5. INTEGRATED REGIONAL PROJECTS

San Gabriel Canyon Spreading Grounds

Over 1,500 projects have been identified by local entities, and are being evaluted for opportunties to accomplish integrated solutions.

5.1 Introduction

Water resource management projects developed in past decades generally focused on a single purpose, and avoided or minimized impacts on other water resource interests. Examples of this approach include; flood protection, water supply and water treatment projects. Agencies, jurisdictions, and stakeholders increasingly recognize the value of addressing the interrelationships and interdependencies of water resource management projects and the value of developing integrated projects.

The purpose of this section is to:

- Describe the current list of stakeholder-identified projects that make progress towards the objectives developed for the IRWMP and contribute to the planning targets for water supply, water quality, open space, habitat and infrastructure identified in Section 3;
- Discuss integration efforts for stakeholder-identified projects; and
- Identify Regional planning project approaches that can be used to help develop a comprehensive vision for each Subregion, assist in evaluating the stakeholder project ideas consistent with that vision, and stimulate the identification of new Regional projects that can bridge the gap between the stakeholder projects and the Regional planning targets and thereby form an integrated and comprehensive solution for the Region's water resource management needs over the 20 year planning horizon of this Plan.

5.2 Stakeholder Identified Projects

To improve water supplies, enhance water supply reliability, improve surface water quality, expand recreational acess, conserve habitat, and enhance infrastructure in the Region, agencies, jurisdictions, and organizations have developed hundreds of water supply, watershed management, water quality compliance and other water resource management projects. Collectively, these projects have the potential to generate substantial amounts of new water, significantly improve surface water quality, restore important habitat areas, enhance flood protection, and repair and replace critical water supply, water quality, and flood protection infrastructure.

A small subset of these projects was identified for the first round of Proposition 50, Chapter 8 funding. Stakeholders identified a list of 149 projects, which was subsequently narrowed down to 58 projects by the Subregional Steering Committees and submitted for Step 1 of the funding process. Following the consolidation of the initial planning efforts, the State requested a single application from the Region, which required further integration and prioritization that ultimately resulted in a list of thirteen priority projects, which were submitted in June 2006 for Step 2 (of Round 1) implementation funding. Information concerning those projects is provided in Appendix B.

Call for Projects

To identify the many potential projects in the Region and to gauge the cumulative contribution of these projects towards meeting the objectives and planning targets, development of the IRWMP included a "Call for Projects" which afforded stakeholders the opportunity to directly submit their projects and project concepts for consideration. Stakeholders were asked to submit projects that were at any stage of development and ideas about possible projects (or project concepts). There were a variety of avenues available for participating in the Call for Projects including the submission of projects via a project identification form (in either a short- or long-form version), in spreadsheet form (for the submission of multiple projects), or directly on-line via the website (www.lawaterplan.org). As of October 31, 2006, a total of 1,521 projects and project concepts had been submitted and entered into a project database. A list of the projects submitted, including information about the project benefits provided by the entity submitting the project, is provided in Appendix C.

Table 5-1 provides a summary of projects including project concepts contained in the database as of October 31, 2006 by Subregion and identified benefit category. Breaking down by benefits category provides a picture of the composition of those projects. Note that stakeholders identified benefits for only 850 of the 1,521 projects submitted, or approximately 55 percent of the projects.

It should be noted that the completeness of the project information varies greatly. For example, only 565 projects out of 1,521 included quantified benefit information. It is assumed that the projects where more complete information was provided, reflects projects at a more advanced level of planning and/or are ready to proceed. It should also be noted that stakeholders were encouraged to submit project concepts and thus the incompleteness of some project information may be appropriate given that request.

The information provided by stakeholders included identification of the project proponent. In many instances, the proponent submitted the project. For some projects, the identified project proponent may have no knowledge of the project, or the project is proposed to be located on private property without the express consent of the property owner. (Several projects fitting these categories were deleted from the database for this reason, but further verification of the project database is needed.)

Although some conclusions may be possible from an analysis of the stated benefits provided for the projects and project concepts in the database, given the uncertain accuracy of the benefit information provided, an assessment of cumulative benefits of the stakeholder-identified projects and a comparison of the cumulative benefits to the planning targets was ultimately not included in this Plan. However, based on a review of the projects,

Table 5-1. Stakeholder Projects by Subregion and Benefit Category

Subregion	Total Projects Submitted [1]	Number of Projects by Benefit Category [1], [2]			
		Water Supply [3]	Water Quality [4]	Habitat & Open Space [5]	Other Benefits [6]
Lower San Gabriel and Los Angeles River Watersheds	212	74	59	53	62
North Santa Monica Bay Watershed	215	43	66	58	36
South Bay Watershed	309	56	98	143	53
Upper Los Angeles River Watershed	296	108	152	119	97
Upper San Gabriel River and Rio Hondo Watersheds	433	96	49	23	14
Regional Projects [7]	56	15	7	20	6
TOTAL	**1521**	**392**	**431**	**416**	**268**

1. *Based on projects submitted by October 31, 2006. Stakeholders identified qualitative benefit information for only 850 of the 1,521 projects.*
2. *Projects for which more than one qualitative benefit was identified were included in each benefit category. Thus the total number of projects included in each benefit category exceeds 850.*
3. *Includes potable and non-potable supply benefits including potable supply benefits from drinking water treatment and non-potable supply benefits from water recycling, urban dry weather runoff/stormwater treatment.*
4. *Includes dry weather urban runoff and stormwater capture benefits.*
5. *Includes public access, open space, habitat, and repair and replacement.*
6. *Includes flood protection and infrastructure repair and replacement. These benefits did not require quantified benefits, hence the numbers listed reference qualitative benefits*
7. *Projects that fell within multiple or all Subregions, or projects for which location information was not provided or incomplete.*

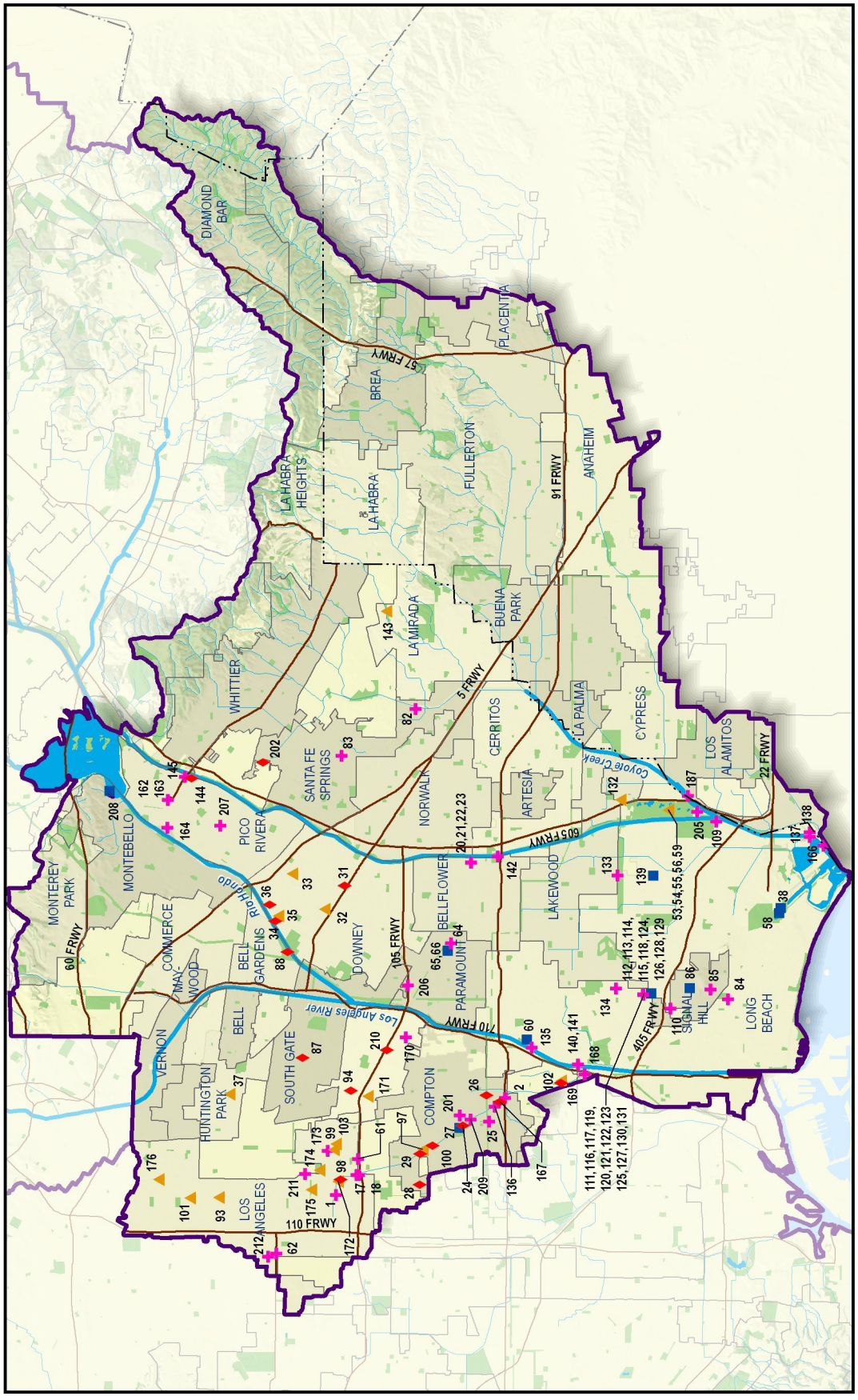
it appears unlikely that the stakeholder-identified projects will provide sufficient benefits to meet the 20 year planning targets.

While many of the projects lack detail and supporting information, the Call for Projects provided a valuable mechanism to engage stakeholders in the process of sharing project information and discussing the issues related to the integration of projects. The information provided herein represents the outcome of the initial step in a process of bringing individual projects into a collaborative process of project identification. The database identifies what information is readily available, what information remains to be identified, and gives the stakeholders a basis to work together as the IRWMP moves forward.

Location of Projects

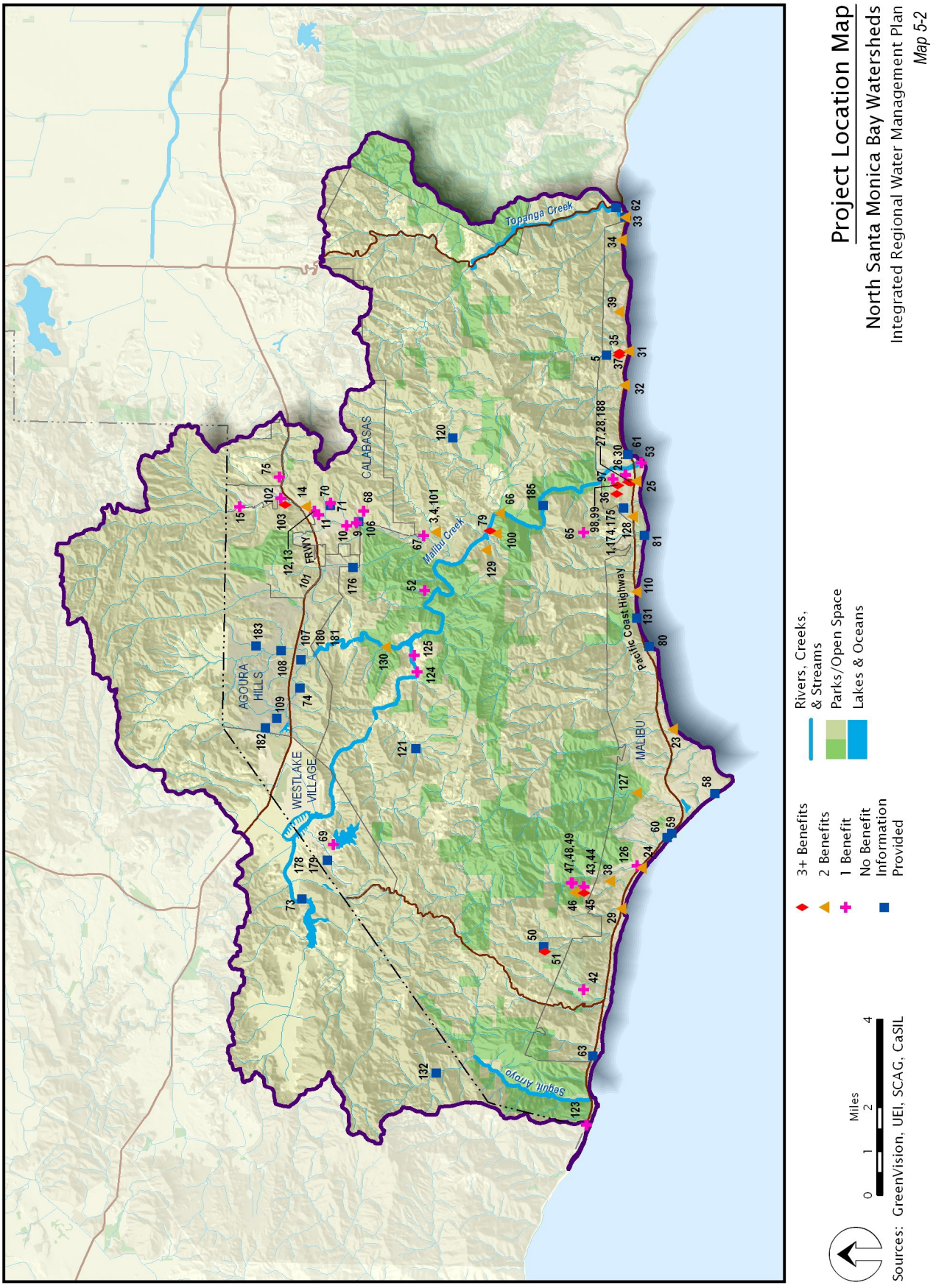
Maps 5-1 through 5-5 show the general location of stakeholder-identified projects within each Subregion. In some instances, multiple projects occur at the same locations, which may suggest opportunities for project integration. Regional projects, projects located in multiple Subregions, or projects for which no location information was provided, are not depicted on the Maps.

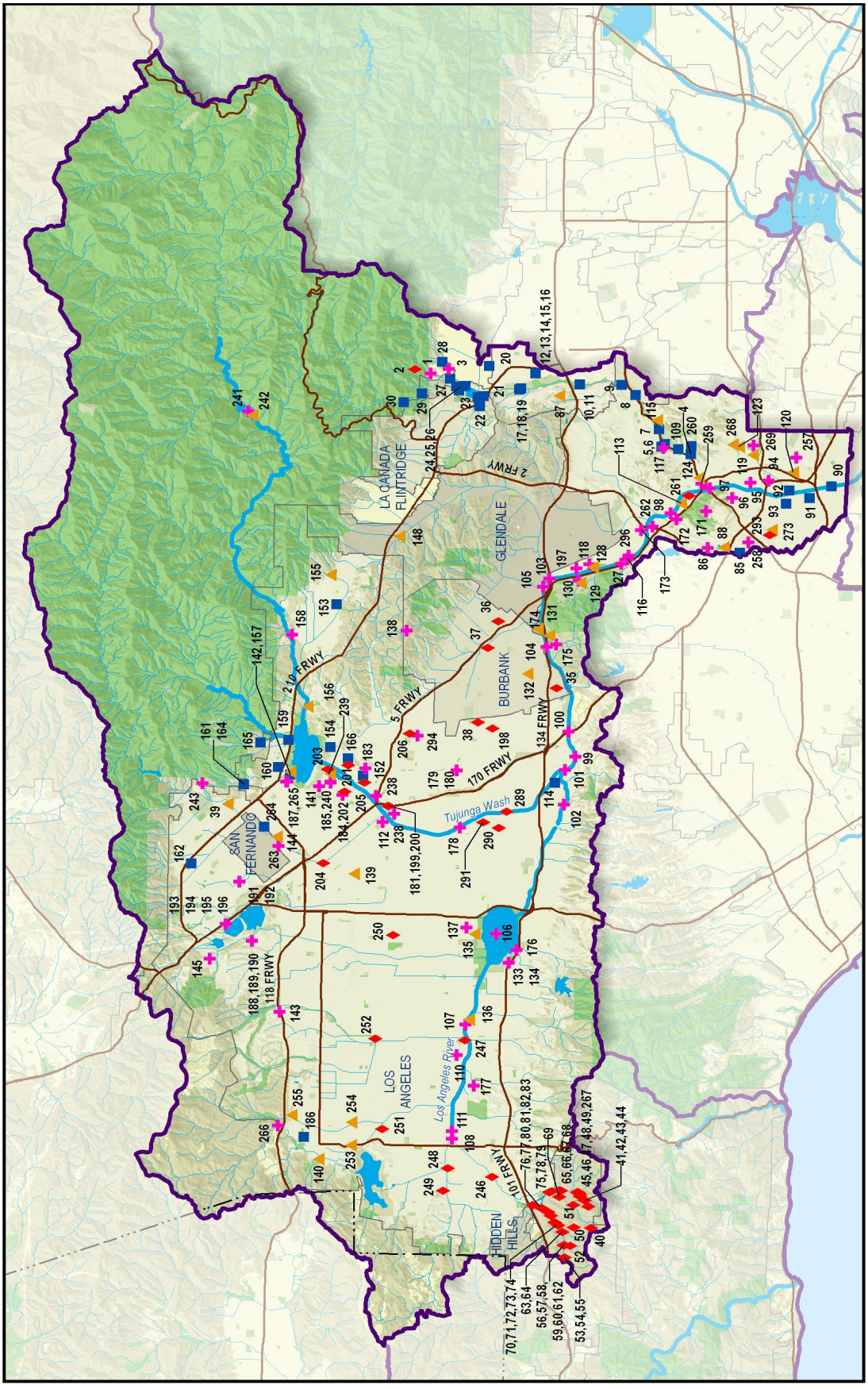
These Maps also illustrate the relationship of projects to DAC areas. The areas with the greatest number of projects in DACs are the Upper Los Angeles Subregion and the Lower Los Angeles and San Gabriel River Subregion. The North Santa Monica Bay has no DACs located within this Subregion. In the Upper San Gabriel and Rio Hondo Subregion the projects located within



Project Location Map

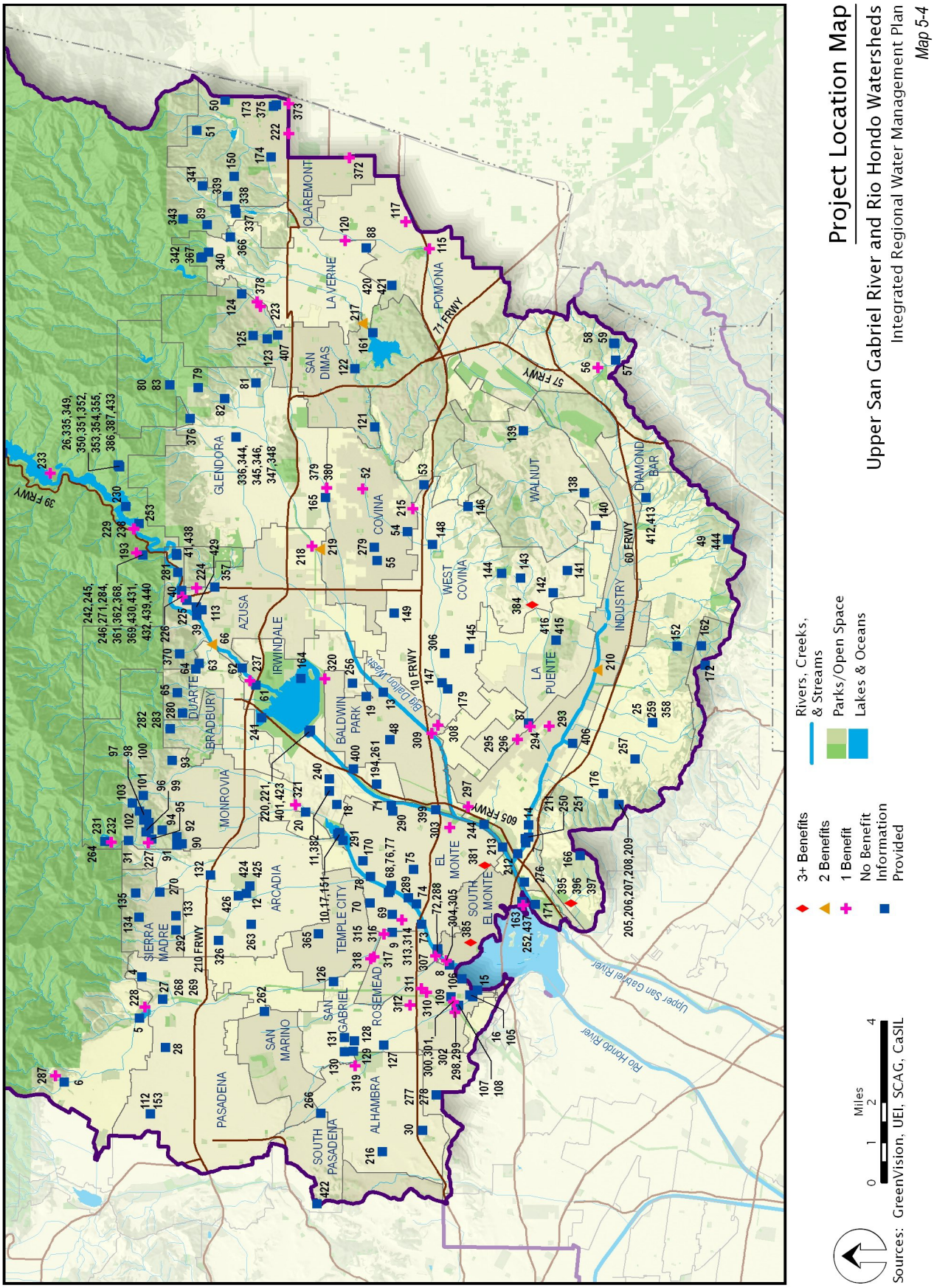
Lower San Gabriel and Lower Los Angeles Rivers Watersheds
Integrated Regional Water Management
Map 5-1

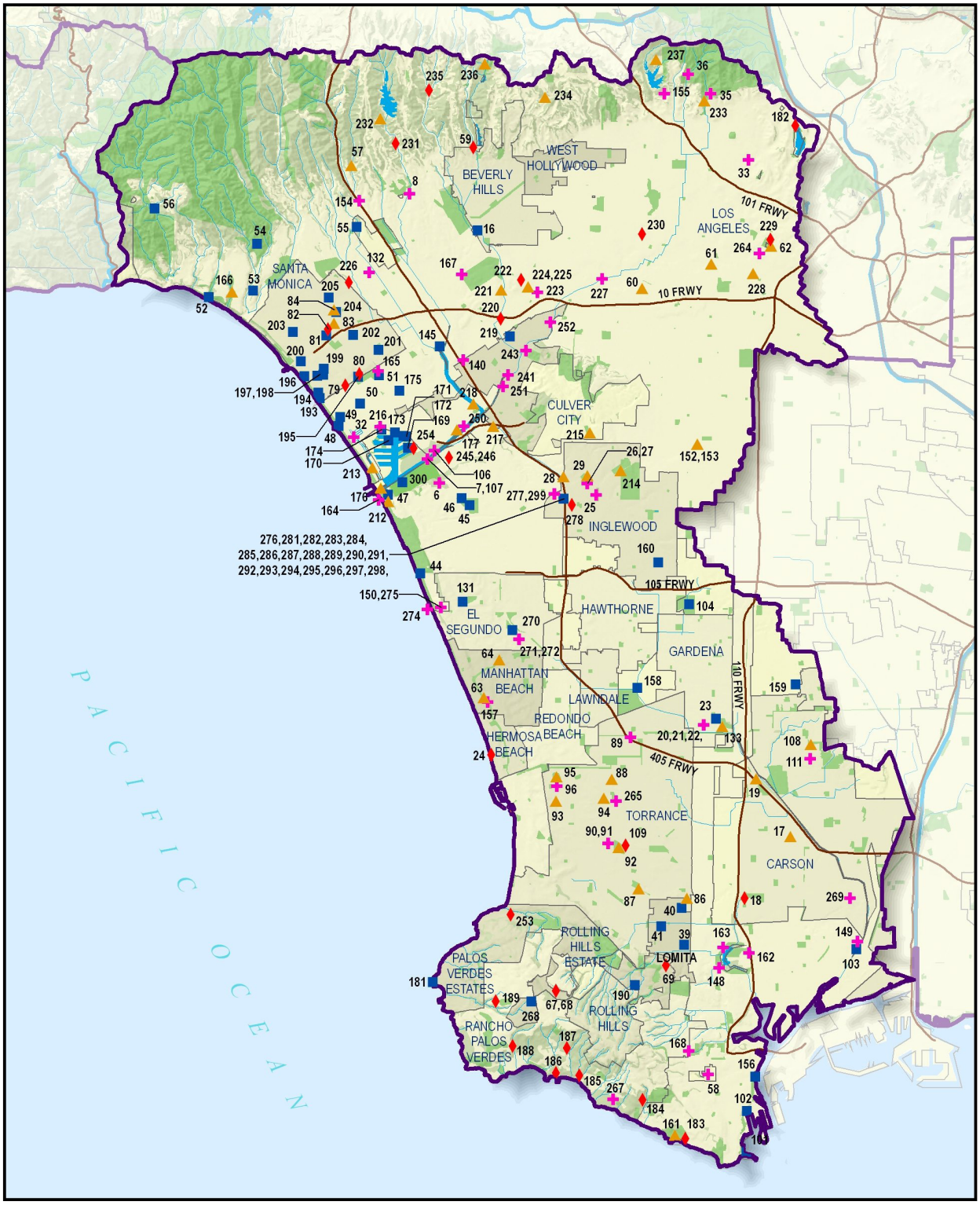

Project Location Map
North Santa Monica Bay Watersheds
Integrated Regional Water Management Plan
Map 5-2
Topanga Creek
Malibu Creek
Pacific Coast Highway
CALABASAS
AGOURA HILLS
WESTLAKE VILLAGE
MALIBU
FRWY
Rivers, Creeks, & Streams
Parks/Open Space
Lakes & Oceans
3+ Benefits
2 Benefits
1 Benefit
No Benefit Information Provided
0 1 2 4
Miles
Sources: GreenVision, UEI, SCAG, CaSIL



Project Location Map

Upper Los Angeles River Watersheds
Integrated Regional Water Management Plan
Map 5-3


Project Location Map
Upper San Gabriel River and Rio Hondo Watersheds
Integrated Regional Water Management Plan
Map 5-4
3+ Benefits
2 Benefits
1 Benefit
No Benefit Information Provided
Rivers, Creeks, & Streams
Parks/Open Space
Lakes & Oceans
Miles
0 1 2 4
Sources: GreenVision, UEI, SCAG, CaSIL
Upper San Gabriel River
Rio Hondo River
Big Dalton Wash
10 FRWY
605 FRWY
210 FRWY
57 FRWY
60 FRWY
71 FRWY
39 FRWY
CLAREMONT
LA VERNE
SAN DIMAS
POMONA
GLENDORA
COVINA
WALNUT
DIAMOND BAR
WEST COVINA
INDUSTRY
AZUSA
IRWINDALE
BALDWIN PARK
LA PUENTE
DUARTE
BRADBURY
MONROVIA
ARCADIA
TEMPLE CITY
EL MONTE
SOUTH EL MONTE
SIERRA MADRE
PASADENA
SAN MARINO
SAN GABRIEL
ROSEMEAD
ALHAMBRA
SOUTH PASADENA



Sources: GreenVision, UEI, SCAG, CaSIL

Project Location Map

South Bay Watersheds
Integrated Regional Water Management Plan

Map 5-5

DACs are generally clustered around the Whittier Narrows Flood Control Basin and may be associated with the project concept known as the Emerald Necklace.

Multi-Purpose Projects

To determine the relative numbers of single and multi-purpose projects, Table 5-2 sums the number of projects with a single benefit type (e.g., water supply, water quality, or open space), two benefit types, and three or more benefit types. Each project is represented one time in the group that describes its benefits. For example, a project submitted with water supply and water quality benefits is only represented once as a water supply/water quality project.

Most of the projects submitted with benefit information, identified only a single benefit category, with water supply the largest number of projects. 201 projects offered two or more benefit categories and only 188 projects identified three or more benefit categories. Although this statistics suggests some integration within individual projects, it is possible that individual projects could integrate multiple water management strategies (e.g., water and wastewater treatment and water supply reliability) which are not reflected in this analysis.

To increase the proportion of multi-purpose projects, the following opportunities should be noted:

- The 461 single-purpose projects (that provided benefit information) could be further evaluated for possibilities between connecting and integrating functions across multiple projects. This process has already begun in the Subregional workshops, and can continue under the direction and leadership of each Subregions Steering Committee. Input from the Subregional workshops may also have identified other opportunities for integration and collaboration among the identified projects.
- Many projects submitted did not include benefit information at all. Because these projects are assumed to be conceptual or in initial planning stages, refinement of the project scope to promote multiple purposes may still be feasible.
- As stakeholders are encouraged to submit additional projects to the database, it should be stressed that whenever possible, project benefit information should be provided, allowing future analysis to reflect project benefits.

Table 5-2. Benefit Combination Groups [1]

Single Benefit Type	Number of Projects	Two Benefit Types	Number of Projects	Three or more Benefit Types	Number of Projects
	156		53		47
	96		7		16
	138		20		13
	71		85		32
			22		80
			14		
TOTAL	**461**		**201**		**188**

1. Based on all projects included in the project database as of October 31, 2006.

Project Costs

Table 5-3 summarizes the range of capital costs that were provided for the projects. Over half of the projects were submitted without any cost information. Those that did include cost information, about half were between the one and 10 million dollar range and the remaining projects were over 10 million dollars.

Table 5-3. Project Capital Costs ($)[1]

Benefit Type	Number of Projects	Number of Projects by Cost Category				
		< 100k	100K-1M	1M-10M	>10M	Not Provided [2]
	156	6	21	60	11	58
	96	3	12	53	10	18
	138	7	31	17	3	80
	71	15	15	30	4	7
	53	2	12	34	3	2
	7	1	1	4	0	1
	20	0	3	10	5	2
	85	2	12	50	6	15
	22	2	12	8	0	0
	14	1	6	4	1	2
	47	0	5	21	6	15
	16	4	3	9	0	0
	13	3	4	6	0	0
	32	9	11	4	2	6
	80	18	27	12	9	14
No benefit information	671	52	94	128	6	391
TOTAL	1521	125	269	450	66	611

1. Based on projects included in the database as of October 31, 2006.
2. Projects for which no cost information was provided.

Implementation Schedules

Table 5-4 summarizes the implementation schedule for the 220 projects that include schedule information. The implementation schedule is broken down into four time period ranges: 2006-2008, 2009-2016, 2013-2017, and 2018-2026.

Table 5-4. Project Implementation Timeline[1]

Benefit Type	Number of Projects	Number of Projects by Implementation Schedule [2] Category				
		2006 – '08	2009 – '12	2013 – '17	2018 – '26+	Not Provided
		0-2 Years	3-6 Years	7-11 Years	12-20+ Years	
	156	62	23	2	1	68
	96	41	19	16	0	20
	138	17	11	0	0	110
	71	32	6	3	0	30
	53	11	1	1	0	40
	7	4	0	0	0	3
	20	14	2	0	0	4
	85	55	8	0	0	22
	22	14	3	0	0	5
	14	6	3	0	0	5
	47	21	14	0	0	12
	16	14	1	0	0	1
	13	10	2	0	0	1
	32	18	1	0	0	13
	80	31	2	0	0	47
No benefit information	**671**	**146**	**60**	**14**	**1**	**450**
TOTAL	1521	496	156	36	2	831

1. Based on projects included in the database as of October 31, 2006.
2. Range refers to project completion date.

Most projects submitted with schedules are scheduled for implementation within the next two years. The majority of submitted projects did not include schedule information, which may due to earlier phases of project development. Inclusion of these projects in the database, presents an opportunity to increase integration of multiple purposes during the planning and development stages of the project.

5.3 Project Integration

Integration Methods

As discussed above, many of the projects identified by stakeholders to date are single purpose. The project location maps (Maps 5-1 to 5-5) depict numerous projects at the same location or in close proximity. Thus, substantial opportunities appear to exist for project integration, in the form of geographic integration, strategy integration, or multi-agency projects, as discussed below.

Geographic Integration

In a Region of more than 2,000 square miles, opportunities for geographic integration are numerous. Two major river systems (the Los Angeles and San Gabriel) with several major tributaries (Arroyo Seco, Compton Creek, Coyote Creek, Rio Hondo, San Jose Creek, Tujunga Wash, and Walnut Creek) drain approximately three-quarters of the Region. Several other major creeks (Ballona, Dominguez Channel, Malibu, and Topanga) drain substantial portions of the remainder. These watershed (and sub-watershed) boundaries provide an obvious opportunity for geographic integration in the Region, particularly for projects and programs that address surface water quality.

The adopted (wet- and dry-weather) bacteria TMDLs for Santa Monica Bay beaches and the metals TMDL for the Los Angeles River require the establishment of jurisdictional groups, which are organized on watershed boundaries, or other logical geographic groupings (e.g., smaller watersheds in the South Bay, or an individual reach of a river). Pending future TMDLs may include a similar requirement. Thus, implementation plans for some TMDLs will result in the geographic integration

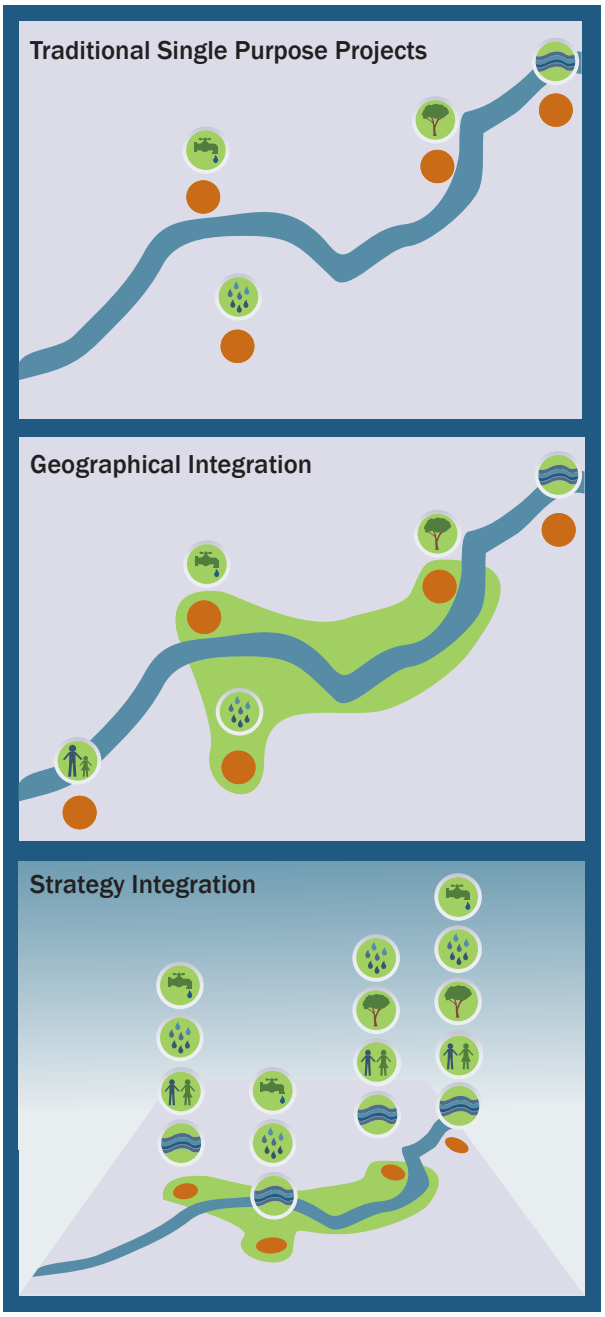


Figure 5-1. Geographical and Strategy Integration. Stakeholders are identifying many opportunities to integrate projects located near each other (geographic integration) and redesign projects to accomplish multiple objectives (strategy integration.)

of projects and programs related to surface water quality. The Los Angeles RWQCB has suggested that it may consider adoption of watershed-based NPDES permits, which would provide additional impetus for coordination of stormwater and NPS programs on a geographic basis.

The Joint Water Pollution Control Plant Marshland Enhancement project provides benefits to a local disadvantaged community and is an example of the integration of several water management strategies including TMDL compliance, habitat restoration and recreation. (Strategy integration.)

Integration of water supply projects and programs on a geographic basis has been occurring in the Region for some time, due to the geographic boundaries of the major wholesale water supply agencies, including the Upper San Gabriel Valley MWD, the Municipal Water District of Orange County, the Central Basin MWD, and the West Basin MWD, the broad scale of the Metropolitan Water District, and the size of the City of Los Angeles. Opportunities for expanded integration exist between the major wholesalers, groundwater management entities, and sanitation agencies which have available excess recycled water.

Project Strategy Integration

Individual agencies, cities, and counties have the ability to implement projects and programs that address more than one of the identified water management strategies. As many resource management agencies typically have single-purpose

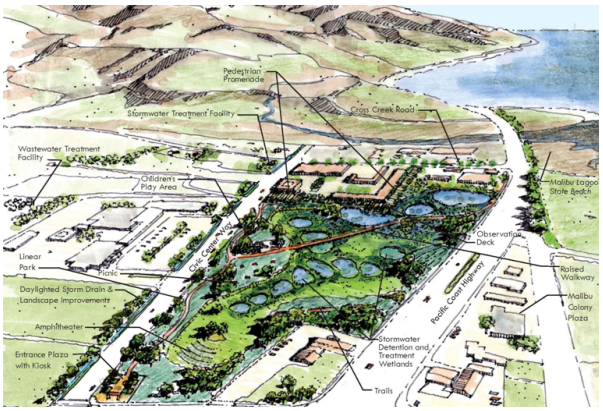
The Machado Lake project has the opportunitiy for integration with the Marshland project due to its proximity. (Geographic integration.)

missions, the implementation of multi-purpose projects may be a challenge, although given affinities between some of the strategies (e.g., water supply, water quality, or habitat and open space), agencies are increasingly funding opportunities to integrate multiple strategies.

Table 4-2 identifies potential affinities between the identified water management strategies, which suggest opportunities to create multi-purpose projects and programs that integrate more than one strategy.

Multi-Agency Projects and Programs

Partnerships provide opportunities for agencies, cities, communities, and groups to work together for common goals. Cities can, and sometimes do, coordinate planning with adjacent jurisdictions. Agencies can work with cities, other agencies, and non-profit groups, to coordinate studies and implement projects. Interest groups may band together to work on issues of common interest. Neighborhoods and associations can strive to iden-



The Malibu Legacy Project will integrate wastewater, stormwater, habitat, open space and recreation strategies.

tify consensus on broad goals. These all represent forms of collaboration, which can result in partnerships that increase the strength of individual voices, expand the influence of groups, and extend benefits of projects and programs beyond individual cities or jurisdictions.

Given the large number of agencies, cities, and counties with jurisdiction in the Region, and the diversity of neighborhoods and interest groups, the range of interests and issues is very diverse and extends beyond water resource management. Instead of differences, it is possible to focus on common themes on which virtually everyone can concur: protect the environment, protect water supply and water quality, and provide more parks and open space. It is possible to work together to plan and develop multi-purpose projects and programs that meet both local needs and agency mandates while also helping to enhance water supplies and improve water supply reliability.

Although informal associations of agencies, cities, counties, and stakeholder groups may be sufficient for the discussion of issues and the formulation of plans (such as watershed plans), more formal arrangements are typically required to plan, implement, operate, and maintain projects. Options for the creation of formal arrangements include a MOU, typically for single projects or programs, a cost-sharing agreement, and a Joint Powers Authority (JPA), which typically is used for multiple actions and/or for long-term activities. Any such structures would need to address the equitable distribution of costs, in proportion to the benefits received by individual agencies or jurisdictions

Integration Process

The project integration process is envisioned to differ in the immediate term and in the future. In the near-term (e.g., 2007-08) integration would likely occur by identifying and enhancing linkages between existing single purpose projects, rather than redefining the projects. For example in the first round of implementation funding, two separate water conservation projects being planned by two agencies (the City of Westlake Village and Las Virgenes MWDs) in the same Subregion were combined into a single integrated project.

In the long term, it is envisioned that identification and integration of projects will be an ongoing, iterative process that would take into account the success of earlier IRWMP projects and be adaptive to a variety of possible changes, including modifications to the objectives and planning targets, and changes to the environmental, regulatory and funding environment. A conceptual process for project identification and integration is described below.

Benefits of Integration

The various water management strategies identified in this document can be integrated into projects and programs to achieve broad objectives.

Improve water supply and enhance water reliability: desalination; groundwater management/ conjunctive use; imported water; surface storage; water and wastewater treatment; water conservation; water recycling; water supply reliability; and water transfers.

Improve surface water quality and/or flood management: flood management; land use planning; NPS pollution control; stormwater capture and management; water quality protection and improvement; and watershed planning.

Expand recreational open space and habitat: ecosystem restoration; environmental and habitat protection and improvement; recreation and public access; watershed planning, and wetlands enhancement and creation.

The integrated implementation of projects to improve surface water quality and/or flood management has the potential to improve water supply and enhance water supply reliability. If surface water quality is improved, concerns about potential adverse impacts from the recharge of stormwater would be reduced, making additional runoff become available for recharge. If stormwater capture and management is expanded, options for the treatment of stormwater include detention basins and constructed wetlands, both of which have the potential to enhance groundwater recharge. If flood management is improved, additional stormwater runoff could be detained and thereby become available for recharge (as current

Step 1 – Develop Subregional targets and assess current progress towards Subregional targets: This step would involve the development of Subregional targets based on Subregional opportunities and constraints. These targets would be used for decision making at the Subregional level. Any adjustment to the Subregional priorities and/or targets would need to be coordinated at the Regional level.

Step 2 – Assess current environment (including political, regulatory, funding). The priority would be adjusted with shifts in the political, regulatory and funding environment, in addition to progress made towards targets. For instance, future bond measures may create increased funding opportunities and necessitate a modification in priorities. Subregional priorities may shift in response to local conditions. Similarly, the political will to pursue certain project types and locations may affect the ability to obtain support and consensus to advance projects forward.

Step 3 – Examine adequacy of long term Regional targets: As implementation progresses, it may become evident that the initial planning targets were unrealistic or will not be sufficient to meet future needs. In such a case, the targets themselves may need to be adjusted.

Step 4 – Review and update the list of potential projects: Identification and submission of new projects will be an ongoing process. Once the priorities and targets have been updated in the previous steps, these projects will be reviewed and prioritized alongside existing projects.

Step 5 – Define a new prioritized set of integrated projects: Using a formal prioritization process and the integration tools developed as part of this IRWMP as appropriate, a new set of priority, integrated projects can be defined.

Figure 5-2. The integration process follows 5 steps. In the long term, it is envisioned that identification and integration of projects will be an ongoing, iterative process that would take into account the success of earlier IRWMP projects.

recharge capacity limits the volume of runoff that may be recharged at some locations). If groundwater recharge is expanded, then water supply reliability would be enhanced, as groundwater basins can be drawn down in periods of drought and replenished during periods of above-average rainfall.

The integrated implementation of projects to expand and preserve open space and habitat also has the potential to improve water supply and enhance water supply reliability. Open space in the mountains and foothills act as sponges to soak up rainfall and slowly release the water and natural outflow over a relatively long period. Restored habitat areas tend to soak up more rainfall than degraded habitat. The Santa Monica and San Gabriel Mountains, along with other mountains and foothills in the Region provide a substantial source of local water supply. Although large portions of these areas are already preserved, in the form of the Angeles National Forest and the Santa Monica Mountains National Recreation Area (and associated state and local parks), large portions of the mountains and foothills remain in private hands, and are subject to potential development. The preservation of open space, restoration of functional habitat, and the creation of new habitat (such as constructed wetlands) all have the potential to increase groundwater recharge, and therefore improve water supplies and enhance water supply reliability.

Project integration can also enhance the Region's ability to contribute to statewide priorities, as more fully discussed in Appendix A (Statewide Priorities).

5.4 Regional Planning Tools

As noted above, it appears unlikely that stakeholder-identified projects will provide sufficient benefits to meet the planning targets and do not appear to reflect widespread integration. To demonstrate integrated approaches that would meet the planning targets, three conceptual approaches were developed that combined selected project concepts which are termed Regional Planning Tools (or Planning Tools):

- **Planning Tool 1—Site Scale:** Use of single purpose projects implemented at individual sites. (Figure 5-4.)
- **Planning Tool 2—Neighborhood Scale:** Agencies working together to implement multi-purpose projects to meet neighborhood level needs. (Figure 5-5.)
- **Planning Tool 3—Regional Scale:** Linear corridors along rivers, creeks and channels that link multipurpose projects. (Figure 5-6.)

Table 5-5 provides an illustration of how planning targets could be met. The Planning Tools provide a mechanism on how to meet the water supply needs of the Region while simultaneously addressing the requirements to reduce, capture, and treat urban and stormwater runoff (and meet applicable water quality standards) and generate benefits to habitat and recreational open space thereby contributing to other identified Regional needs.

Although the Planning Tools depict three conceptual approaches to meet the planning targets for water supply and water quality, numerous combinations of the project concepts included in the tools are possible. The Planning Tools are not intended to represent every possible combination and no inference should be drawn from the omission of any individual project concept in any of the tools. The tools are intended to generate a discussion of how to meet the planning targets while maximizing the integration of water supply and water quality projects and simultaneously generating benefits for habitat, open space, and recreational access. As the stakeholder-identified projects do not cumulatively meet the planning targets, the Regional Planning Tools could be utilized to define a set of new Regional or Subregional integrated projects, and

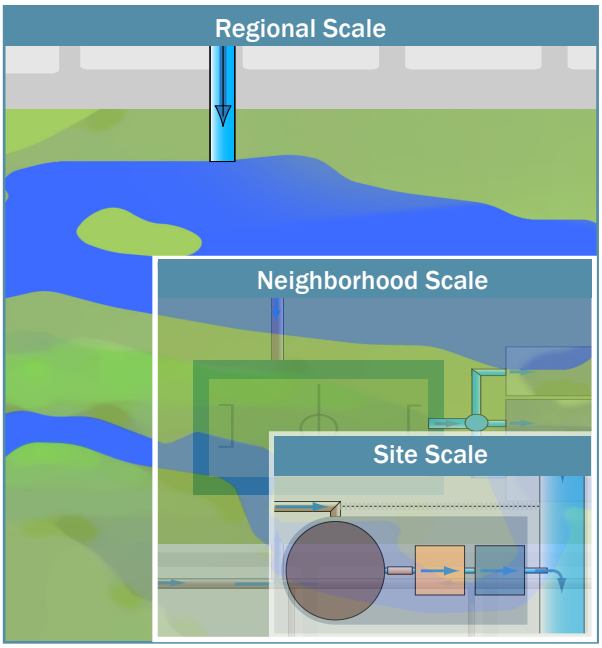


Figure 5-3. Regional Planning Tools Relationship. By integrating projects within the 3 planning tools, a network can be created that is greater than the sum of its parts.

when combined with the stakeholder-identified projects, would provide a comprehensive water resource management solution.

Given the substantial variation that exists between the Subregions, the applicability of each of the tools will also vary between Subregions. It should not be assumed that only one tool is applicable to any Subregion, watershed, or jurisdiction. Rather, each Subregion, or individual agency and jurisdiction may elect to consider customization of the tools to reflect local conditions and priorities

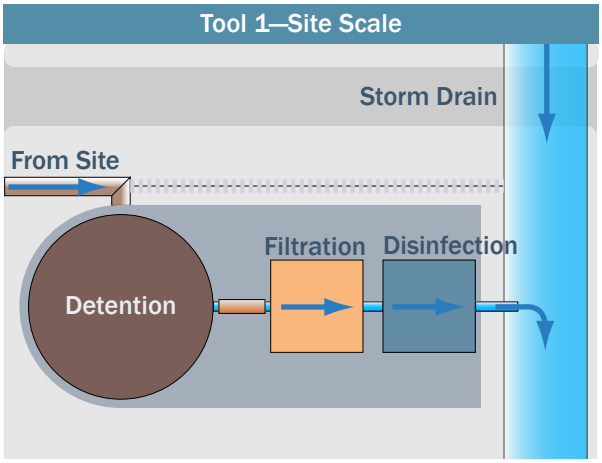


Figure 5-4. Planning Tool 1—Site Scale. Conceptual runoff capture and treatment project before water flows to storm drain.

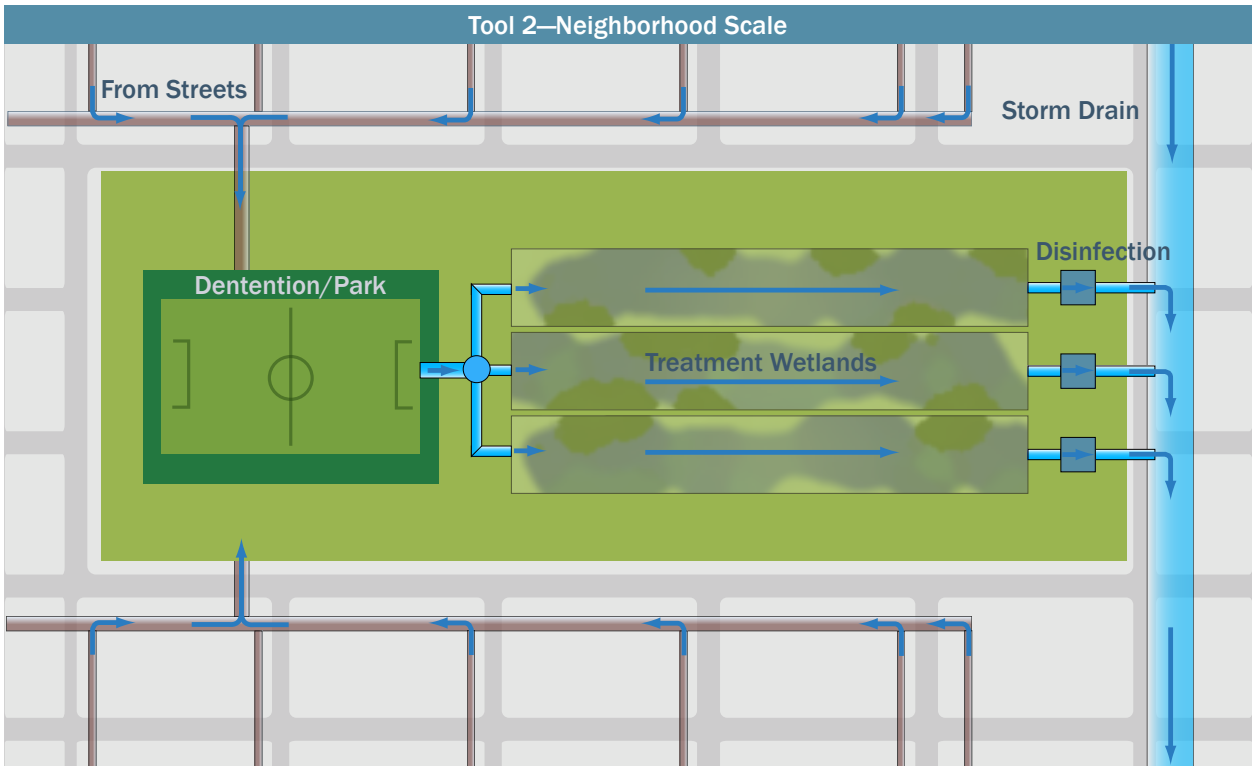


Figure 5-5. Planning Tool 2 —Neighborhood Scale. Conceptual runoff capture and treatment project of water flow to storm drain.

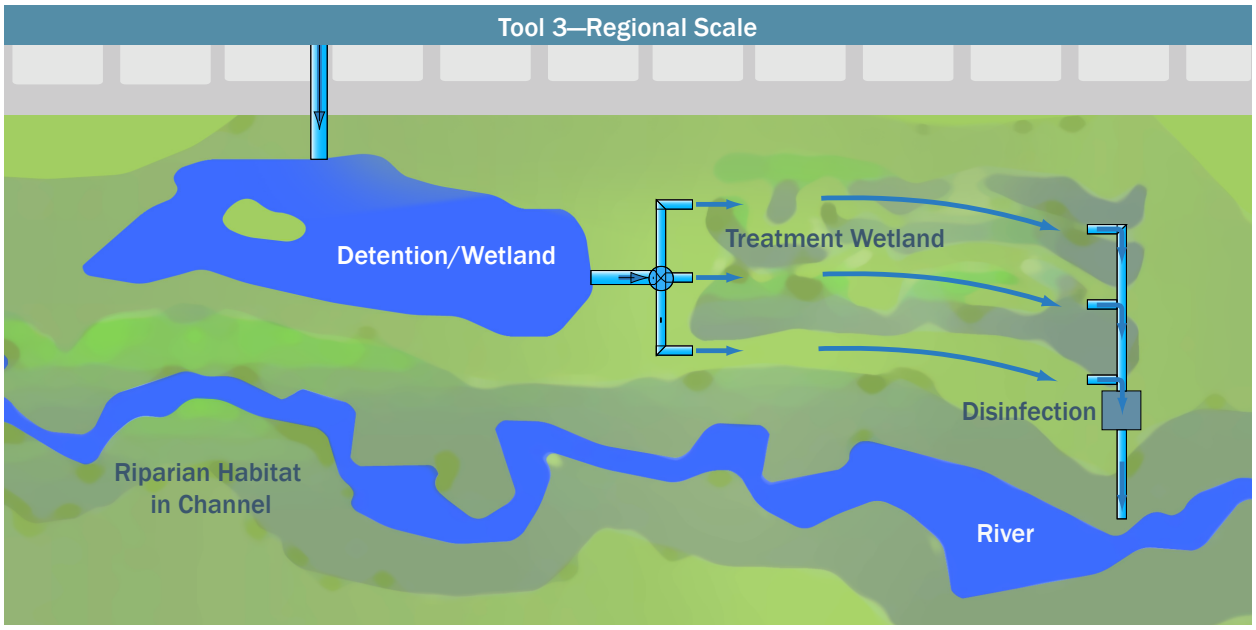


Figure 5-6. Planning Tool 3 —Regional Scale. Conceptual runoff capture and treatment of water flows from storm drain.

and generate additional integrated Regional projects. The following sections include an expanded description of each of the three Regional Planning Tools.

Planning Tool 1: Site Scale

Public agencies throughout the Region have a variety of projects and programs to address water supply, improve surface water quality, maintain

flood protection, and expand parkland and open space. However, as most public agencies have single-purpose missions and mandates, most of these projects and programs tend to be single-purpose. Thus, one option to fill the identified gap would be to continue to focus on single purpose projects at the site scale level.

For water supply, site scale projects would include: expanded groundwater recharge (e.g., by expanding capacity at existing recharge facilities); groundwater basin optimization (including remediation of existing contamination); expansion of water conservation; expanded utilization of recycled water, ocean water desalination, and surface storage (e.g., using flood control facilities to retain additional runoff). Water quality improvement site scale tools would include various projects and programs identified to treat stormwater contaminants (trash, bacteria, metals, and organic chemicals), through a variety of treatment technologies (e.g., on-site BMPs, catch basin filters, continuous deflection separators, oil and grease separators, disinfection systems, or ultraviolet light systems). A hypothetical scenario shown in Table 5-5 uses a combination of these projects. Figure 5-4 shows an example of stormwater capture and treatment BMPs being used as a site scale tool for water quality.

Given the volume estimates for stormwater that must be treated, it is assumed that projects would need to be located within existing residential street boundaries, rights-of-way, and small catchments, where individual storm drains meet the river, or major creek channels. The actual treatment technology that would be needed for individual storm drains would vary depending on which contaminants are present. The capacity requirements for these technologies would be reduced over time as more and more residences begin to capture and infiltrate their stormwater runoff on-site. Map 5-6 shows the potential coverage available in the Region for the widespread application of site scale projects using onsite BMPs in single family neighborhoods.

The site scale option could be adapted via an analysis of the project database to identify specific projects and programs to restore wetland and riparian habitat and associated buffer areas. This may include removal of barriers to fish migration in the Santa Monica Mountains, invasive species removal, land acquisition, and measures to improve water quality in contributing areas.

Finally, although site scale tool is by definition the utilization of single-purpose projects, implementing them in conjunction with the IRWMP requires that all attempts be made to find linkages and synergies to other projects where-ever possible.

Planning Tool 2: Neighborhood Scale

From a water quality and water supply standpoint, neighborhood-scale projects shift the focus from projects on individual sites (as in Planning Tool 1) to the installation of large scale water quality treatment facilities for urban and stormwater runoff at the neighborhood scale. Fundamentally, this concept reflects a shift away from single-purpose water supply and water quality projects with a proposal to reuse 130,000 acre-feet of treated urban runoff for non-potable uses (e.g., irrigation), thereby augmenting local water supplies and reducing demand for other sources. The example in Table 5-5 shows that under Planning Tool 2, 130,000 acre-feet/year of treated runoff contributing to surface water quality targets would also contribute the same amount of water supply.

Planning tool 2 consists of multi-purpose projects and programs implemented at the neighborhood scale all across the Region. Neighborhood scale projects would be specifically designed for each of the neighborhood's needs and conditions. This approach could encourage agencies and jurisdictions to work collaboratively together to implement multipurpose projects and programs.

Using these types of projects assumes that some water supply projects and programs would proceed, such as: expanded groundwater recharge (e.g., by expanding capacity at existing recharge facilities); groundwater basin optimization (including remediation of existing contamination); expansion of water conservation; ocean water desalination; surface storage (e.g., using flood control facilities to retain additional runoff); and expanded utilization of recycled water (recycled dry weather runoff) through development of a localized distribution system at facilities where water users are within

Table 5-5. Summary of Regional Planning Tools

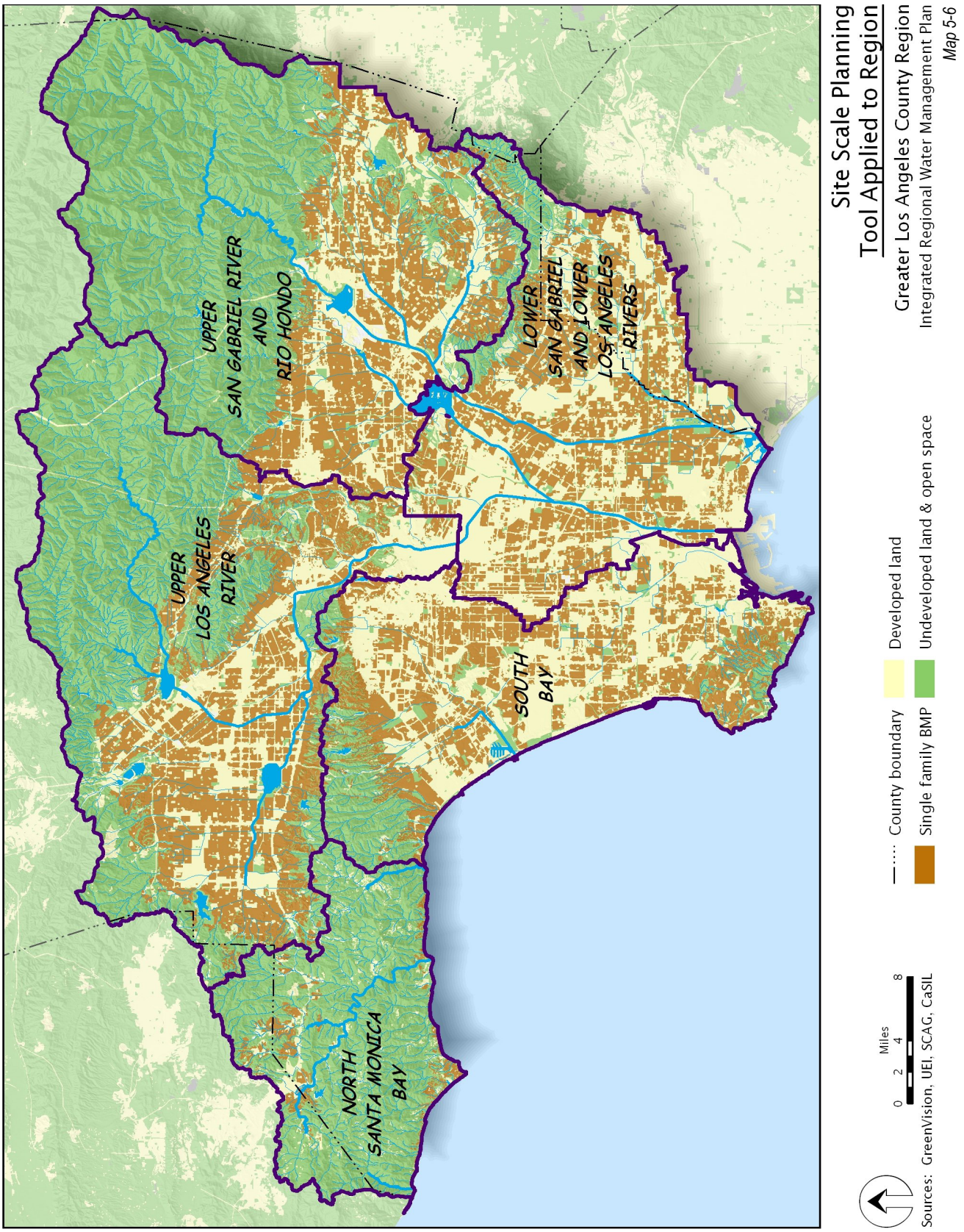
	Target 800,000	Planning Tool 1 Site Scale	Planning Tool 2 Neighborhood Scale	Planning Tool 3 Regional Scale
	Acre-feet/year			
Water Conservation / Demand Reduction		110,000	110,000	110,000
Expanded Local Water Production		100,000	100,000	100,000
Other Projects (desalination & groundwater recovery)		90,000	90,000	90,000
Additional Recycled Water		130,000	130,000	130,000
Additional Imported Water		370,000	240,000	120,000
Urban (Dry Weather) Runoff		0	130,000	130,000
Stormwater Runoff (from Urban Areas)		0	0	120,000
Total Water Supply[1]		**800,000**	**800,000**	**800,000**
Urban (Dry Weather) Runoff	320,000			
Reduction of Runoff Volumes				
On-Site Residential BMPs[2]		124,000	0	0
Treatment[3]				
Traditional (Mechanical/Chemical)		196,000		
Natural Treatment (e.g., constructed wetlands)			320,000	320,000
Use of Treated Water				
Non-Potable Reuse[4]		0	130,000	130,000
Discharge to Creeks and Rivers		196,000	190,000	190,000
Total Urban (Dry Weather) Runoff Treated		**320,000**	**320,000**	**320,000**
Stormwater Runoff (from Urban Areas)	490,000			
Reduction of Runoff Volumes				
On-Site Residential BMPs[2]		190,000	0	0
Short-Term Detention		300,125	490,000	490,000
Treatment				
Traditional (Mechanical/Chemical)		300,125	0	0
Natural Treatment (e.g., constructed wetlands)				
Secondary Treatment[5]				120,000
Tertiary Treatment			490,000	370,000
Total Urban Stormwater Runoff Treated		**490,000**	**490,000**	**490,000**
Use of Treated Water				
Recharge via Groundwater Basins		0	0	120,000
Discharge to Creeks and Rivers		300,125	490,000	370,000
Wetland restoration/creation (from water quality facilities) (acres)	1,400		4,500 acres	8,000 acres
Riparian habitat restoration (from water quality facilities) (miles)	100			100 miles
Parks and Open Space creation (from water quality facilities) (acres)	**30,000**	1,550 acres	3,500 acres	
Parks and Open Space creation (additional) (acres)		6,450 acres		
Total Open Space and Habitat		**8,000 acres**	**8,000 acres**	**8,000 acres**
Flood Management, Water Supply and Wastewater	**40%**	**40%**	**40%**	**40%**

1. *Estimated increase in water supply and/or demand reduction above current supplies/conservation*
2. *Equals approximately 39% of runoff, as that portion of urbanized area is single family homes*
3. *Assumes tertiary treatment, unless otherwise noted*
4. *Local distribution of treated urban runoff for irrigation and other uses (similar to reclaimed water)*
5. *Assumes secondary treatment for subsequent groundwater recharge via spreading basins*

Residential BMPs could reduce water demand (amount TBD)

Non-potable reuse of treated urban runoff

Recharge of treated stormwater runoff


UPPER SAN GABRIEL RIVER AND RIO HONDO
LOWER SAN GABRIEL AND LOWER LOS ANGELES RIVERS
UPPER LOS ANGELES RIVER
SOUTH BAY
NORTH SANTA MONICA BAY
Site Scale Planning Tool Applied to Region
Greater Los Angeles County Region
Integrated Regional Water Management Plan
Map 5-6
County boundary
Developed land
Single family BMP
Undeveloped land & open space
Miles
0 2 4 8
Sources: GreenVision, UEI, SCAG, CaSIL

a one-mile radius. However, to the extent that stormwater improvement projects and programs make supplies available for direct reuse or recharge, the need for "traditional" water supply projects may be reduced. The implementation of runoff treatment technologies has traditionally been limited to a single purpose benefit of water quality improvement. Using neighborhood scale projects will allow some additional water supply benefits through reuse of the captured water, converting the project to multi-use and contributing simultaneously to both the water supply and water quality planning targets. Map 5-7 shows the potential coverage available in the Region for the widespread application of a neighborhood scale projects using onsite BMPs in single family neighborhoods as an example.

To achieve the multiple benefits envisioned at the neighborhood scale, natural treatment systems would include detention basins to capture, detain and equalize the flow generated from a ¾-inch storm event, and treatment wetlands to receive the equalized flow effluent from the detention basin. These facilities would be designed to enable the integration of additional purposes into the design of subsequent facilities, such as passive and active recreation. It is assumed that the facilities would be designed to drain the detention basin in 72 hours in anticipation of the next storm event. These systems could be located at sites throughout the Region (as shown in Map 5-7), within individual catchments and on smaller storm drains to create a patchwork of small open spaces within individual neighborhoods for both recreation and habitat purposes.

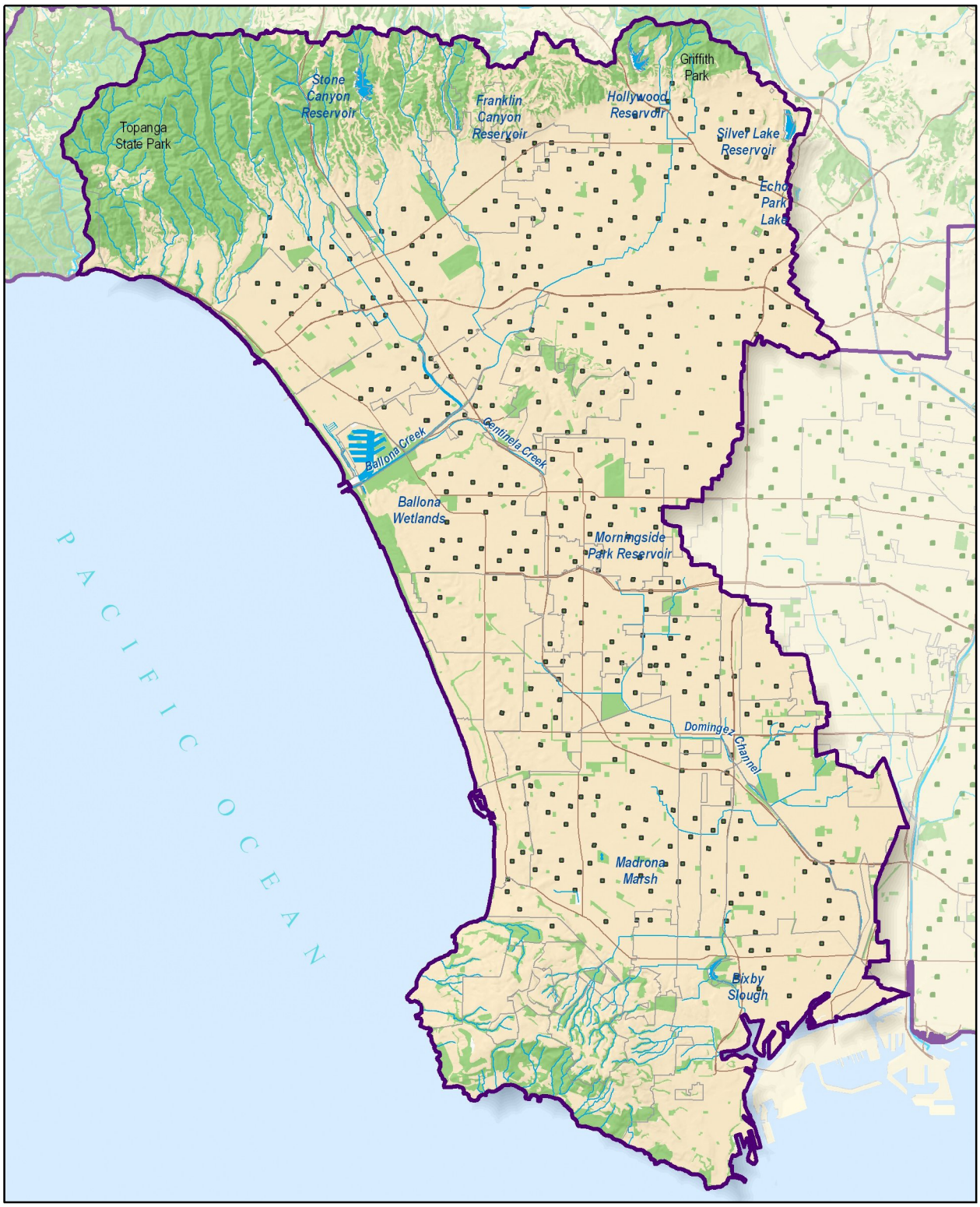
Planning Tool 3: Regional Scale

The regional scale Planning Tool also emphasizes development of multi-purpose projects. However, instead of projects developed at the neighborhood scale, the capture and treatment of urban and stormwater runoff would occur along the rivers, creeks, and major tributary channels, creating multi-purpose riparian corridors that have the potential to connect the Region with linear green spaces. For this option, a series of detention basins and constructed wetlands would be developed along major channels as shown in Figure 5-6 to treat runoff from individual storm drains before they empty into the main channel.

Over time, as additional facilities are constructed and become contiguously linked, existing river channels could potentially be reconfigured to incorporate these facilities into a more naturalized channel to function more like a riparian ecosystem. This concept is generally consistent with the "river parkways" found in the 2001 California Resources Agency document Common Ground: From the Mountains to the Sea, which proposed the creation of linear green spaces along the Los Angeles and San Gabriel Rivers, the major tributaries, and other major creeks or channels. The specific width of the parkways would vary, depending on volume of runoff that would need to be treated from specific storm drains or tributary channels and the availability of land.

The river corridor design would increase habitat value benefits by creating a contiguous linear corridor of connected habitats which would provide greater ecological value than the same amount of disconnected habitats isolated by urbanization. A conceptual figure of how this could be accomplished is shown in Map 5-8. In addition, the U.S. Army Corps of Engineers has acknowledged that this approach would be consistent with the Corp's mandate for ecosystem restoration, which would make these projects eligible for federal cost-sharing (at 65 percent of the cost).

Consistent with Planning Tool 2, this tool also proposes the capture, treatment, and subsequent reuse of urban runoff for non-potable uses, such as landscape irrigation. In addition, Planning Tool 3 also proposes to recharge treated stormwater runoff via recharge features incorporated into the site design. This is illustrated in Table 5-5, which shows that under Planning Tool 3, approximately 130,000 acre-feet/year would be captured and treated (as in Planning Tool 2), while an additional 120,000 acre-feet/year of treated stormwater would be recharged, creating a total of 250,000 acre-feet/year of supplemental water, reducing the need to develop new water supplies and potentially reducing demand for imported water.



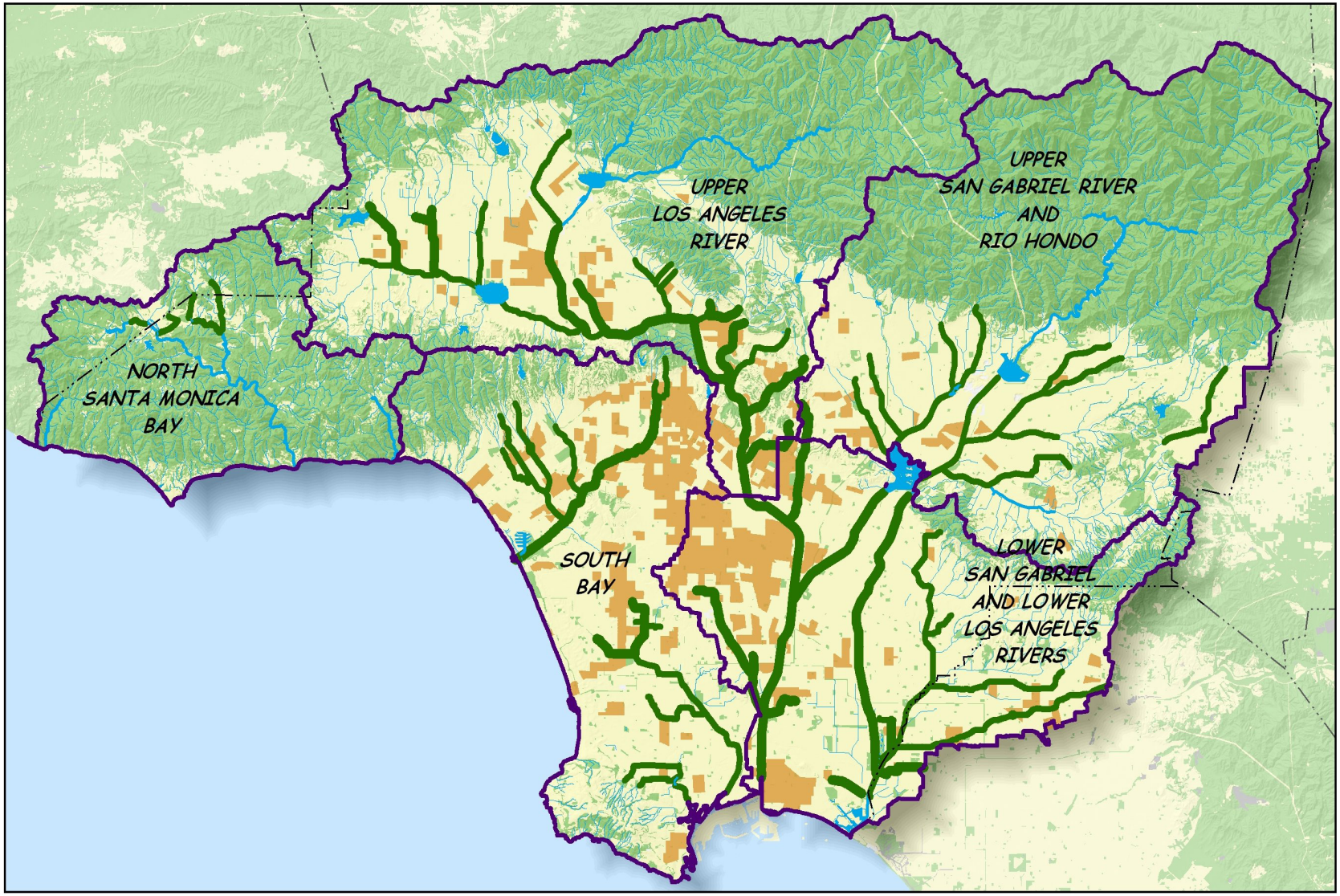
Miles
0 1.25 2.5 5

Sources: GreenVision, UEI, SCAG, CaSIL

5-acre open space
Developed land
Undeveloped land & open space

Neighborhood Scale Planning Tool Applied to a Subregion

South Bay Watersheds
Integrated Regional Water Management Plan
Map 5-7



Sources: GreenVision, UEI, SCAG, CaSIL

Regional Scale Planning Tool Applied to Region

Greater Los Angeles County Region
Integrated Regional Water Management Plan
Map 5-8