Main Street (water and sediment)
- Dominguez Channel at Avalon Boulevard (water and sediment)
- Consolidated Slip (water and sediment)
- Torrance Lateral at Main Street (water only)
- Wilmington Drain at Pacific Coast Highway (water and sediment)
- Cerritos Channel (water and sediment)
- Los Angeles Harbor Main Channel (water and sediment)

- Cabrillo Beach (water and sediment)
- Long Beach Middle Harbor (water and sediment)
- Los Angeles Harbor (water and sediment)
- Outer Harbor (water and sediment)

Surface water quality is monitored regularly by industries and municipalities at or near many of these locations under their respective discharge or stormwater permit requirements. Summaries of these programs are available online at http://www.swrcb.ca.gov/~rwqcb4/html/permits/permits.html). These programs include analysis for a full range of chemical constituents, hydrocarbons and bacteria, acute and chronic toxicity, and bioassessment.

Rather than proposing additional sampling of the Dominguez Channel and the Harbor Complex, what is needed is a centralized, electronic, and web-based database where the actual data can be submitted and extrapolated. In this way, each discharger could submit an electronic file of the receiving water data to a central hub. Although not a substantial burden for dischargers, an additional requirement to submit information to this database could be viewed as such by the Regional Board and qualify a discharger to some type of credit. In addition, a database that centralizes information will provide dischargers with a basis to request modifications to their monitoring requirements when redundancies are identified. When the database has been fully developed, it can also be used as a tool to identify data gaps and additional programs can be recommended to fill these gaps. Examples of the types of data gaps that might potentially warrant further sampling include the following:

- Additional sampling to help complete water quality/pollutant transport modeling.
- Additional sampling necessary to help complete an approved dry or wet weather sampling program should existing public funding be reduced and contributing stakeholders agree continued sampling is the best course of action.

Current sampling programs, which could be included in this database, are performed by:

LA/LB Harbor
Port of Long Beach and Port of Los Angeles.
City of Los Angeles Department of Water and Power.
City of Los Angeles Bureau of Sanitation (Terminal Island).

Dominguez Channel
County of Los Angeles Department of Public Works.
BP – Carson Refinery.
SWAMP monitoring program – LARWQCB
Dominguez Channel bacterial survey – LARWQCB.
USEPA Superfund monitoring data..

Wilmington Drain/Machado Lake
California State Department of Health Services.
City of Los Angeles Bureau of Sanitation.
City of Los Angeles Department of Recreation and Parks.

Watershed Landuses
County of Los Angeles Department of Public Works.
Wet weather sampling program organized by SCCWRP.
U.S. Department of Energy hydraulic and pollutant transport model.

The key to success of this program is a single point of contact that is well familiar with the watershed, DWAC and the database that can maintain the database and provide QA/QC for the data received. By proactively staying informed of the various efforts in the watershed, and with support from the regulating community, trends and improvements in the overall assessment the Dominguez Watershed will be readily available utilizing existing monitoring programs. According to the County of Los Angeles' mission for watershed management to become a central source of information, the Department of Public Works would be a primary candidate for coordinating this effort.

### 4.8.2 Land

The goal identified by the DWAC for monitoring the land surface of the Dominguez Watershed is to identify available open areas and their value. Landuse and socioeconomic information is already well monitored and documented for the Dominguez Watershed and available in digital GIS form. This information should be made available so that outreach programs can be designed and implemented to target specific areas.

Because of the intense level of development in the Dominguez Watershed, the aspect of land that should be regularly monitored in order to improve the environment is the location and status of vacant, undisturbed and natural land. Using tools currently available, this assessment could be done on a yearly basis fairly easily. As evidenced by a similar program in the City of Rolling Hills Estates, simply keeping record of the undisturbed areas in the watershed will lead to an increased appreciation for these natural buffer areas by jurisdictions and the general public.

Using available aerial images of the watershed and ownership data from the County of Los Angeles Assessors office, vacant or undisturbed parcels should be identified and classified based on ownership and property value. An initial site assessment should be conducted to determine the visual quality of the property. Consideration could then be given to acquiring the parcels that are privately owned with grant funds to be converted to or protected as natural open areas for habitat or stormwater treatment. Those parcels that are publicly owned and satisfactory for protection as open space should be noted as such.

These land parcels could be listed on a central database so that when funds become available for land acquisition in the Dominguez Watershed, those with interest and the means to do so will be able to easily identify potential areas. Any acquisition of land in the watershed for open space will require appropriate jurisdictional approval. In addition, land acquisition, use or alteration for watershed management purposes will require approval from local jurisdictional authorities such as departments of public works, recreation and parks, transportation, and planning, as well as from city managers and land use authorities.

### 4.8.3 Habitat

The goal identified by the DWAC for monitoring the habitat of the Dominguez Watershed is to assure that the bird and fish populations that have the potential to flourish are protected.

Due of the industrial and heavy development of the Dominguez Watershed, there is limited potential for habitat areas. However the natural or habitat potential areas in the watershed are regularly observed by various groups that are listed below.

Madrona Marsh
Friends of Madrona Marsh
City of Torrance

Harbor Regional Park / Machado Lake
The National Audubon Society
City of Los Angeles

Wilmington Drain / Dominguez Channel
Observation Stations
LACDPW

Gardena Willows
City of Gardena

Walteria Lake
Not currently monitored
LACDPW?

Rolling Hills Canyons
Palos Verdes Land Conservancy

Linden H. Chandler Preserve
Palos Verdes Land Conservancy

San Pedro Bay
Ports of Long Beach and Los Angeles

The information collected by these various groups could also be posted to the web based database to provide biological information to those interested in these areas. In addition, the observation stations recommended as part of the water quality program could include specific questions regarding the wildlife and habitat observed in the area.

### *4.8.4 Assessment of Implemented Programs and Projects*

Program and project actions recommended in this WMMP include recommendations for assessment and/or monitoring to determine the success of the implemented actions. These recommendations are included in the description of actions in Subsection 4.3 through 4.7 of this Action Plan. In many cases, a recommendation is made to coordinate the assessment of the implemented action with existing assessment and/or monitoring programs. For site specific projects, recommendations are made to either compare environmental conditions upstream and downstream of the implemented project, or to measure environmental conditions prior to and then after the project to document changes in environmental quality over time. Data collected from the site specific monitoring also would be input into the centralized database to support the overall assessment of watershed health.

## 4.9 Action Plan Summary

Organization of Section

4.9.1 Introduction
4.9.2 Summary of Recommended Programs
4.9.3 Summary of Recommended Projects by Land Use Type and Location

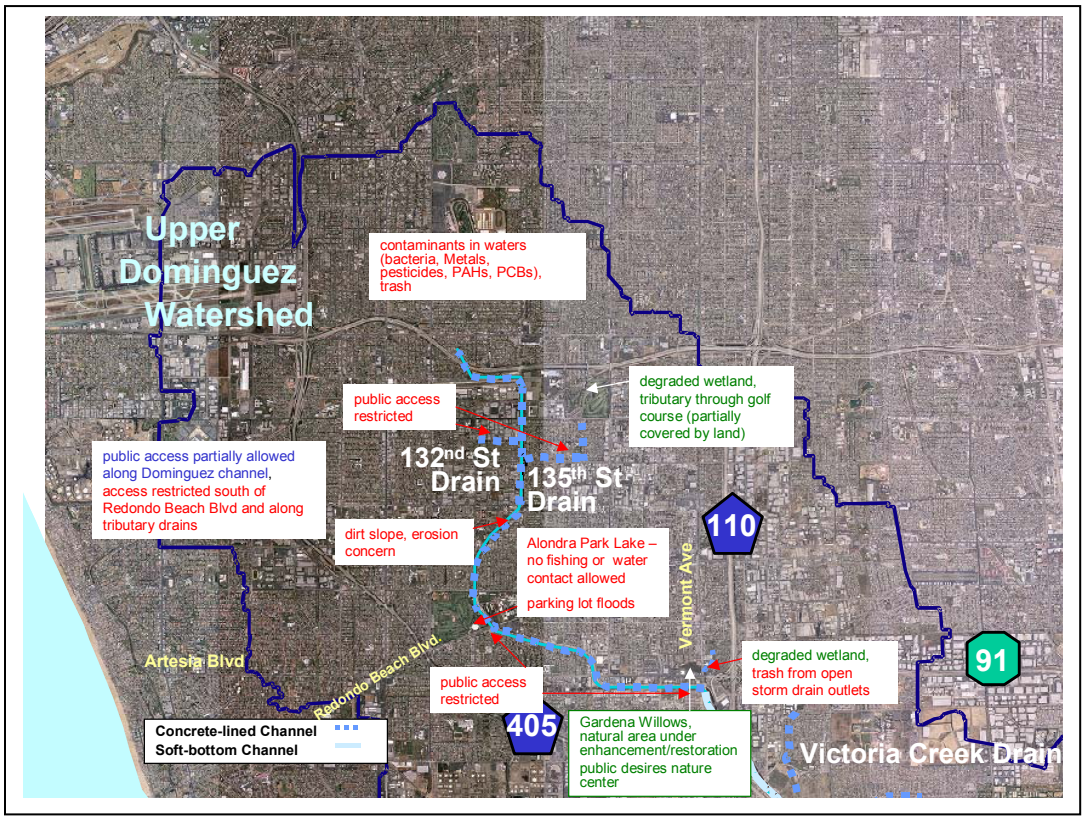
### 4.9.1 Introduction

The focus of this plan has been to identify and describe actions that will help reduce and/or eliminate 303(d) listed water quality impairments and other problems identified during review of background information and public outreach (Figure 4.9-1). Potential solutions identified during coordination with the DWAC and members of the public were translated into many of the actions described in this plan. In addition, other actions were developed to complement and/or to provide a more comprehensive strategy to address a problem or issue.

The actions recommended in the Dominguez WMMP include approximately thirty programs and thirty-five different types of projects, many of which could be implemented at multiple locations. The diverse array of programs and projects is intended to complement and work in coordination with the existing Stormwater Quality Management Program (SQMP) and Standard Urban Runoff Mitigation Plan (SUSMP) required under the municipal Storm Water and Urban Runoff NPDES permit (Municipal Permit). Jurisdictions may wish to draw upon the proposed actions as they prepare their implementation plans for specific TMDLs. The WMMP also extends beyond the objectives of the programs implemented under the Municipal Permit to address other resource issues relevant to watershed management, such as conservation and reuse, and protection and enhancement of biological resources.

It is recognized that there must be balance between environmental restoration and economic impacts in order to properly steward. Therefore, the WMMP includes several different types of actions to contribute to cost effective watershed management. Several public education and involvement programs are recommended to increase personal stewardship, which should contribute over the long-term to source control and reduced costs associated with maintenance and cleanup. Other programs are recommended to increase coordination to promote consistency, reduce redundancy, encourage integration, and to leverage experience. In addition, programs are recommended to increase opportunities for obtaining funds to assist with the implementation of watershed management.

Recommended watershed programs are summarized in Subsection 4.9.2, and projects are summarized in Subsection 4.9.3.



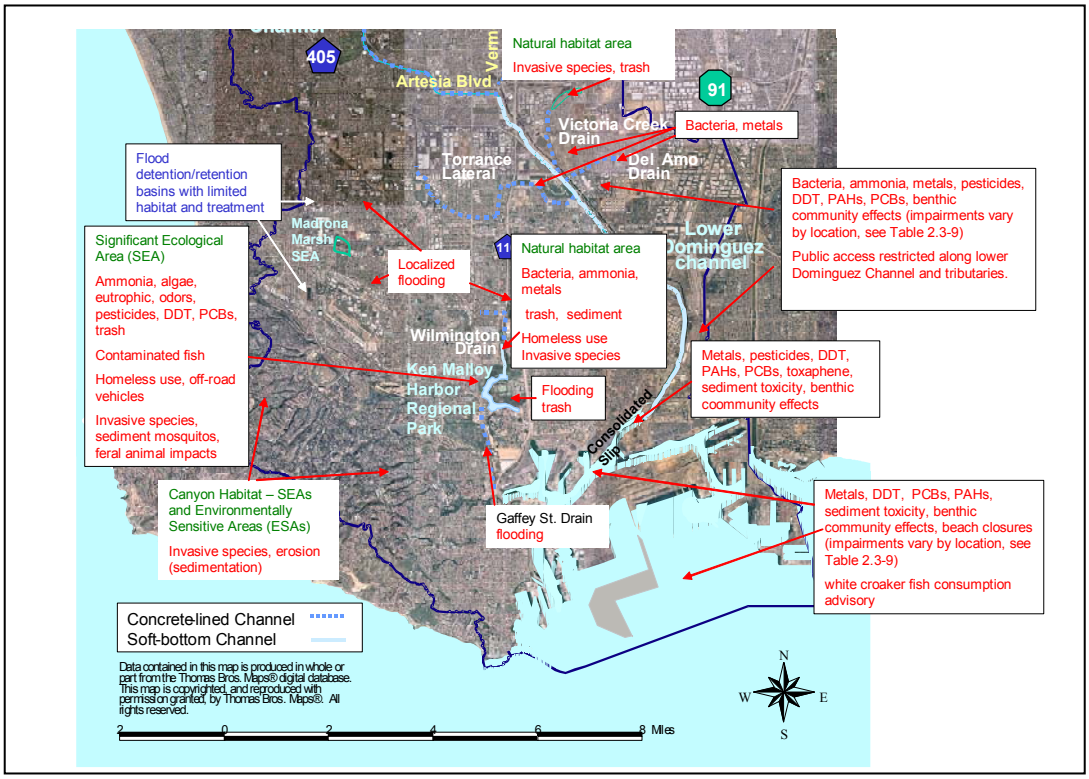




**Figure 4.9-1. Types of impairments and problems in the upper and lower Dominguez Watershed.**

### 4.9.2 Summary of Recommended Programs

Several programs are recommended to increase stewardship of the Dominguez Watershed through education and outreach, increased coordination, and actions to obtain funds to implement watershed projects (Table 4.9-1, which is at the end of this subsection).

Education and outreach activities will be coordinated with the Public Information and Participation Program (PIPP) under the SQMP to facilitate consistency in watershed-based messages and informational materials in the watershed. The outreach information would then be distributed using different strategies, including mailing of fact sheets with water bills, posting on municipal web sites, and making materials available at municipal information counters. Several topics of outreach materials would be coordinated with the PIPP, including:

- Benefits of use of pervious pavement and encouragement to increase its use in development and redevelopment projects.
- Anti-litter campaign and targeted outreach to fast food restaurants and convenience stores.
- Reduction of green waste to storm drains.
- Benefits of use of grassy swales and landscaped strips to treat runoff and encouragement to increase their use in development, redevelopment, and roadway improvement projects.
- Water conservation and rebate information, and encouragement of water-wise landscaping.
- Control of invasive plants, exotic pet escape, pet waste, and pet impacts on native animals.
- Benefits and encouragement to participate in Cool Schools and Campus Forestry programs.
- Beneficial uses and impairments within the Dominguez Watershed and how individual behavior affects environmental health and the local economy.

It also is recommended that the PIPP assist local municipalities plan activities for a water awareness month (May), and include water quality and conservation messages in the outreach materials for those activities.

Other educational and outreach activities include implementing additional source control protections within 300 feet of Environmentally Sensitive Areas (ESAs), and discouraging the sale of non-native, invasive plants by local businesses and nurseries within the watershed.

It is recommended that public involvement be encouraged through cleanup days at ESAs and by participation in the implementation of watershed projects. It is recommended that these events be publicized and attended by elected officials in order to increase public awareness and participation in these stewardship activities. Additional outreach to increase the awareness by school children of the Dominguez Watershed is recommended. A curriculum experience involving classroom instruction and field trips to the Dominguez Channel, selected ESAs, recycling centers, wastewater treatment plants, West Basin Water Recycling Plant, and other relevant locations would be coordinated between the PIPP, local school districts, and local jurisdictions.

Continued coordination of the DWAC is recommended to maintain momentum and to facilitate the implementation of the Dominguez WMMP. Increased coordination with other watershed councils and with regional planning agencies is recommended to increase awareness, facilitate the integration of watershed management into regional planning, and to leverage a broader experience base to increase the effectiveness of watershed management actions implemented in the Dominguez Watershed.

Establishment of Model City codes and ordinances is recommended to ensure a unified and consistent approach to watershed management in Los Angeles County. This consistency is desired so there is balance between economic impacts and environmental benefits in different communities in the county. Balance between environmental stewardship and economic benefit also is sought with increased assistance and encouragement for brownfields redevelopment.

Several programmatic actions are recommended to increase funding opportunities to implement watershed-based projects. Considerable funding resources are available from local, state, and federal agencies in the form of grants, tax and bond disbursements, and low interest loans. Most grants involve a competitive selection process, and in many cases there are limits on the number and/or funded amounts given to any particular geographic region. Given the current budget crisis in California, some grant funds are not available at this time. A funding strategy that includes applying for grant funds, as well as seeking other funding mechanisms is recommended. Other fund raising mechanisms including obtaining sponsorships with the Adopt-A-Waterway Program, and purchase of watershed logo plaques (with a storm water message and the purchaser's name or logo) to be placed on trash receptacles and/or public benches. Establishment of a stormwater utility fee is recommended for long-term and reliable funding. Creation of a mitigation bank to streamline and increase the effectiveness of habitat enhancement/restoration is recommended, and establishing incentives for obtaining conservation easements are encouraged.

Implementation of the WMMP is intended to be adaptive in nature with the focus being effective watershed management. Monitoring is recommended with the implementation of watershed projects so that there will be a record of project success and opportunity to adapt methods from lessons learned. A coordinated Dominguez Watershed monitoring program, which includes establishment of a centralized database, is recommended to promote public awareness and involvement, facilitate information exchange, reduce redundancies, and to increase the cost effectiveness of the assessment of watershed health. Information exchange also will be facilitated by a cooperative effort among the jurisdictions, who will summarize their watershed-based activities each year, and those summaries will be compiled by the County into a State of the Watershed Report.

**Table 4.9-1. Summary of recommended education, planning, and fund raising programs to implement in the Dominguez Watershed.**

| Report Section | Action | Program Type | Base Cost | Jurisdictions Involved in Implementation | | |
|---|---|---|---|---|---|---|
| | | | | Lead | All | Comments |
| 4.3.2. Reduce Hardscape | 1. Increase use of pervious pavement during development and redevelopment | E | $ | | √ | Coordinate with PIPP to develop outreach materials. Municipalities to coordinate amongst planning, engineering, and maintenance departments to increase use of pervious pavement. |
| 4.3.3.1 | 1. Increase public outreach and the number of trash, cigarette, and recyclable containers in high priority areas | E | $$ | | √ | Coordinate with PIPP to develop outreach materials for fast food restaurants and convenience stores. Municipalities to conduct outreach with local business, and determine high priority areas where additional waste receptacles needed. |
| 4.3.4 Reduce discharge impairments | 1. Reduce green waste to storm drains | E | $ | | √ | Coordinate with PIPP to develop outreach mailer to be included with water bill. Municipalities to post outreach information on web sites. |
| | 4. Create grassy swales and/or vegetated areas to treat urban runoff | E | $ | | √ | Coordinate with PIPP to develop outreach materials. Municipalities to coordinate amongst planning, engineering, and maintenance departments to increase use in projects |
| | 5. Perform roadway improvements using vegetated medians, buffers, and parkways | C | $ | | √ | Municipalities to coordinate amongst planning, engineering, and maintenance departments, and streetscape committees to increase use in projects. |
| 4.4.2 Reduce Potable Water Use | 1. Add water conservation to municipal education and outreach programs | E | $-$$ | | √ | Coordinate with PIPP to prepare standardized outreach materials, and to incorporate water conservation benefits into storm water and urban runoff media messages. Municipalities to include outreach fact sheet with regular mailings, post on web sites, place in newsletters, and distribute at information counters. Coordinate between PIPP and municipalities to develop water awareness month activities. |
| | 2. Increase water-wise landscaping | E | $ | | √ | Municipalities to increase use of water wise landscaping, and to encourage developers to use water-wise landscaping in new development and substantial redevelopment projects. |

**Table 4.9-1 (Continued)**

| Report Section | Action | Program Type | Base Cost | Jurisdictions Involved in Implementation | | |
|---|---|---|---|---|---|---|
| | | | | Lead | All | Comments |
| 4.5.2 Protect Native Habitat | 1. Standardize definition and update list of ESAs | E | $ | | √ | Except for the following cities, which lack ESAs in the watershed: Compton, El Segundo, Lawndale, Lomita, Manhattan Beach, Palos Verdes Estates, Redondo Beach. |
| | 2. Target outreach within 300 feet of ESAs | E | $ | | √ | Same exceptions as above for Action 4.5.2.1. Coordinate with PIPP to prepare public outreach materials. Municipalities to distribute materials to businesses and residents within 300 feet of ESAs. |
| 4.5.4 Control Exotic Species | 2. Update municipal landscape plant lists | E | $ | | √ | |
| | 3. Discourage sale of exotic, invasive plants | E | $ | | √ | Coordinate with California Native Plant Society and prepare letter. Municipalities to send letter to nurseries and local businesses that sell landscape materials, and conduct follow up assessment of effectiveness of action. |
| | 4. Coordinate control of non-native species and pets with public outreach | E | $ | | √ | Coordinate with PIPP to develop standardized outreach materials. Municipalities to send with water bill, post on web sites, and distribute at information counters. |
| 4.6.2 Increase Public Awareness and Stewardship | 1. Conduct public awareness campaign for the Dominguez Watershed | E | $ | | √ | Coordinate with PIPP to develop fact sheet on watershed. Municipalities to send with water bill, post on web sites, submit to local real estate agencies, and distribute at information counters. |
| | 2. Develop curricula materials for Dominguez Watershed | E | $ | | √ | Coordinate with PIPP and local school districts to develop curriculum materials and field trip experiences to promote stewardship of Dominguez Watershed. |
| | 3. Adapt Malibu Creek's Living Lightly in Our Watersheds | E | $ | | √ | |
| 4.6.3 Encourage Public Involvement | 1. Support watershed clean up days | E | $ | | √ | Jurisdiction's to coordinate clean up days at ESAs in their jurisdiction, as appropriate. |

**Table 4.9-1 (Continued)**

| Report Section | Action | Program Type | Base Cost | Jurisdictions Involved in Implementation | | |
|---|---|---|---|---|---|---|
| | | | | Lead | All | Comments |
| 4.6.3 Encourage Public Involvement | 2. Involve public (including elected officials) in implementation of watershed projects | E | $ | | √ | |
| | 3. Implement and/or increase Cool Schools and Campus Forestry Program at local schools | E | $ | | √ | |
| 4.6.4 Document Effectiveness of WMMP Actions | 1. Implement citizen-based monitoring program | E | $$ | County | √ | |
| | 2. Create centralized monitoring data base | E | $$ | County | √ | |
| | 3. Prepare State of the Watershed Report | E | $ | | √ | Each jurisdiction to prepare summary and submit to County who will compile. |
| | 4. Update WMMP | E | $-$$ | | √ | |
| 4.7.2 Promote Watershed Management Coordination | 1. Continue DWAC coordination amongst stakeholders during implementation of the WMMP | C | $ | County | √ | |
| | 2. Increase coordination with other advisory councils of local urbanized watersheds | C | $ | DWAC Chair | √ | |
| | 3. Increase watershed management coordination with regional planning agencies | C | $ | | √ | Lead selected among members of Executive Advisory Committee. |
| | 4. Develop model city codes and ordinances | C | $$ | | √ | This may involve a countywide policy action. |
| 4.7.3 Promote Brownfields Redevelopment | 1. Expand local technical assistance for brownfields redevelopment | C | $$$ (paid back) | | √ | City of Los Angeles already provides assistance to communities within City boundaries. |
| 4.7.4 Obtain funds to Implement Watershed Programs and Projects | 1. Apply for grant funding to implement watershed projects | F | $ | | √ | |
| | 2. Implement Adopt-A-Waterway Program | F | $ | | √ | |
| | 3. Establish storm water fee | F | $$ | | √ | This may involve a countywide policy action. |
| | 4. Establish mitigation bank to manage improvement in wildlife habitat quality | F | $$$ (paid back) | | √ | This may involve a countywide policy action. |

Program Type: C = coordination, E = education and outreach, F = obtain funds
Base Cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000

### 4.9.3 Summary of Recommended Projects

Project actions are summarized according to land use types in this section. This is a useful way to organize the information because similar types of project will occur on the same type of land use. For example, roadway improvements will occur on municipal developed lands, and habitat enhancement will occur on open space lands. The projects are summarized in this section according to the following categories of land use.

- 4.9.3.1 Commercial and Industrial Areas
- 4.9.3.2 Residential Areas
- 4.9.3.3 Schools
- 4.9.3.4 Municipal Urban Areas
- 4.9.3.5 Municipal Open Space and Recreational Areas

Projects are summarized by geographic location (i.e., by city, county) in Table 4.9-2, which is at the end of this subsection.

#### 4.9.3.1 Commercial and Industrial Areas

The industrial/Commercial Facilities Control Program of the SQMP under the Municipal Storm Water and Urban Runoff Permit requires implementation of pollution reduction and control measures. In addition, many industrial facilities hold their own discharge permits with the Regional Water Quality Control Board that include individual SQMPs. This WMMP recommends use of measures to treat urban runoff on-site, to incorporate sustainable building techniques into the design of new development and/or substantial redevelopment to conserve water, and to target source control of trash in high priority areas. Actions recommended for commercial, industrial, and brownfield areas are separately listed below. Figure 4.9-2 shows locations of commercial and industrial lands where actions could be implemented. Brownfields, which may be associated with past commercial or industrial use, are included in the discussion of this section, but are not shown on Figure 4.9-2. As explained in Subsection 4.7.3, the current status and availability of brownfields requires additional investigation and is included as an activity in Action 4.7.3.1.

<u>Commercial Areas</u>
The following WMMP actions are recommended for commercial areas. Several actions apply to existing commercial lands and should be implemented as soon as is practical (4.3.3.1, 4.3.3.2, 4.3.4.1, 4.4.2.2), other actions would be appropriate to include during new development and/or substantial redevelopment (4.3.2.1, 4.3.2.2, 4.3.4.4, 4.4.3.2). Increased use of recycled water use in commercial areas will be tied to the expansion of the recycled water delivery system, which is recommended.

4.3.2.1 Increase use of pervious pavement in walkways of large commercial centers and business parks.

4.3.2.2 Construct and/or rehabilitate parking lots with pervious pavement at shopping centers, shopping malls, and large business parks.

4.3.3.1 Increase public outreach and the number of trash, cigarette, and recyclable containers at strip malls with fast food restaurants and/or convenience stores, and commercial centers in high priority areas.

4.3.3.2 Install and maintain catch basin inserts in high priority trash-generating areas.

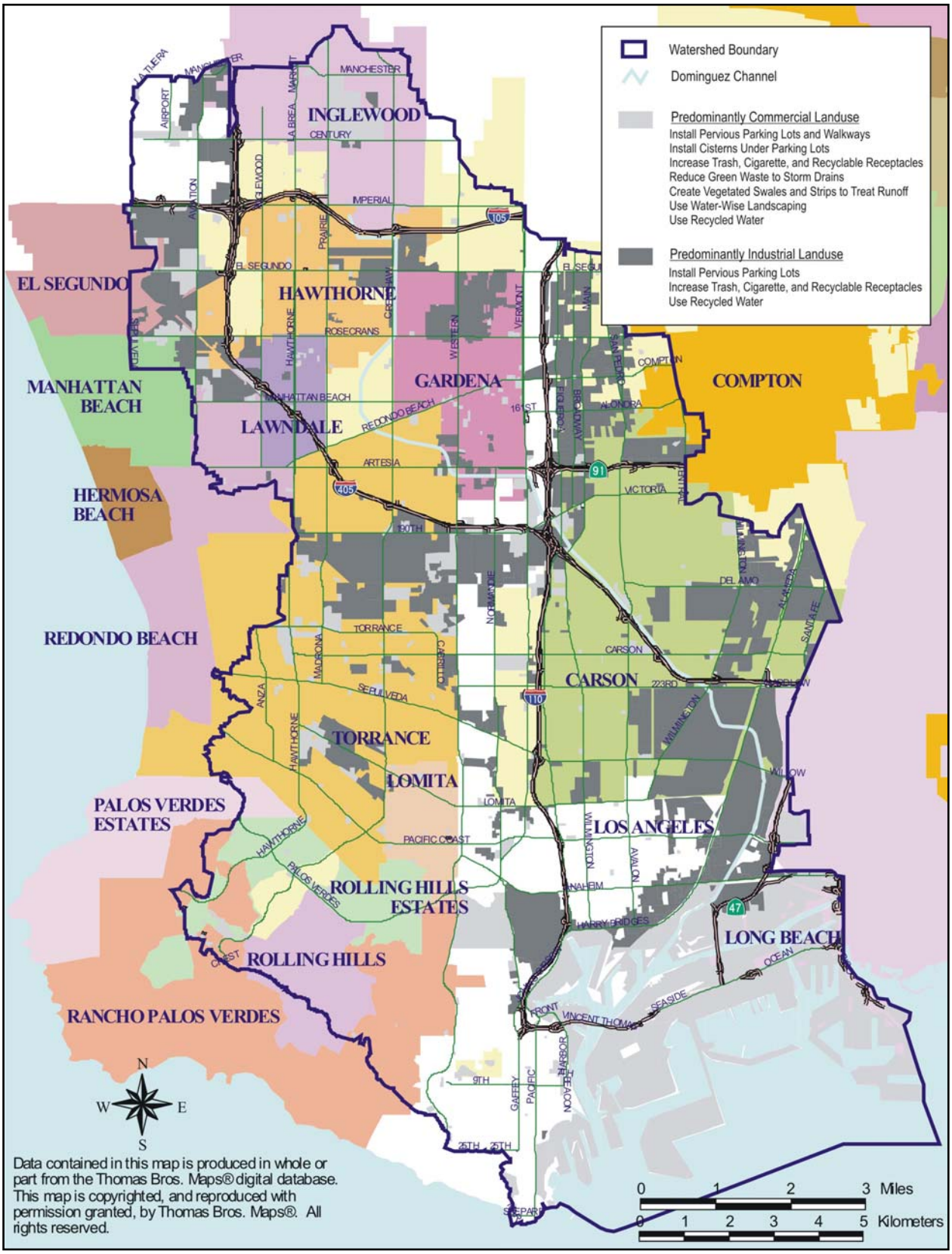



**Figure 4.9-2. Potential program and project locations for commercial and industrial lands.**

4.3.4.1 Reduce green waste to storm drains from landscaped areas.

4.3.4.4 Create grassy swales and/or vegetated areas to treat runoff at business parks and shopping centers.

4.4.2.2 Increase water-wise landscaping.

4.4.3.1 Increase use and expansion of the recycled water system for operation of toilets and urinals and irrigation of landscaped areas at commercial facilities with high public use such as shopping malls. Increase use of recycled water for irrigation at private golf courses and cemeteries. (Note: recycled water already is supplied to the racetrack, stadium, and some cemeteries in the watershed.).

4.4.3.2 Install cisterns under parking lots to store water for landscape irrigation at large business parks and commercial centers during new development and/or redevelopment.

Industrial Areas

Figure 4.9-2 shows the extensive coverage of industrial lands within the watershed, where the following WMMP actions could be implemented. Similar to commercial lands, Action 4.3.3.1 should be implemented as soon as is practical, Action 4.3.2.2 would be appropriate during development/redevelopment, and Action 4.4.3.1 would be tied to the expansion of the recycled water conveyance system.

4.3.2.2 Construct and/or rehabilitate parking lots with pervious pavement.

4.3.3.1 Increase public outreach and the number of trash, cigarette, and recyclable containers at industrial business complexes in high priority trash-generating areas.

4.4.3.1 Increase use and expansion of the recycled water system for industrial uses, irrigation of landscaped areas, and operation of toilets and urinals at large industrial areas.

Brownfields

Action 4.7.3.2 recommends increasing brownfields redevelopment to promote environmental stewardship while balancing between economic and environmental considerations. Small sites that are redeveloped for commercial use should incorporate SUSMP BMPs so that runoff is treated on-site. For large sites, it is recommended that the property be redeveloped with multiple land use functions. In particular, vegetated open space for habitat and/or recreational use should be included in the design to contribute to municipal open space and recreation goals. In addition, the following sustainable building practices should be included in large redevelopment projects in order to provide balance with environmental stewardship.

4.3.2.1 Use pervious pavement in walkways.

4.3.2.2 Construct parking lots with pervious pavement.

4.3.4.4 Create grassy swales and/or vegetated areas to treat runoff.

4.4.2.2 Use water-wise landscaping.

4.4.3.1 Use recycled water system for irrigation of landscaped areas and operation of toilets and urinals.

4.4.3.2 Install rain-harvesting system and/or cistern to store water for landscape irrigation.

4.6.2.4 Install informational kiosks for public education at multi-use sites that include open space habitat and/or recreation.

### *4.9.3.2 Residential Areas*

Figure 4.9-3 shows potential locations of actions for residential lands. Most actions would be appropriate to any type of residential development. In a couple of cases, the action would be more relevant to multiple family developments (e.g., 4.3.4.4) or single family residences (e.g., 4.3.2.2). Actions that should be implemented as soon as possible include reducing green waste to storm drains, increasing water-wise landscaping, and control of pets and their waste (4.3.4.1, 4.4.2.2, 4.5.4.4). In areas where there are recurrent flooding problems, the use of underground cisterns to capture and store rainfall runoff or routing of flows to existing detention/retention basins should be considered. The other listed actions would be appropriate to include during new development or substantial redevelopment.

4.3.2.1 Increase use of pervious pavement in parking lots and driveways.

4.3.4.1 Reduce green waste to storm drains from lawns and landscaped areas.

4.3.4.4 Create grassy swales and/or vegetated areas to treat runoff.

4.4.2.2 Increase water-wise landscaping and gardening.

4.4.3.2 Install rain-harvesting systems and/or cisterns during new development or as a retrofit in flood prone areas.

4.4.3.4 Route flows to detention/retention basins in flood prone areas.

4.5.4.4 Control of non-native species and pets

### *4.9.3.3 Schools*

Figure 4.9-4 shows potential program and project locations for schools. Similar to other land types, the use of pervious pavement, underground cisterns, and grassy swales would be appropriate to include in new development and/or substantial redevelopment (4.3.2.2, 4.3.4.4, 4.4.3.2). As can been seen by the substantial number of schools on Figure 4.9-4, use of recycled water (4.4.3.1) for irrigating school lawns and landscaped areas would provide substantial conservation benefit, and expansion to schools throughout the watershed is recommended. It is understood that schools already engage in several conservation and energy efficient management measures, therefore, the actions to reduce green waste to storm drains and to increase the use of water-wise landscaping should be adopted by individual schools, as appropriate. Two actions are recommended to increase student awareness and involvement in environmental stewardship. These include incorporating curricula materials developed specifically for the Dominguez Watershed into local school educational programs, and implementing Cool Schools or Campus Forestry programs. In addition, several volunteer opportunities are recommended in the plan that would be appropriate for student involvement, such as watershed cleanup days, implementation of projects, and/or citizen-based monitoring (4.6.3.1, 4.6.3.2, 4.6.4.1).

4.3.2.2 Construct and/or rehabilitate parking lots with pervious pavement.

4.3.4.1 Reduce green waste to storm drains from lawns and landscaped areas.

4.3.4.4 Create grassy swales and/or vegetated areas to treat runoff.

4.4.2.2 Increase water-wise landscaping.

4.4.3.1 Increase use and expansion of the recycled water system.

4.4.3.2 Install rain-harvesting system and/or cistern in the design of new schools.

4.6.2.2 Incorporate curricula materials specific to the Dominguez Watershed into educational programs.

4.6.3.3 Implement Cool Schools or Campus Forestry program.

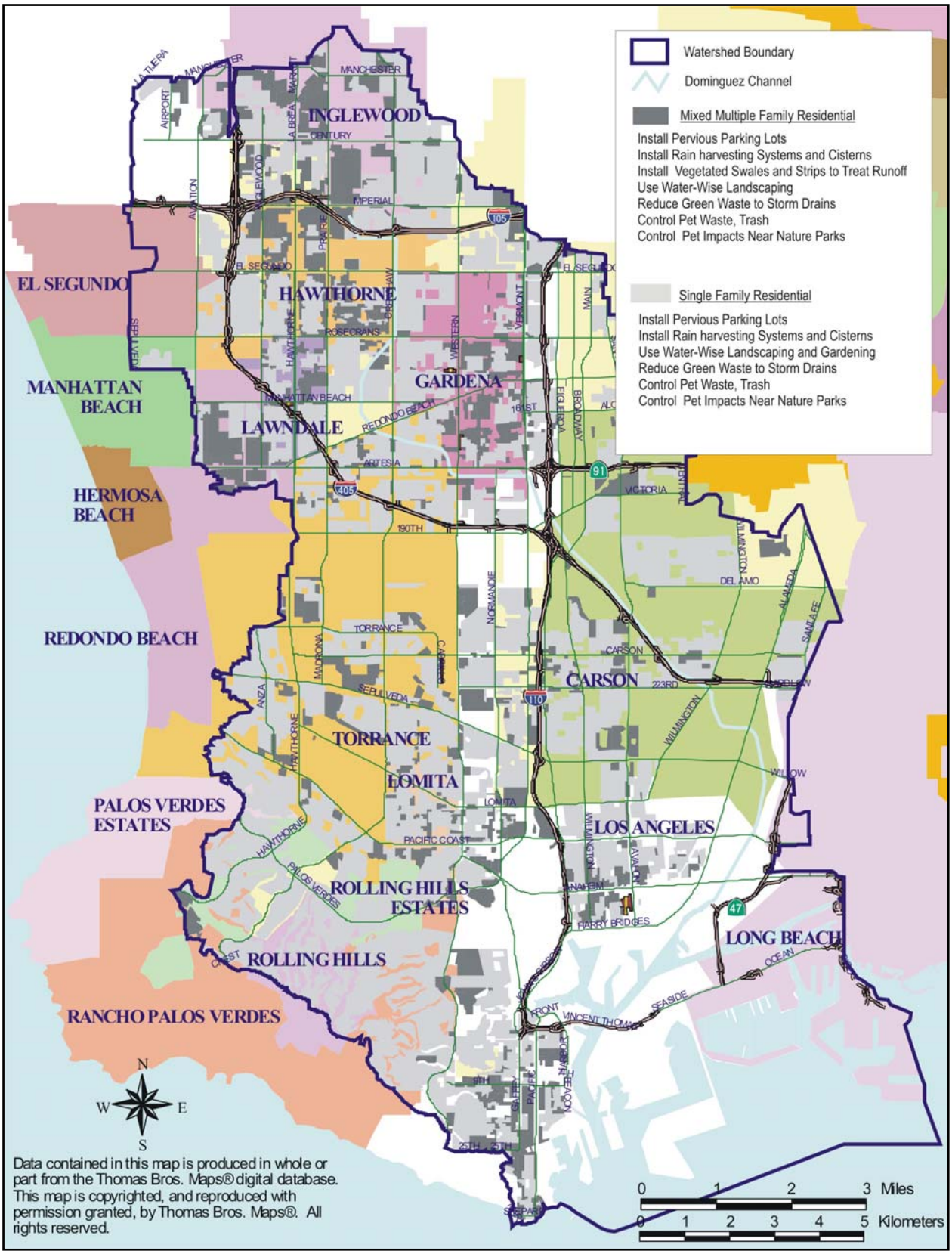



**Figure 4.9-3. Potential program and project locations for residential lands.**

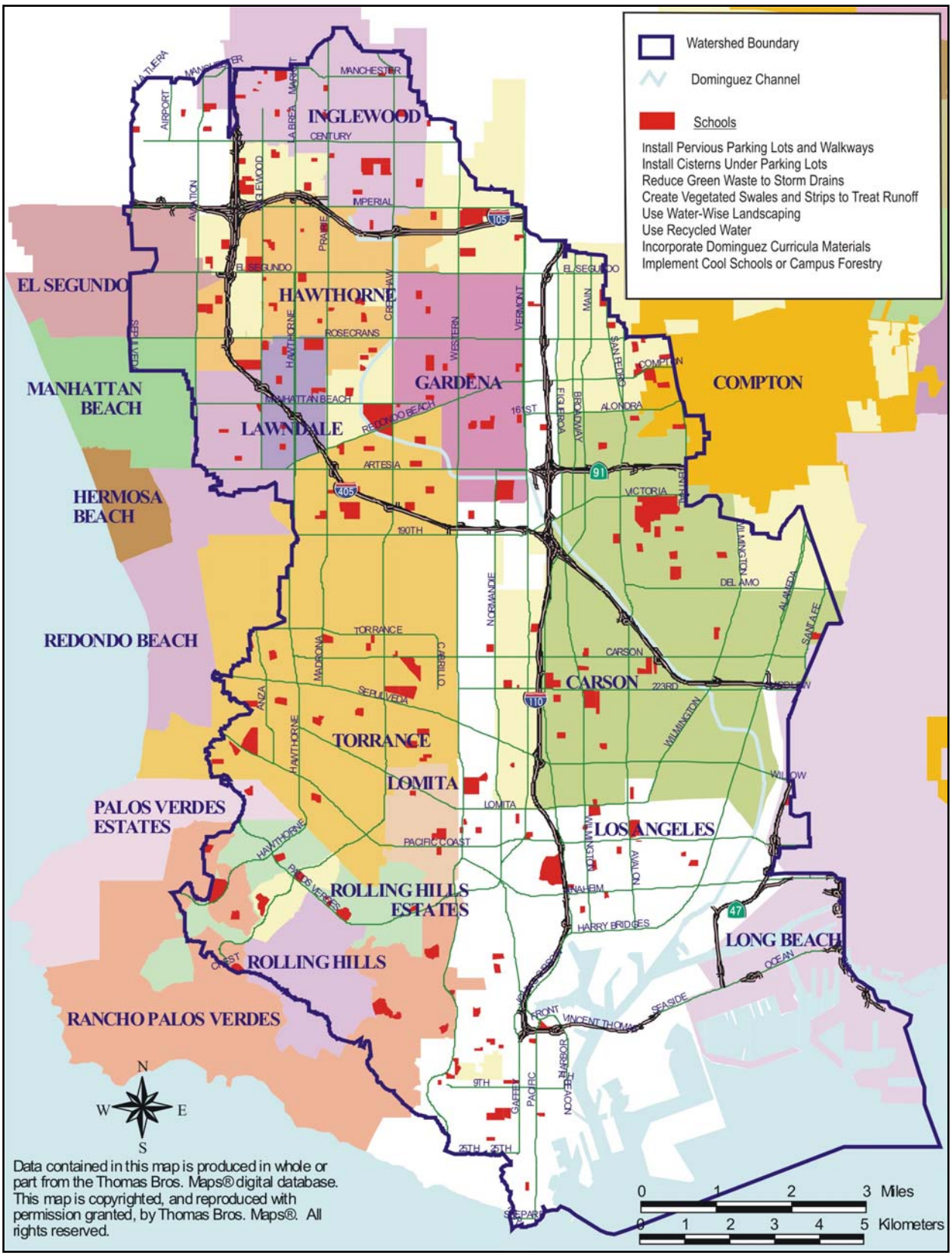



**Figure 4.9-4. Potential program and project locations for schools.**

### *4.9.3.4 Municipal Urban Areas*

Projects and programs that are recommended for municipalities are listed below for developed lands (civic centers, city halls, court houses, Department of Motor Vehicles, and libraries), the flood control system, and storm drain system. Potential locations for projects on developed municipal lands are shown on Figure 4.9-5. Projects recommended for municipal open space and recreational lands are described in Subsection 4.9.3.5.

Many of the same actions that are recommended for implementation at commercial lands are also recommended for municipal developed land. Additional actions include the use of vegetated swales and landscaped areas in the design of roadway improvement projects to treat runoff as well as providing aesthetic improvements (4.3.4.4), and several actions to improve water quality through the storm drain and flood control system. The construction of a facility to treat runoff for reuse, and the development and construction of facilities to provide alternative water sources (e.g., water recycling facility desalination plant) are included in the plan for planning consideration. It is recognized that the feasibility of those actions will require additional environmental and economic analysis.

<u>Civic Centers, City Halls, Libraries</u>

- 4.3.2.1 Increase use of pervious pavement in walkways.
- 4.3.2.2 Construct and/or rehabilitate parking lots with pervious pavement.
- 4.3.3.1 Increase trash, cigarette, and recyclable containers at public buildings in high priority trash-generating areas.
- 4.3.4.1 Reduce green waste to storm drains from landscaped areas.
- 4.4.2.2 Increase water-wise landscaping.
- 4.4.3.1 Increase use and expansion of the recycled water system.
- 4.4.3.2 Install rain-harvesting system and/or cistern during substantial redevelopment of parking lots.

<u>Department of Motor Vehicles, Court Houses</u>

- 4.3.2.2 Construct and/or rehabilitate parking lots with pervious pavement.
- 4.3.3.1 Increase trash, cigarette, and recyclable containers at public buildings in high priority areas.

<u>Major Streets Along Commercial Areas</u>

- 4.3.4.4 Perform roadway improvements using vegetated medians, buffers, and/or parkways.
- 4.4.3.1 Use recycled water for irrigation.

<u>Storm Drain and Flood Control System</u>

- 4.3.3.2 Install and maintain catch basin inserts in high priority areas.
- 4.3.3.3 Install and maintain in-line separation units and/or end-of-pipe control along all major storm drains to water bodies.
- 4.3.4.2 Divert dry weather runoff to sanitary sewer system.
- 4.3.4.6 Create wetlands to treat urban runoff.
- 4.3.4.7 Enhance existing detention/retention basins.
- 4.3.4.8 Route flows to storm water retention facilities to reduce flooding and treatment.

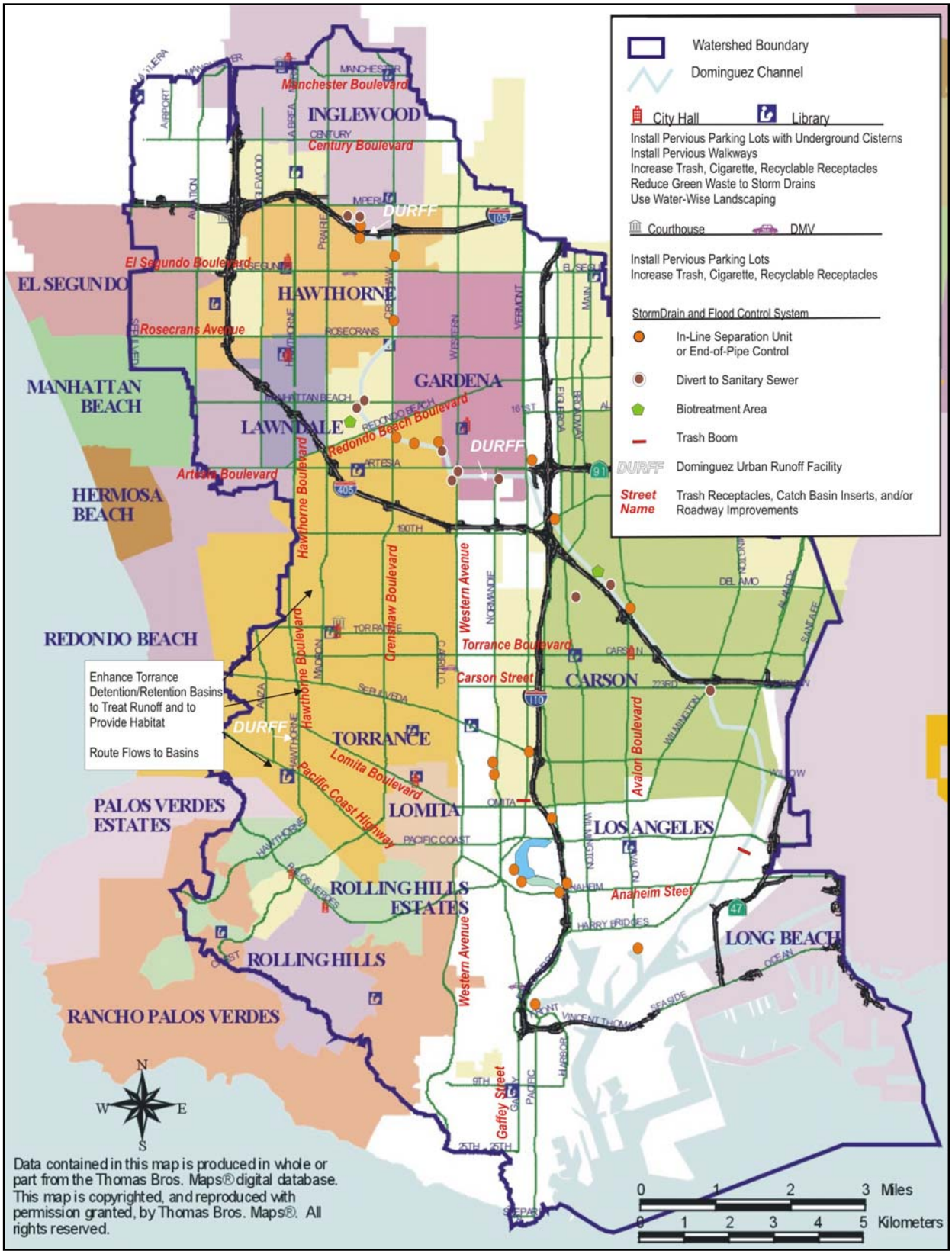



**Figure 4.9-5. Potential program and project locations for developed municipal lands.**

Waste Water and Water Facilities

4.3.2.2 Construct and/or rehabilitate parking lots with pervious pavement.

4.3.4.9 Construct DURRF for water treatment and reuse.

4.4.3.3 Develop and construct new alternative water sources.

### *4.9.3.5 Municipal and Other Open Space and Recreational Areas*

Several actions are recommended for open space recreational and habitat areas. In some cases both recreation and habitat functions are provided by the open space lands, therefore, projects for both these types of land uses are shown on Figure 4.9-6. Actions recommended for parks, golf courses, habitat areas both on land and in the harbors are listed below. In several cases, the action involves activities to increase public awareness, stewardship, and involvement in watershed management. The actions are organized below by predominant land use type (i.e., golf course, park, open space area) and/or location.

***Golf Courses***

Chester Washington Golf Course

4.3.2.2 Replace parking lots with pervious pavement during major repair or renovation.

4.4.2.2 Increase water-wise landscaping.

4.4.3.1 Increase use and expansion of the recycled water system.

4.5.3.7 Daylight historic stream to restore wetlands and improve water quality.

Victoria Golf Course

4.3.2.2 Replace parking lots with pervious pavement during major repair or renovation.

4.3.4.7 Create wetlands to treat runoff.

4.4.2.2 Increase water-wise landscaping.

4.5.3.7 Daylight historic streams to restore wetlands.

Other Municipal and County Golf Courses

4.3.2.2 Replace parking lots with pervious pavement during major repair or renovation.

4.4.2.2 Increase water-wise landscaping.

4.4.3.1 Increase use and expansion of the recycled water system.

***Parks***

Alondra Park

4.3.2.2 Replace parking lots with pervious pavement during major repair or renovation.

4.3.4.3 Install pet waste stations.

4.3.4.7 Create wetlands to treat runoff.

4.4.2.2 Increase water-wise landscaping.

4.4.3.1 Increase use and expansion of the recycled water system.

4.6.2.4 Install informational kiosk.

4.6.3.2 Involve public (including elected officials) in implementation of watershed projects.

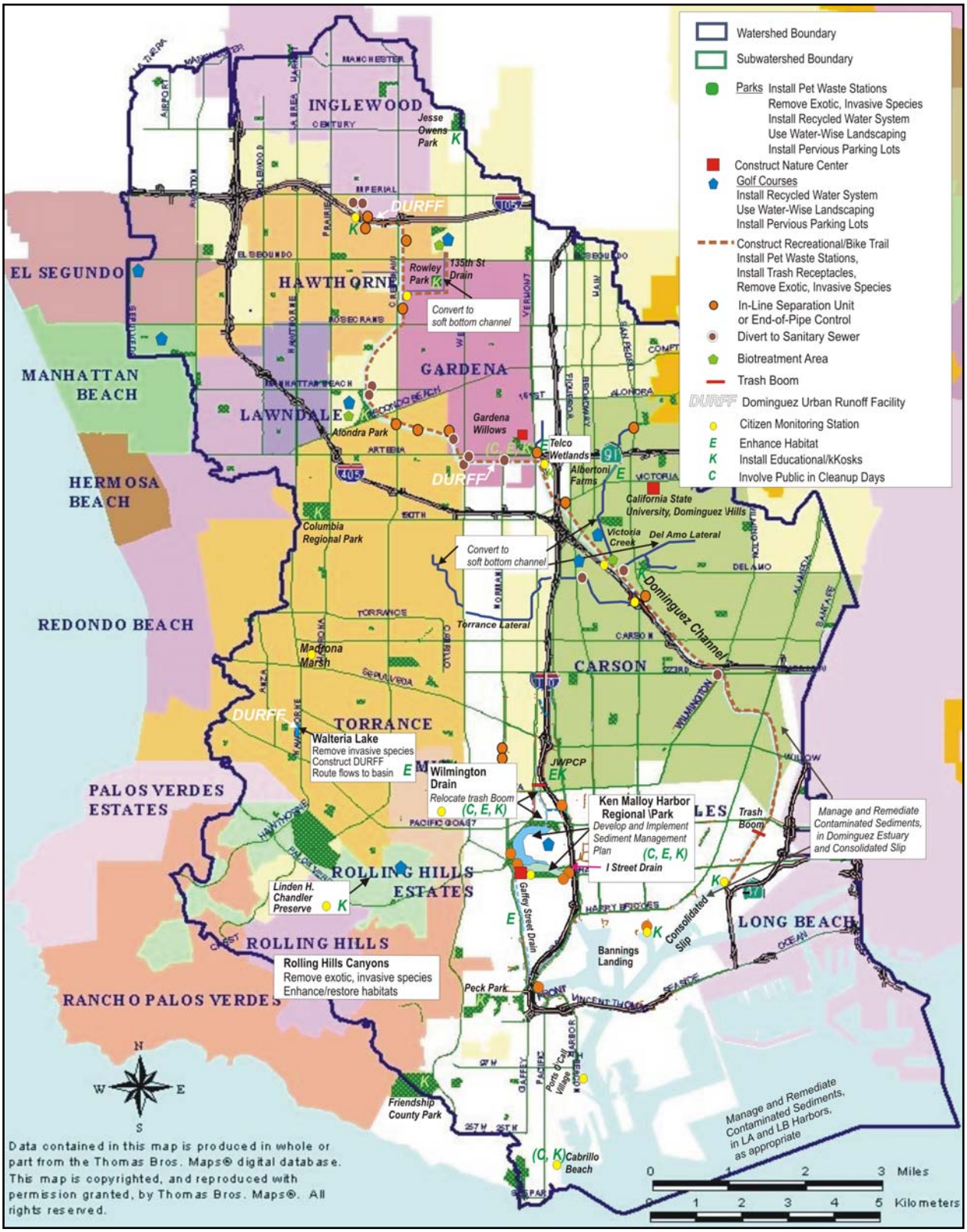



**Figure 4.9-6. Potential program and project locations for open space and recreational lands.**

Ken Malloy Harbor Regional Park

4.3.2.2 Construct and/or replace parking lots with pervious pavement.
4.3.3.3 Install and maintain in-line separation units and/or end of pipe controls (major storm drains with outlets to park).
4.3.4.3 Install pet waste stations.
4.3.4.9 Construct DURFF for water treatment and reuse (construct at Walteria Lake to supply water to Machado Lake).
4.3.5.3 Develop and implement a sediment management plan for Machado Lake.
4.4.2.2 Increase water-wise landscaping.
4.4.3.1 Increase use and expansion of the recycled water system.
4.4.3.2 Include cistern in design of nature center to provide water for irrigation.
4.5.2.2 Target outreach within 300 feet of ESAs.
4.5.3.2 Enhance Machado Lake wetlands.
4.5.4.1 Develop and Implement an invasive species eradication program.
4.6.2.4 Install informational kiosks.
4.6.3.1 Involve public in watershed clean up days.
4.6.3.2 Involve public (including elected officials) in implementation of watershed projects.
4.6.3.3 Implement citizen-based monitoring program.
4.6.3.5 Create nature center.

Other Parks

4.3.2.2 Construct parking lots with pervious pavement.
4.3.4.3 Install pet waste stations.
4.4.2.2 Increase water-wise landscaping.
4.4.3.1 Increase use and expansion of the recycled water system.
4.5.3.7 Daylight historic streams to restore wetlands.
4.5.4.1 Develop and implement an invasive species eradication program.
4.6.2.4 Install informational kiosks.
4.6.3.3 Implement citizen-based monitoring program (*selected large parks)*.
4.7.2.1 Increase brownfields redevelopment.
4.9.3.6 Other Open Space Areas

**Open Space Areas**

Gardena Willows

4.5.2.2 Target outreach within 300 feet of ESAs.
4.5.3.3 Enhance Gardena Willows.
4.5.4.1 Implement an invasive species eradication program.
4.6.2.4 Install informational kiosk.
4.6.3.2 Involve public (including elected officials) in implementation of watershed projects.
4.6.3.5 Create nature center.

Madrona Marsh

4.5.2.2 Target outreach within 300 feet of ESAs.

4.6.2.4 Provide watershed themed outreach materials and/or informational kiosk.

Pocket Wetlands (e.g., Albertoni Farms, Gaffey Street Drain, I-Street Drain, Telco Wetlands, JWPCP Wetland)

4.3.3.3 Install and maintain in-line separation units and/or end of pipe controls (major storm drains with outlets to area).

4.5.4.1 Develop and Implement an invasive species eradication program.

4.3.4.7 Expand and/or create wetlands to treat runoff (Gaffey Street Drain, Telco Wetlands).

Rolling Hills Canyons

4.5.2.2 Target outreach within 300 feet of ESAs (Linden H. Chandler Preserve).

4.5.3.6 Enhance and restore canyon habitats.

4.5.4.1 Develop and Implement an invasive species eradication program.

4.6.3.3 Implement citizen-based monitoring program.

Wilmington Drain

4.3.3.1 Add trash and recyclable containers to trail.

4.3.3.3 Install and maintain in-line separation units and/or end of pipe controls (major storm drains with outlets to Wilmington Drain).

4.3.3.4 Relocate trash boom.

4.3.4.3 Install pet waste stations.

4.5.2.2 Target outreach within 300 feet of ESAs.

4.5.3.1 Enhance/restore Wilmington Drain wetlands, including improvement and re-opening of recreational trail, and increased frequency of homeless code enforcement.

4.5.4.1 Develop and Implement an invasive species eradication program.

4.6.2.4 Install informational kiosk.

4.6.3.1 Support watershed clean up days.

4.6.3.2 Involve public (including elected officials) in implementation of watershed projects.

4.6.4.3 Implement citizen-based monitoring program.

Walteria Lake

4.3.4.9 Construct DURFF for water treatment and reuse (supply water to Machado Lake).

4.4.2.2 Route flows to storm water retention facilities.

4.5.3.4 Enhance Walteria Lake.

4.5.4.1 Develop and Implement an invasive species eradication program.

4.6.4.3 Implement citizen-based monitoring program.

***Dominguez Channel and Tributaries***

Dominguez Channel

4.3.3.1 Add trash and recyclable containers to trail.

4.3.3.3 Install and maintain in-line separation units and/or end-of-pipe control (major drains with outlet to channel).

4.3.3.4 Install trash boom.

4.3.4.2 Divert dry weather runoff to sanitary sewer system (major drains with outlet to channel).

4.3.4.3 Install pet waste stations.

4.3.5.1 Remediate and manage sediments in the estuary of Dominguez Channel.

4.4.2.2 Use water-wise landscaping along recreational trail.

4.5.2.2 Target outreach within 300 feet of ESAs.

4.5.4.1 Develop and Implement an invasive species eradication program.

4.6.2.4 Install informational kiosks.

4.6.3.1 Involve public in watershed cleanup days.

4.6.3.4 Create watershed enhanced recreational trail along Dominguez Channel.

4.6.4.3 Implement citizen-based monitoring program.

Tributary Channels to Dominguez Channel

4.3.3.3 Install and maintain in-line separation units and/or end-of-pipe control (major drains with outlet to channel).

4.3.4.2 Divert dry weather runoff to sanitary sewer system (major drains with outlet to channel).

4.4.2.2 Use water-wise landscaping if recreational trail is constructed.

4.5.3.8 Investigate feasibility of removing concrete and restoring natural cross section to tributary channels.

4.6.2.4 Install informational kiosk if recreational trail is constructed.

4.6.3.4 Create recreational/bike trail if channel improvements are feasible.

***Los Angeles and Long Beach Harbors***

Banning's Landing

4.6.2.4 Install informational kiosk.

4.6.4.3 Implement citizen-based monitoring program.

Cabrillo Beach

4.6.2.4 Install informational kiosk.

4.6.3.1 Involve public in watershed clean up days.

4.6.3.3 Implement citizen-based monitoring program.

Consolidated Slip

4.3.5.1 Manage and remediate sediments in Consolidated Slip

Inner and Outer Los Angeles and Long Beach Harbor Environment

4.3.3.3 Install and maintain in-line separation units and/or end of pipe controls (major storm drains with outlets to harbors).

4.3.5.2 Manage and remediate contaminated sediments from Los Angeles and Long Beach Harbors.

4.5.2.2 Target outreach within 300 feet of ESAs.

**Table 4.9-2. Summary of recommended projects according to geographic location in the Dominguez Watershed.**

| Report Section | Action | Land Use Type | Base Cost | Carson | County Los Angeles | Compton | El Segundo | Gardena | Hawthorne | Inglewood | Lawndale | Lomita | Long Beach | Los Angeles | Manhattan Bch | Palos Verdes Estates | Rancho Palos Verdes | Redondo Beach | Rolling Hills | Rolling Hills Estates | Torrance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Subwatershed Designation** | LM | A | L | U | U | U | U | U | M | H | A | U | M | HM | U | M | HM | LM |
| 4.3.2. Reduce Hardscape | 1. Increase use of pervious pavement during development and redevelopment | C, R, | $-$$ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 2. Construct parking lots with pervious pavement | C, I, M, O, S | $$$-$$$$ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 4.3.3 Reduce Trash | 1. Increase public outreach and the number of trash, cigarette, and recyclable containers in high priority trash generating areas | C, I, M | $$ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 2. Install and maintain catch basin inserts in high priority areas | C, M | $ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 3. Install and maintain in-line separation units and/or end-of-pipe controls along all major storm drains to water bodies | M, M (O) | $$-$$$ | • | • | | | • | • | • | | | • | • | | | | | | | • |
| | 4. Re-install and/or relocate trash booms on Dominguez Channel and Wilmington Drain | M (O) | $$-$$$ | | • | | | | | | | | | • | | | | | | | |
| 4.3.4 Reduce discharge impairments | 1. Reduce green waste to storm drains | C, R, S | $$$ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 2. Divert dry weather runoff to sanitary sewer system | M | $$-$$$ | • | • | | | • | • | • | | | | | | | | | | | • |
| | 3. Install pet waste stations in parks and along trails | M (O) | $ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 4. Create grassy swales and/or vegetated areas to treat urban runoff | C, R, S | $ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 5. Perform roadway improvements using vegetated medians, buffers, and/or parkways | M | $$$$ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |

**Table 4.9-2. Summary of recommended projects (Continued).**

| Report Section | Action | Land Use Type | Base Cost | Carson | County Los Angeles | Compton | El Segundo | Gardena | Hawthorne | Inglewood | Lawndale | Lomita | Long Beach | Los Angeles | Manhattan Bch | Palos Verdes Estates | Rancho Palos Verdes | Redondo Beach | Rolling Hills | Rolling Hills Estates | Torrance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Subwatershed Designation** | LM | A | L | U | U | U | U | U | M | H | A | U | M | HM | U | M | HM | LM |
| 4.3.4 Reduce discharge impairments (Continued) | 6. Create wetlands to treat urban runoff | M (O) | $$$-$$$$ | • | • | | | | | | | | | • | | | | | | | |
| | 7. Enhance existing detention/retention basins | M | $$$$ | | • | | | | | | | | | | | | | | | | • |
| | 8. Route flows to detention/ retention basins to reduce flooding and treat runoff | M | $$$$ | | • | | | | | | | | | | | | | | | | • |
| | 9. Construct DURRF for water treatment and reuse | M | $$$$ | | • | | | • | • | | | | | | | | | | | | • |
| 4.3.5 Reduce legacy pollutants | 1. Manage and remediate sediments in Consolidated Slip and Dominguez Channel | M (O), Port LA (O) | $$$$ | • | • | | | | | | | | | • | | | | | | | |
| | 2. Manage and remediate contaminated sediments from Los Angeles and Long Beach Harbors | M (O), Ports (O) | $$$$ | | | | | | | | | | • | • | | | | | | | |
| | 3. Develop and implement a sediment management plan for Machado Lake | M (O) | $$$$ | | | | | | | | | | | • | | | | | | | |
| 4.4.2 Reduce Potable Water Use | 2. Increase water-wise landscaping | C, M (O), R, S | $ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 4.4.3 Increase Water Reuse | 1. Increase use and expansion of the recycled water system | C, I, M (O), S | $$-$$$ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 2. Increase installation of rain-water harvesting systems and cisterns | C, M, M (O), R, S | $-$$$$ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 3. Develop and construct new alternative water sources | M | $$$$ | • | | | | | | | | | • | • | | | | | | | |

**Table 4.9-2. Summary of recommended projects (Continued).**

| Report Section | Action | Land Use Type | Base Cost | Carson | County Los Angeles | Compton | El Segundo | Gardena | Hawthorne | Inglewood | Lawndale | Lomita | Long Beach | Los Angeles | Manhattan Bch | Palos Verdes Estates | Rancho Palos Verdes | Redondo Beach | Rolling Hills | Rolling Hills Estates | Torrance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Subwatershed Designation** | LM | A | L | U | U | U | U | U | M | H | A | U | M | HM | U | M | HM | LM |
| 4.5.3 Enhance/ Restore Habitat | 1. Enhance/restore Wilmington Drain | M (O) | $$$ | | • | | | | | | | | | • | | | | | | | |
| | 2. Enhance Machado Lake wetlands | M (O) | $$$ | | | | | | | | | | | • | | | | | | | |
| | 3. Enhance Gardena Willows | M (O) | $$$ | | | | | • | | | | | | | | | | | | | |
| | 4. Enhance Walteria Lake | M (O) | $$$ | | • | | | | | | | | | | | | | | | | • |
| | 5. Enhance pocket wetlands | M (O), P (O) | $$ | • | • | | | | | | | | | • | | | | | | | |
| | 6. Enhance and restore canyon habitats | M (O), P (O) | $$$ | | | | | | | | | | | • | | | • | | • | • | |
| | 7. Daylight historic streams to restore wetlands | M (O) | $$$ | | • | | | | | | | | | • | | | | | | | |
| | 8. Investigate feasibility and restore concrete –lined tributary channels | M (O) | $$$$ | • | • | | | • | • | | | | | • | | | | | | | • |
| 4.5.4 Control Exotic Species | 1. Develop and Implement an invasive species eradication program | M (O) | $$ | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 4.6.2 Increase Public Awareness and Stewardship | 4. Install informational kiosks at parks and recreational areas | M (O) | $ | • | • | | | • | • | • | | | | • | | | | | | • | • |
| 4.6.3 Encourage Public Involvement | 4. Create watershed enhanced recreational/bike trail along Dominguez Channel | M (O) | $$$$ | • | • | | | • | • | • | | | | • | | | | | | | • |
| | 5. Create additional nature centers | M (O) | $$$$ | • | | | | • | | | | | | • | | | | | | | |
| 4.7.3 Promote Brownsfields Redevelopment | 2. Increase brownfields redevelopment | C, I, M, S | $$$$ | • | • | • | • | • | • | • | • | | • | • | • | | | • | • | | • |

Land Use Type: C = commercial, I = industrial, M = municipal, M (O) = municipal open space/recreation, P (O) = private property open space, R = residential, S = schools
Subwatershed Designation: A = All, H = Harbors, L = Lower Dominguez, M = Machado Lake and Basins, U = Upper Dominguez
Base Cost: $ = ≤ $10,000, $$ = > $10,000 and ≤ $100,000, $$$ = > $100,000 and ≤ $1,000,000, $$$$ = > $1,000,000