6. BENEFITS AND IMPACTS

Venice Beach

The Southern California economy is dependent on clean water and clean beaches.

6.1 Introduction

This section summarizes the potential benefits and impacts of the IRWMP. The following sub-sections identify the potential benefits of the stakeholder submitted projects, describe the overall approach to the assessment of benefits, provide an assessment of potential benefits from the IRWMP, and summarize potential impacts that could result from implementation of the IRWMP. A discussion of potential benefits and impacts for the thirteen projects submitted for Proposition 50 (Chapter 8) Round 1 (Step 2) implementation funding is provided in Appendix B.

6.2 Benefits of Stakeholder-Identified Projects

Section 5 (Project Identification and Integration) provided an analysis of 1,521 projects and project concepts submitted via the project solicitation process through October 2006. This process generated a total of 1,521 projects and project concepts (which are included in Appendix C), of which 850 identified benefit types and 565 quantified those benefits, as discussed more fully in Section 5.

6.3 Benefits of IRWMP Implementation

The IRWMP proposes integration of multiple water management strategies in projects to improve water supply, water quality, and open space. The Leadership Committee has identified objectives and quantifiable planning targets for water supply, water quality, habitat, parkland, and infrastructure repair and replacement.

The benefits assessment provides an opportunity to quantify, in monetary terms, the value of implementing the Plan or individual projects.

Benefits Assessment Framework

The purpose of the benefits assessment framework is to quantify, in monetary terms, improvements to the "beneficial uses" of water, which are identified in the Basin Plans prepared by the RWQCBs, and any other improvements that may result from the IRWMP. The benefits assessment framework provides decision-makers with a tool that can support the integration of projects and be used to compare the estimated benefits of different projects or combinations of projects.

The benefits assessment framework provides the categorization and quantification of project benefits under a consistent metric. The goal of the benefit assessment framework is to identify opportunities to increase benefits, through the integration of individual projects into a more cost-effective program. Benefit values used in this framework are largely based on estimates established in the Environmental and Natural Resource Economics Literature, avoided costs, or estimates provided by project sponsors. Economists regard environmental resources, including water resources, as natural assets that generate value in the same manner as all other assets. Thus, the value of a water resource asset can be generally defined as the discounted sum of the "well being" provided by water resource during the useful life of that resource.

To estimate the value of water resources improvements, environmental and natural resource economists have developed a variety of methods that either estimate the willingness-to-pay for the resource improvement or infer value from an observed phenomena, such as price differentials. Each valuation method has an appropriate application and comes with caveats. This benefit assessment framework relies on the following approaches to evaluate project benefits:

- Avoided costs;
- Revealed preferences;
- Stated preferences; and
- Hedonic pricing[1].

In addition, the benefit assessment framework uses a flood protection valuation model developed by LACFCD. Benefit estimates submitted by projects proponents are also presented in this benefits assessment framework.

The following sub-sections provide additional benefit assessment information associated with water supply, water quality, and other beneficial uses.

Water Supply Benefits	Water Quality Benefits
■ Increase groundwater recharge ■ Increase groundwater recovery ■ Increase conjunctive use ■ Increase water transfers ■ Increase recycled water ■ Increase surface water capacity ■ Increase surface water capture and treatment ■ Increase desalination ■ Avoided purchase of imported water	■ Avoided water treatment costs ■ Avoided sediment removal costs ■ Avoided damages ■ Avoided health risks ■ Increased recreational use ■ Improved recreational experience ■ Increased aesthetic value of water and related habitat ■ Increased property values

Figure 6-1. Potential water supply and water quality benefits.

[1] *Hedonic pricing is the use of statistical techniques such as regression analysis to determine, from the prices of goods with measurable characteristics, the prices associated with those characteristics, and there from the comparable price of another good based on its characteristics.*

Other Benefits

Numerous types of benefits, other than those directly related to water supply and water quality, may be generated by a water resources project. These benefits may be ancillary to the primary purpose of a water resources project, such as habitat benefits from a treatment wetland or recreational benefits from new open space created by surface water quality treatment facilities. Although ancillary, these benefits may be useful in the formulation of projects that provide the greatest economic benefit, including both primary and ancillary benefits.

Other benefits may be categorized in various ways, however, for the purpose of this Plan, the framework of other benefits are categorized according to the services provided. Categorization and calculation of benefits according to services provided is consistent with the valuation of ecological services and allows for identification and calculation of individual benefits, which may be added to water supply and water quality benefits calculated elsewhere.

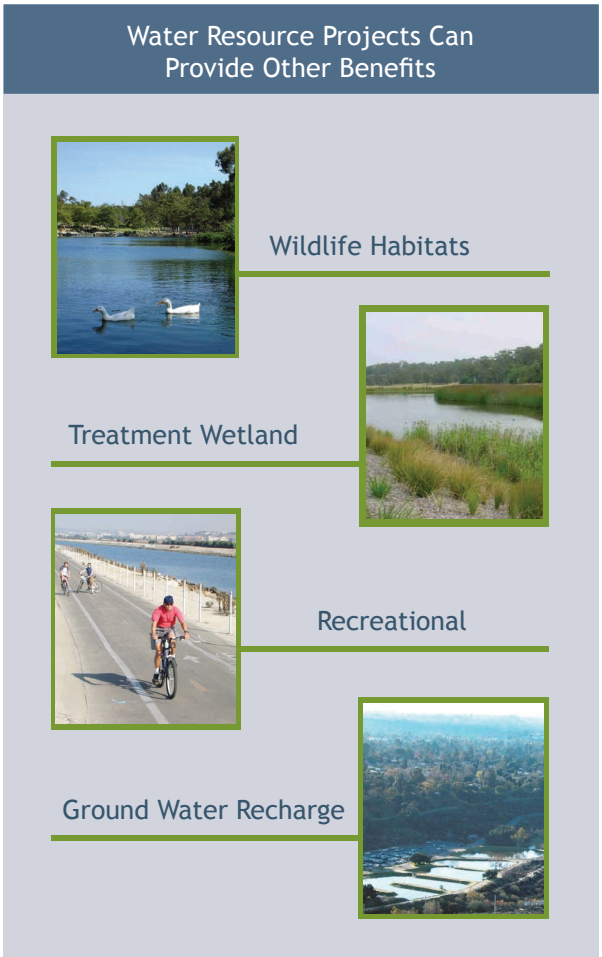


Figure 6-2. Water resource projects provide other benefits. Water resource projects can be designed to provide benefits other than water supply and water quality.

Regional Planning Tools

Three distinct approaches to achieve the planning targets are described in Section 5. As the stakeholder-identified projects may not provide the level of benefits needed to meet the planning targets, a benefit gap must be met to reach the targets. This led to the development of three Regional Planning Tools (or Planning Tools):

- Planning Tool 1: Site Scale
- Planning Tool 2: Neighborhood Scale
- Planning Tool 3: Regional Scale

The Planning Tools have been developed at the direction of the Leadership Committee, to assist stakeholders by providing information on the benefits and costs of three distinct approaches that would achieve the planning targets. It should be emphasized that none of these tools should be interpreted to be the answer for the Region or any Subregion. The information is provided to help decision-makers develop more informed choices about appropriate solutions given a particular set of opportunities and constraints. It is likely that the final solution for any Subregion could be a hybrid of all three of approaches identified by the Planning Tools.

Costs and Benefits

Calculation of the costs and benefits of the three Regional Planning Tools was conducted at a conceptual level, based on data gathered from similar projects that have already been constructed in the Region, discussions with local agency personnel, or from costs and benefits identified in literature. The costs and benefits of each Planning Tool are estimated separately, using generic unit costs and benefits that may be applicable to each Planning Tool.

It should be noted that the cost of a project or groups of projects would vary depending on how the project is structured to generate multiple

benefits. For example, capturing and treating runoff from a particular storm drain that currently drains into the Los Angeles River could include water quality, water supply, and/or habitat benefits. If a single purpose project is pursued, then the improvements provided would be different than if the project was designed to achieve multiple objectives. Likewise, the costs associated with the different project integration and development alternatives will also vary. To facilitate an assessment of the costs to benefit relationships of these different project integration and development alternatives, the costs and benefits of each Planning Tool are estimated separately. The costs estimates were developed using generic unit costs and benefits applicable to each Planning Tool.

Again, the cost estimates developed herein are appraisal-level estimates and are to be used only for comparison purposes. More detailed cost estimates that reflect local project conditions and other project-specific cost factors will need to be developed in subsequent planning stages of the selected projects. Similarly, more detailed benefit estimates are not necessary for development of the IRWMP because the purpose of the Plan is to identify the overall approach to regional water resources management and not to select among specific local projects. Consequently, it is important to consider that the benefits identified in this IRWMP are not all encompassing. It is understood that substantial localized benefits exist for some projects that cannot be identified at this Regional Planning level. For this reason, calculation of a benefit/cost ratio for any of the three Regional Planning Tools would likely be misleading, given the under-representation of potential benefits.

The information contained within this analysis provides decision-makers with a venture level quantitative assessment of the incremental costs and benefits of integrated regional water resources management. The costs and benefits presented in this analysis provide a perspective on the significant economic differences between the three Regional Planning Tools in terms of the magnitude of the costs and benefits. An assessment of the potential magnitude of Federal participation in financing Regional water resources management is also provided. The costs and benefits analysis clearly shows the progressive increase in regional benefits that is gained from increased project integration and development of multi-purpose projects. The results of this analysis indicate that project integration and coordination with the management of existing natural features (such as parks, rivers, wetlands, etc.) will lower the cost of developing the additional water supplies that are needed for the Region.

Regional Planning Tool Costs

All three Tools were designed to treat the runoff from a "design storm" of 0.75 inch precipitation in 24 hours. The volume of stormwater runoff associated with the design storm was estimated to help define future needs for capture and treatment facilities (capacity and cost). Stormwater runoff volume was calculated using a weighted Simple Method equation, as applied in the Los Angeles County 1994-2005 Integrated Receiving Water Impacts Report. In the Region, the 85th percentile 24-hour runoff storm event translates to approximately 0.75 inch of precipitation over a 24-hour period. This design storm event has been calculated based on methods and recommendations set forth by the ASCE and the Water Environment Federation (WEF) in their design manual (ASCE/WEF, 1998). For detailed project design, storm intensity and rate of runoff would also need to be considered in addition to volume of the runoff.

To calculate the runoff from developed areas, the percent impervious area for each land use type was estimated based on guidelines for Los Angeles County published in the (LACFCD, 1991). The total volume of stormwater runoff associated with a 0.75 inch storm event is approximately 25,800 acre-feet/design storm event over the entire 1,151 square miles of developed area in the Region.

Water quality targets and volumes achieved by the three Planning Tools are presented in terms of acre-feet per year instead of the more typical mgd metric (for flood protection projects) for ease of comparison with the water supply planning targets (as Tools 2 and 3 provide water supply benefits). In order to capture and treat the "design" storm event, treatment facilities with a capacity of 8,400 mgd were identified. By designing runoff capture systems for this volume, dry-weather urban runoff

flows, which would be substantially less than storm runoff, could also be captured and treated by the same system.

Table 6-1 presents a summary of the present costs for the Regional Planning Tools. Present cost values are used to calculate the total costs and benefits of the tools, over the useful life of the Tools, in this case 50 years (the typical design life of major capital projects and thus an appropriate timeframe for calculation of costs and benefits). Present values are discounted (6 percent per year) so that all costs and benefits can be expressed in current (2006) dollars.

Discounting is necessary for the comparison of costs and benefits and for the comparison of one tool to another because it accounts for differences in the timing of costs and benefits. Typically, costs are higher in the early stages of a project (construction, land acquisition, etc) and then level off at a much lower level (operations and maintenance costs). Benefits, on the other hand, typically don't occur until after the construction is complete and may require a few years to build up to a sustainable level. Discounting provides a consistent systematic approach to comparing costs and benefits that occur at different times (some today, some tomorrow, and some 50 years from now). All the costs and benefits presented in this analysis are discounted at 6 percent and summed over 50 years, with the exception of the discussion of construction costs, which are presented in today's 2006 dollars. These construction costs are discounted when they are included in the total costs of there Regional Planning Tools.

The total present value water supply costs presented in Table 6-4 are the sum of a series of calculations for each of the estimated 50 years the project would operate. For each year (2007–2056), the volume of water produced by each supply type has been estimated based on discussions with local water agency personnel. A total annual cost for each supply type is calculated by multiplying the annual volume by the unit cost for each water supply type. The total annual costs for each supply type are summed and discounted according to the year of the project.

Table 6-4 also presents the water supply, water quality, and open space quantities achieved by those Tools. There are no costs specifically identified for open space creation under Tools 2 and 3 because land purchases are assumed to be a requirement for construction of the water quality facilities. Under Tool 1, land in addition to land required for construction of the treatment facilities must be purchased for the sole purpose of creating the same number of open space acres as tools 2 and 3. Therefore, only Tool 1 has costs specifically identified for open space. Capital costs, including

Table 6-1. Cost Summary of Regional Planning Tools[1]

	Regional Planning Tools		
	Tool 1	Tool 2	Tool 3
Water Supply Quantity (acre-feet/year)	800,000	800,000	800,000
Water Supply Costs[2]	$9,499,000,000	$8,487,000,000	$9,842,000,000
Surface Water Quality Reduction and/or Treatment Quantity (acre-feet/year)	810,000	810,000	810,000
Water Quality Costs[3]	$32,154,000,000	$45,580,000,000	$15,869,000,000
Open Space Quantity (acres)	8,000	8,000	8,000
Open Space Costs[3]	$3,109,000,000	-	-
Total Costs	**$44,762,000,000**	**$54,067,000,000**	**$25,711,000,000**

1. *Costs are sum of present values discounted 50 years at 6 percent.*
2. *From Table 6-4.*
3. *From Table 6-5.*

land purchases, for each tool are distributed evenly over a twenty year period and Operation and Maintenance (O&M) costs are accrued cumulatively over the same 20 years. All costs are discounted at 6 percent and summed over a period of 50 years.

Table 6-1 indicates that the same quantities of water supply, water quality, and open space can be achieved at varying costs. The costs of implementing Tool 3, which has the greatest level of integration, are 57 percent of the costs of implementing Tool 1, which has the least level of integration, even though both tools produce the same water supply, water quality, and open space quantities during the same time.

Water Supply Costs

Table 6-2 presents the quantities of the various types of water supply that will provide a total of 800,000 acre-feet/year. Each type of water supply is assumed to achieve the full quantity by 2020, with the exception of conservation which will be fully achieved in 2025. After 2025, water supply quantities for each supply type are assumed to be constant at the fully achieved level. Water supply quantities under Tool 1 are based on projected increases in local water supply production, conservation, and MWD supplies. Under Tool 2, an additional 130,000 acre-feet/year of dry weather runoff is developed for water supply, which displaces an equal volume of demand for imported water. Under Tool 3, an additional 120,000 acre-feet/year of stormwater runoff is developed for water supply, similarly displacing an equal amount of imported water.

Differences in water supply costs among the three Regional Planning Tools are directly related to the level of project integration and increased use of multi-purpose projects across the tools. Water supply unit costs, presented in Table 6-3 are based on MWD rate projections and discussions with local water agency personnel. Table 6-4 presents an example calculation of total annual water supply costs under each Regional Planning Tool. This table displays the change in costs across the planning tools as imported water is replaced by new supplies developed from urban dry weather and stormwater runoff. The example calculations are conducted for the year 2025, using the water supply quantities presented in Table 6-2.

Water Quality Costs

Differences in water quality costs for the Planning Tools are due to differences in treatment facility design and function in each of the three Tools. Tool 1, the least integrated of the three Regional Planning Tools, includes 1,030 treatment facilities (5 mgd each) and BMPs that would capture the first ¾ inch of runoff from 100 percent of all single family residential properties in the Region. Tool 2 would include 1,600 5.25 mgd facilities, but no resi-

Table 6-2. Water Supply Development Quantities (acre-feet/year)

	Regional Planning Tools		
Water Supply Type	**Tool 1**	**Tool 2**	**Tool 3**
Conservation/Demand Reduction	110,000	110,000	110,000
Expanded Local Groundwater Production	100,000	100,000	100,000
Desalination	55,000	55,000	55,000
Groundwater Recovery	35,000	35,000	35,000
Additional Recycled Water	130,000	130,000	130,000
Additional Imported Water	370,000	240,000	120,000
Dry Weather Urban Runoff	0	130,000	130,000
Stormwater Urban Runoff	0	0	120,000
Totals	**800,000**	**800,000**	**800,000**

dential onsite BMPs. Tool 3, the most centralized and integrated tool, includes 84 treatment facilities rated at 100 mgd.

The differences in project integration and centralization among the three Regional Planning Tools also affect the quantity of open space created by each tool. Under Tool 1, 1,550 acres of open space is created at the detention and sand filtration areas of the treatment facilities, assuming that only 50 percent of the 3,100 acres used for treatment would qualify as open space. An additional 6,450 acres is purchased under this Tool for the purpose of achieving 8,000 total acres of open space. Under Tools 2 and 3, wetland filtration replaces sand filtration and the detention areas are larger than under Tool 1. Both Tools 2 and 3 create 8,000 acres of open space without the need for land purchases beyond those required for the treatment facilities.

Table 6-3. Estimated New Water Supply Development Unit Costs (2006 Dollars per acre-feet/year)

	Total New Supply Volume Increments		
Water Supply Type	**First 25%**	**26% to 75%**	**Greater than 75%**
Conservation	$600	$1,400	$2,000
Local Groundwater Production	$600	$1,100	$1,500
Local Surface Water	$250	$250	$250
Recycled Water	$775	$1,000	$1,450
Groundwater Recovery	$875	$1,125	$1,375
Ocean Desalination	$1,000	$1,000	$1,000
Dry Weather Runoff	$500	$1,000	$1,500
Urban Stormwater Runoff	$500	$1,000	$1,500

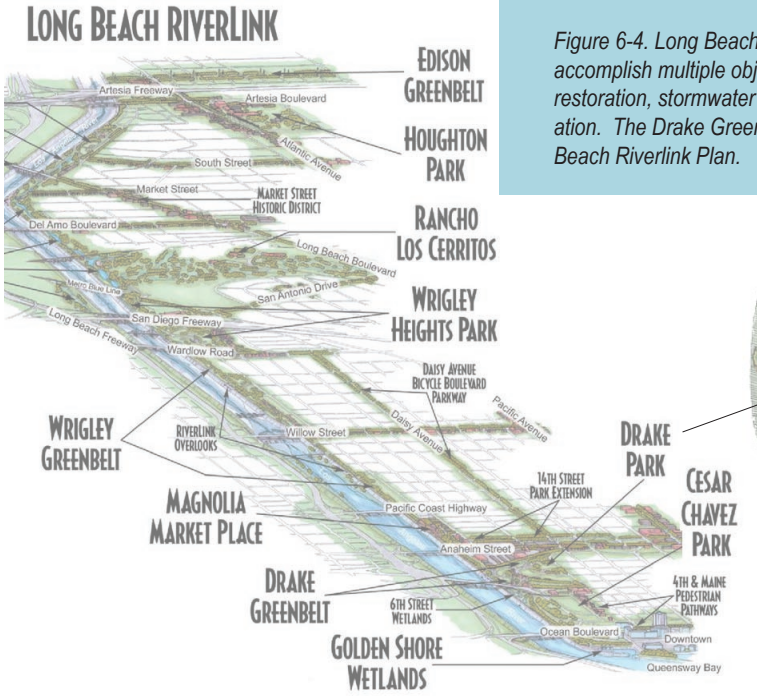
Source: Informal survey of local water agency personnel.

Table 6-4. Total Annual Water Supply Cost Example: 2025

	Assumed Cost	Regional Planning Tool		
Water Supply Type	**Per acre-feet/year**	**Tool 1**	**Tool 2**	**Tool 3**
Imported Water	$842	$311,000,000	$66,600,000	$33,300,000
Conservation	$2,000	$220,000,000	$220,000,000	$220,000,000
Local Groundwater Production	$1,500	$150,000,000	$150,000,000	$150,000,000
Recycled Water	$1,450	$188,000,000	$188,000,000	$188,000,000
Groundwater Recovery	$1,375	$48,100,000	$48,100,000	$48,100,000
Ocean Desalination	$1,000	$55,000,000	$55,000,000	$55,000,000
Dry Weather Runoff	$1,500	0	$195,000,000	$195,000,000
Urban Stormwater Runoff	$1,500	0	0	$180,000,000
Total		**$973,000,000**	**$923,000,000**	**$1,070,000,000**
Discount Factor		.330	.330	.330
Present Value Total		**$321,000,000**	**$305,000,000**	**$353,000,000**

Present Value discounted at 6 percent for 19 years (2025 to 2006).

GEOGRAPHIC INTEGRATION BENEFITS



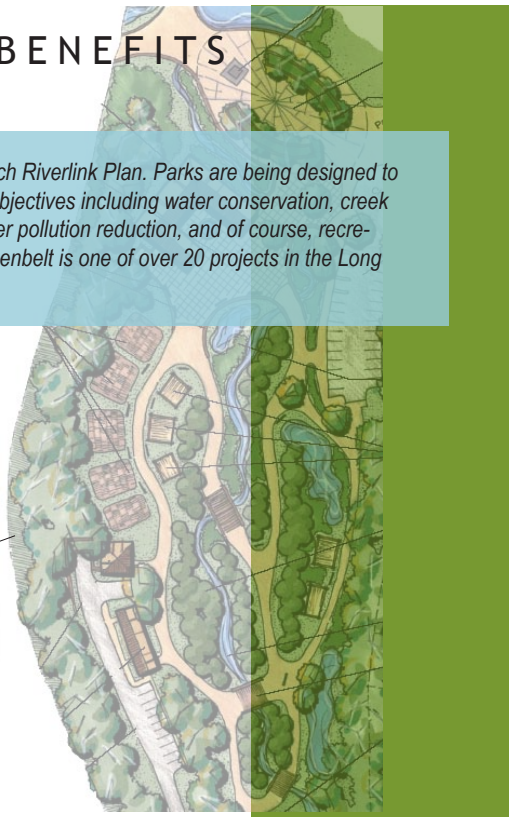


Figure 6-4. Long Beach Riverlink Plan. Parks are being designed to accomplish multiple objectives including water conservation, creek restoration, stormwater pollution reduction, and of course, recreation. The Drake Greenbelt is one of over 20 projects in the Long Beach Riverlink Plan.

Table 6-5 presents the significant differentiating features of the three Regional Planning Tools and their construction costs.

Regional Planning Tool Benefits

The calculation of economic benefits resulting from increases in open space and parkland is based on increases in property values for adjacent and nearby residential properties (Crompton, 2001 and 2005). The calculation of wetland and riparian habitat benefits is based on improved recreational opportunities (bird watching: McConnell and Walls, 2005) and on California resident's stated willingness-to-pay value for wetland restoration (Pate and Loomis, 1997). The economic benefits of riparian habitat improvements are assumed to be equivalent to the economic benefits of wetland habitat improvements.

Table 6-6 presents a summary of benefits generated by each of the Regional Planning Tools. The benefits are based on the services provided by the facilities described in the Regional Concept Cost section of this document. Benefits, which result from capital expenditures distributed over 20 years, accumulate at the same rate as the capital is expended. All benefits are discounted at 6 percent and summed over a period of 50 years.

Water quality benefits are constant across the three Regional Planning Tools because the quantity and the unit value of water quality improvements are the same for each tool. Open space benefits are greater for Tool 3 than for the other two tools because their adjacency to existing water resources and the larger size of open space parcels increases their value for recreation and improves habitat conditions (thereby increasing habitat values). Overall, Table 6-6 shows that a broad range of benefits can result from achievement of the same target quantities of water supply, water quality, and open space. The benefits resulting from Tool 3, the Regional scale, are 1.65 times larger than the benefits resulting from Tool 1, the site scale.

Benefits Requiring Additional Study

Many of the monetary benefits associated improvements in water quality and increases in open space cannot be quantified at the conceptual level of analysis presented in the IRWMP. For example,

Table 6-5. Summary of Planning Tool Water Quality Features and Capital Costs						
	Description			Estimated Cost (in Billions)		
Feature	Tool 1	Tool 2	Tool 3	Tool 1	Tool 2	Tool 3
Runoff Reduction						
Onsite BMPs	Residential Areas Only	None	None	$5.86	None	None
Runoff Collection	Existing Storm Drain System	Existing System	Existing System	None	None	None
Runoff Treatment						
Plant Capacity	5 mgd	5.25 mgd	100 mgd	-	-	-
Number of Plants	1,030 plants	1,600 plants	84 plants	-	-	-
Total Capacity	5,140 mgd	8,400 mgd	8,400 mgd	-	-	-
Treatment Technique						
Level 1	Screening / Detention Basin	Screening / Detention Basin	Screening / Detention Basin	$13.7	$21.9	$6.75
Level 2	Sand Filter & Disinfection	Wetland Filter & Disinfection	Wetland Filter & Disinfection	$6.56	$2.06	$1.33
Level 3	Reverse Osmosis	Reverse Osmosis	Reverse Osmosis	$23.4	$37.5	$9.06
Distribution of Treated Runoff	None	1 mi. (16") Pipe, & 1 Pump Station per Plant	5 mi. (72" dia.) Pipe & 1 Pump Station per Plant	None	$1.6	$0.878
Land Acquisition	6,450 ac. open space 3,100 acres treatment	8,000 acres	8,000 acres	$9.68	$13.2	$8.8
Total Capital Costs				**$59.3**	**$76.4**	**$26.8**
Annual O&M Costs				$0.135	$0.188	$0.51

All costs in 2006 dollars.

Table 6-6. Summary of Regional Planning Tool Benefits(1)			
	Regional Planning Tool		
	Tool 1	Tool 2	Tool 3
Water Supply Quantity (acre-feet/year)	800,000	800,000	800,000
Water Supply Benefits	$1,990,000,000	$2,550,000,000	$3,070,000,000
Water Quality Quantity (acre-feet/year)	810,000	810,000	810,000
Water Quality Benefits	$3,600,000,000	$3,600,000,000	$3,600,000,000
Open Space Quantity (acres)	8,000	8,000	8,000
Open Space Benefits (recreation based)	$1,880,000,000	$1,880,000,000	$3,800,000,000
Open Space Benefits (recreation and habitat based)	-	-	$1,950,000,000
Total Benefits	**$7,500,000,000**	**$8,060,000,000**	**$12,400,000,000**

Quantities are attained over 20 years.

1. Benefits are sum of present values disounted 50 years at 6 percent.

the dollar value of creating new recreational opportunities in neighborhood or Regional parks can only be calculated when the specific location of the new facility is known so that it can be analyzed in relation to its proximity to existing facilities. Likewise, the full economic benefits of reaching the IRWMPs water quality goals cannot be enumerated without detailed studies of the costs that will be avoided upon attainment such as the elimination of the economic losses associated with beach closures or the health impacts of swimming in polluted ocean waters. In order to calculate the benefits arising from reduced beach closures it would be necessary to determine which beaches are closed, how often and for how long; the average daily number of beach goers at each beach at the time of year of each closure; and the nearest alternate beach available as a substitute. The acquisition and analysis of this data, was not be completed within the scope and schedule constraints imposed by this IRWMP. Another example of a benefit type that could arise but cannot be estimated at this time would be the economic and intangible benefits resulting from restoring steelhead fishery in the Region's rivers. Attaining TMDL compliance would be one requirement of such a restoration but the benefits would not accrue until substantial restoration of riparian habitat could be completed after reaching compliance.

Beneficial Aspects of Project Integration

Project integration typically consists of concurrent development of multipurpose projects or coordination of single purpose projects in such a way that the benefits of the single purpose are enhanced (or costs reduced). More than 25 percent of the stakeholder identified projects are multi-purpose projects. The Regional Planning Tools have been designed to illustrate varied degrees of project scale, and potential integration.

Tool 1, which is at the site scale, perhaps offers the least opportunity for integration, and relies on typical single-purpose water supply projects, on-site BMPs to achieve water quality goals, and additional land purchases to achieve open space goals. Tool 2 generates 130,000 acre-feet/year of water supply from capture of dry weather flow and conducts surface water treatment at neighborhood-scale facilities. Recreational open space is provided through creative use of retention facilities at the neighborhood level. Although overall costs are 19 percent higher for Tool 2 (Table 6-1), there is a 7 percent increase in quantified economic benefits (Table 6-6). In addition, development of water quality projects at the neighborhood scale may allow a preferential distribution of benefits by siting projects in Disadvantaged Communities.

Tool 3, which is the most Regional tool, may offer the most opportunities for integrated solutions, as it also makes the most use of Region's natural resources, such as rivers, creeks, and major tributary channels in order to create multi-purpose riparian corridors that connect the entire Region. Tool 3 generates 130,000 acre-feet/year of water supply from dry weather flow and 120,000 acre-feet/year from stormwater flow. The heavy reliance on large scale projects adjacent to natural features greatly reduces the overall cost of this tool. The cost of Tool 3 is 56 percent of the cost of Tool 1 and 47 percent of the cost of Tool 2 (Table 6-1). Benefits are also increased, due to greater reductions in imported water purchases and the increased size of open space parcels, which enhances recreation and habitat benefits. The overall benefits of Tool 3 are 65 percent greater than the benefits of Tool 1 and 54 percent greater than the benefits of Tool 2 (Table 6-6). Tool 3 also provides opportunities to distribute benefits to some Disadvantaged Communities through the placement of treatment facilities and accompanying open space and habitats along waterways in those communities.

Additionally, the natural resource focus associated with Tool 3 increases the opportunity for federal cost sharing in water resource habitat improvement through the U.S. Army Corps of Engineers ecosystem restoration program. The objective of the U.S. Army Corps of Engineers ecosystem restoration program is to invest in restoration projects or features that make a positive contribution to the environmental resources in a cost effective manner. Restoration of riparian and wetland habitat, including the restoration of natural functions such as stormwater retention and filtration, is a substantial component of Tool 3. Construction of large scale ecosystem restoration projects are cost-shared 65 percent federal funds/35 percent

non-federal funds. Although only a rough estimate of federal financial participation can be made with the venture level cost estimates used in this analysis, it would not be unreasonable to assume that as much as 20 percent to 25 percent of the total cost of Tool 3 may be available for federal participation under the U.S. Army Corps of Engineers ecosystem restoration program.

Other opportunities for increased federal cost sharing through other programs may also exist. For example, the potential for Bureau of Reclamation participation in the construction of water supply elements of Tools 2 and 3 should be investigated.

Benefit Assessment Conclusion

Three Regional Planning Tools, each designed to achieve the same level of water supply, water quality, and open space output have been assessed in terms of venture level costs and benefits. The three categorical approaches are largely differentiated by the scale of individual projects which make up the tool, with Planning Tool 1 including projects at the site scale, Planning Tool 2 including projects at the neighborhood scale, and Planning Tool 3 including projects at the larger Regional scale. The results of the assessment indicate that Tool 3 has the least cost and highest economic benefits. Multiple benefits can be accomplished by projects at any scale, but in general, increased benefits occur as a result of increased scale, especially for water quality treatment and habitat creation. In general, larger multi-purpose projects are able to provide water supply, water quality, and habitat creation benefits at a lower cost than an accumulation of smaller single-purpose projects. The three Regional Planning Tools have been designed to accent different scales and therefore should not be considered as alternative comprehensive plans. The actual plans, which will be implemented in the near and long-term future, will include combinations of all scales presented in this analysis. The benefit of conducting comparative cost and benefit assessments of the three Tools is that the comparison illustrates the relative costs and benefits of increasing (or decreasing) scale among local projects.

The three Regional Planning Tools have been developed to illustrate the economic effects of

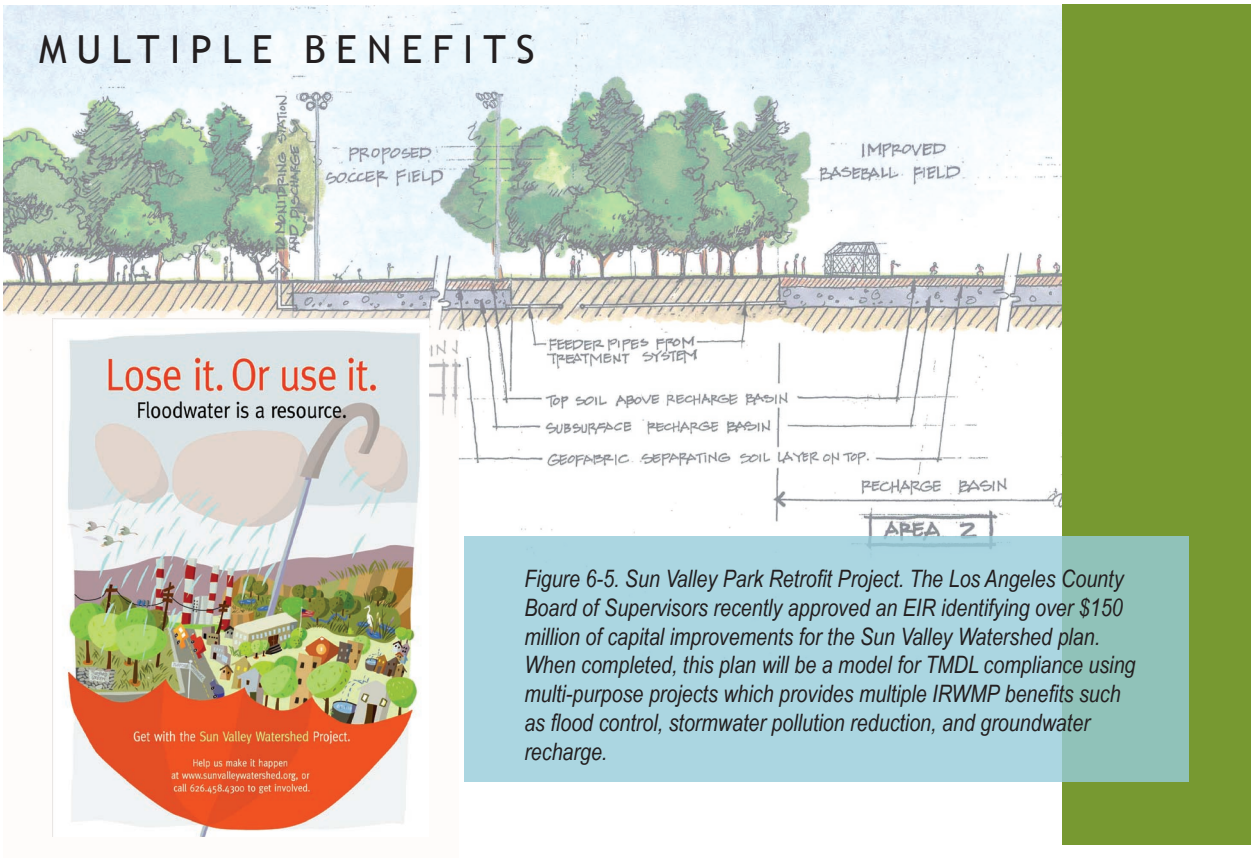


Figure 6-5. Sun Valley Park Retrofit Project. The Los Angeles County Board of Supervisors recently approved an EIR identifying over $150 million of capital improvements for the Sun Valley Watershed plan. When completed, this plan will be a model for TMDL compliance using multi-purpose projects which provides multiple IRWMP benefits such as flood control, stormwater pollution reduction, and groundwater recharge.

varied levels of project scale, integration and centralization. None of the tools represent a comprehensive plan to meet the Region's water resource needs, but instead illustrate the benefits of project integration, reliance on multi-purpose projects, and centralization around existing natural features. The actual plans, which will be implemented over the course of the next 20 years and more, will likely be a mix of strategies adapted to local opportunities and constraints and would be unlikely to consistently achieve the high level of integration depicted in Tool 3. However, the results of this analysis indicate that increasing project integration with centralization around natural features to whatever extent possible will increase the economic benefits of achieving the Region's future water resource needs.

As project integration dialog moves forward the demonstrated quantitative benefits provided by the integration in the Regional planning tools will help to inform the process at the Subregional level while promoting an approach that maintains a consistent vision at the Regional level.

6.4 Potential Impacts of IRWMP Implementation

As discussed in Section 7.7, this IRWMP is a feasibility or planning study which identifies possible future actions that the members of the RWMG have not approved, adopted, or funded. Consistent with Section 15262 of the CEQA Guidelines, a project involving only feasibility or planning studies does not require the preparation of an Environmental Impact Report or Negative Declaration but does require consideration of environmental factors.

To consider potential environmental effects that could result from IRWMP implementation, the CEQA Initial Study Checklist contained in Appendix G of the CEQA Guidelines (OPR, 2003) was reviewed to identify whether the implementation of the Plan, which might include those project concepts identified in the Regional Planning Tools, could result in adverse affects. Although this review is not intended to replace or supplant detailed review of potential environmental impacts (at such time as specific projects are proposed), the following provides a summary of potentially adverse project-specific and/or cumulative affects that could result. These include the potential to:

- Degrade the existing visual character or quality of project sites and their surroundings, including adverse affects to scenic vistas or damage to scenic resources.
- Generate construction emissions which could violate applicable air quality standards.
- Modify project sites in a manner that could have a substantial adverse effect, either directly or through habitat modifications, on candidate, sensitive, or special status species.
- Disturb project sites during construction in a manner that could cause a substantial adverse change in the significance of a historical, archaeological, or paleontological resource.
- Result in substantial soil erosion or the loss of topsoil (e.g., during construction), or involve construction on unstable soils.
- Disturb project sites in a manner which could expose buried or unknown hazardous materials or substances.
- Alter the existing drainage pattern of a site or area, including the alteration of the course of a stream or river, in a manner which could result in substantial erosion or siltation.
- Place facilities within a 100-year flood hazard area in a manner which could impede or redirect flood flows.
- Generate noise levels during construction which could cause a substantial temporary increase in ambient noise levels in the project vicinity.
- Depending on the location of proposed land acquisition, projects could displace existing housing, which could necessitate the construction of replacement housing elsewhere.

Any decision to implement any individual project or program identified in this plan would be subject to CEQA compliance at such time as any agency commits to fund or implement the project. It is assumed that the approving entity would comply with CEQA and identify appropriate mitigation measures to the extent that any significant impacts would result.