

# Chapter 8 Benefits of Sustainable Solutions

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With the development of integrated watershed planning, multi-benefit, multi-purpose projects have moved to the forefront and have become one of the primary goals of the OWOW process. The idea of meeting a number of community needs with a single project is not new; however, specialization within agencies that deal with water has often moved these project types to the backburner. Efforts primarily have focused on single purpose projects, and the additional effort required to develop multi-objective solutions has made true multi-benefit projects relatively uncommon. In California, there has been an effort to incentivize collaborative planning through IRWM Planning and associated funding sources.

This reliance on single purpose projects is not unique to water. An interesting analogy can be drawn with the field of public health. Infectious diseases that plague much of the world can be treated by eliminating the infectious agent or interrupting the transmission of the pathogen. Public health programs traditionally focus on both approaches and use a team of physicians, sanitary engineers, and others professionals to address problems, often with great result. The development of more specialization in public health practice, in many cases, has been correlated with the resurgence of some diseases, such as malaria. Recently, scientists have become concerned that the “Balkanization of Science” has resulted in specialists with narrow training focusing only on a single aspect of a broader problem. Often, effective solutions are missed by this approach (Moore, 2008). Similar statements could be made about water management. If water is considered, in the broadest sense, as a resource that benefits a wide group of interests, including those represented by the ten Pillar groups of the OWOW process, the projects that address as many of those interests as possible should be encouraged.

Some of the earliest multi-benefit water projects were done through a partnership between those interested in flood and groundwater management. Spreading grounds along the front slopes of local mountains have attenuated flood flows and recharged groundwater basins for nearly 100 years. OCWD partnered early with Orange County Flood Control District to provide recharge basins within flood control basins. More recently, IEUA has worked with San Bernardino County Flood Control to modify the operation of the flood control system to maximize recharge opportunities. IRWD has partnered with the Orange County Flood Control District to store recycled water in some flood basins. All of these projects primarily were facilitated by operational changes rather than the construction of new infrastructure, although in some cases the flood system was upgraded. Operational changes could occur only when both parties understood the needs and assets of the other.

The development of multi-benefit projects will remain challenging and require sustained effort by agencies that manage water. In the Watershed alone, there are approximately 100 agencies that manage water in some way. This situation is not unique to this Watershed. The Federal government has 12 Federal agencies and eight separate committees all doing water-related work (Udall and Averyt, 2009). Agencies need to prioritize collaborative projects and provide the staff resources to ensure that such projects are developed.

The purpose of integrated watershed planning is to consider other disciplines or functional areas when planning and implementing projects. Benefits of this approach far exceed the immediate benefit of reducing controversy surrounding a particular project. Pillar leaders developed a list of potential benefits in a workshop to identify incentives associated with the development of multi-benefit programs and projects. They are listed below:

**Solving problems using a multi-benefit approach prevents the creation of other problems.**

Often when a single-function project is developed, it has an impact on other water-related areas, often unanticipated. The truth of this statement is often born out in a CEQA or NEPA analysis, where numerous problem areas can be identified.

**Multi-benefit problem solving results in no missed opportunities.** In a multi-benefit type of approach, a careful exploration of all aspects of a particular project often results in the identification of incremental project changes that can result in large benefits in other areas.

**Cost and resource savings for the public can be achieved.** When a multi-benefit project is developed, the cost of providing each benefit is often less than providing similar benefits to the public using two or more separate projects. As land and other public resources become scarce, these types of projects are more likely to be undertaken and provide more public benefit.

**Developing projects that provide multiple benefits develops trust.** As groups develop multi-benefit projects, trust is developed among different constituencies, each interested in a different aspect of water. These groups are more likely to work toward similar solutions in the future if they have successfully developed multi-benefit projects.

**Multi-benefit projects are focused on building successful projects, not dispute resolutions.** Groups focused on problem solving rather than dispute resolution or litigation save public resources and implement solutions to regional problems faster than they would had they disputed each other's single-function project.

**Development of multi-purpose projects can develop better communication.** Through the development of a project, groups that span geography or area of interest develop better communication and trust.

**Multi-purpose projects often have diverse sources of funding.** As multi-benefit projects are developed, multiple State and Federal funding sources become available providing cost share opportunities, and increasing the probability that a specific project would move forward.

**Development of multi-function projects allows sharing of human resources.** Each agency or constituency interested in developing a project has access to individuals with unique abilities and perspectives. Teams formed from diverse groups often develop unique solutions to problems.

Pillar leaders met several times to develop matrices that demonstrated the potential benefits of multi-benefit projects undertaken between Pillars. In other words, how would a multi-benefit project conducted by one Pillar group benefit another group? The purpose of this exercise was to

encourage Pillar leaders to begin to focus on how implementing projects to benefit their constituency can be designed to benefit others.

Drafts of these matrices were taken to three public workshops held in Orange, Riverside, and San Bernardino Counties. At these sessions, stakeholders were invited to comment on the work of the Pillar leaders, as well as suggest their own benefits. Again, the primary purpose of these workshops was to encourage discussion around the concept of designing projects for more than one purpose. As the Pillar leaders completed their final drafts, they developed a list of project types that would benefit more than one Pillar and were worthy of further consideration.

The following tables summarize the efforts of the Pillar leaders and the Watershed stakeholders to catalog the possible benefits to other Pillars by well designed projects. A project that fulfills a particular Watershed need can be designed to provide other benefits to all other Pillar groups. Maximizing these benefits provides for better projects and better use of public money.

***Benefits of Multi-Purpose Projects***

- Water use efficiency projects increase water supply reliability
- Integrated flood management projects also supply groundwater recharge and provide
- Surface storage provides opportunities for local recreation
- Improving water quality of “tainted” local supplies increases reliability

## *Water Supply Reliability*

Pillar	Benefit to Other Pillars
Climate Change	<ul style="list-style-type: none"> <li>Reduces the carbon footprint associated with importing water.</li> <li>Accommodates for drought and less frequent rainfall.</li> </ul>
Environmental Enhancement and Habitat	<ul style="list-style-type: none"> <li>Quantifies environmental and habitat needs.</li> <li>Provides water supply for riparian and aquatic habitat.</li> </ul>
Environmental Justice	<ul style="list-style-type: none"> <li>Provides reliable high quality drinking water supply for all residents.</li> <li>Constructs infrastructure improvements supporting disadvantaged communities.</li> </ul>
Flood Control and Stormwater Management	<ul style="list-style-type: none"> <li>Allows cost sharing partnerships to enhance and improve the capability of flood control infrastructure to capture and infiltrate storm flows.</li> </ul>
Parks, Recreation, and Open-Space	<ul style="list-style-type: none"> <li>Surface storage provides opportunities for local recreation.</li> <li>Expands and enhances opportunities for recreational boating and sport fishing.</li> <li>Increases the economic value of local recreational opportunities.</li> <li>Water utility easements provide trail opportunities.</li> </ul>
Water and Land Use	<ul style="list-style-type: none"> <li>Supports smart growth enhancing quality of life.</li> <li>Allows sustainable growth.</li> <li>Incentive for high quality industrial and commercial development.</li> <li>Enhances property values.</li> <li>Improves public's perception of community.</li> </ul>
Water Quality Improvement	<ul style="list-style-type: none"> <li>Lowens the concentrations of imported salt in local surface and groundwater supplies.</li> <li>Provides mechanism to lower the concentration of industrial pollutants in local surface and groundwater supplies.</li> <li>Provides high quality supply to clean up contaminated groundwater basins.</li> </ul>
Water Recycling	<ul style="list-style-type: none"> <li>Promotes appropriate use of recycled water.</li> </ul>
Water Use Efficiency	<ul style="list-style-type: none"> <li>Provides business opportunities for green products and water saving devices.</li> <li>Promotes changes in water usage.</li> <li>Encourages transition of landscaping to native plant types.</li> </ul>

## ***Water Quality Improvement***

<b>Pillar</b>	<b>Benefit to Other Pillars</b>
Climate Change	<ul style="list-style-type: none"> <li>• Offsets climate changes stress on water supply by expanding usable local surface and groundwater resources.</li> <li>• Reduces the carbon footprint associated with transporting and processing water.</li> <li>• Reduces the amount of salt and other contaminants entering local surface and groundwater supplies.</li> </ul>
Environmental Enhancement and Habitat	<ul style="list-style-type: none"> <li>• Improves quality of local water resources that support wildlife habitat.</li> <li>• Reduces the input of nutrients which promote eutrophication.</li> <li>• Promotes greater biodiversity.</li> <li>• Use of natural treatment systems provides incentive for restoration and construction of habitat.</li> <li>• Supports and protects areas of biological significance including habitat for threatened and endangered species.</li> </ul>
Environmental Justice	<ul style="list-style-type: none"> <li>• Provides high quality drinking water for disadvantaged communities.</li> <li>• Reduces the perceived need for bottled water.</li> <li>• Improves public health.</li> <li>• Expands and enhances recreational opportunities.</li> <li>• Improves the public's perception of community.</li> <li>• Enhances value of property.</li> <li>• Expands water supply for local communities.</li> <li>• Extends life of fixtures and appliances</li> <li>• Reduces operation and maintenance costs.</li> </ul>
Flood Control and Stormwater Management	<ul style="list-style-type: none"> <li>• Strategies that promote infiltration, such as Low Impact Development (LID) help to reduces peak flows and risk of flooding.</li> <li>• Extends the life of existing infrastructure.</li> <li>• Reduces operation and maintenance costs.</li> </ul>
Parks, Recreation, and Open-Space	<ul style="list-style-type: none"> <li>• Expands and enhances recreational opportunities.</li> <li>• Increases the economic value of local recreational opportunities.</li> <li>• Improves the aesthetics of local lakes and streams.</li> <li>• Promotes tourism.</li> <li>• Reduces risks to public health.</li> </ul>
Water and Land Use	<ul style="list-style-type: none"> <li>• Attracts high quality industrial developments.</li> <li>• Improves the public's perception of community.</li> <li>• Enhances value of property.</li> <li>• Reduces operation and maintenance costs.</li> </ul>
Water Recycling	<ul style="list-style-type: none"> <li>• Expands opportunities for water recycling.</li> <li>• Reduces operation and maintenance costs.</li> <li>• Extends the life of equipment.</li> <li>• Improves the efficiency of membranes and filters.</li> </ul>
Water Supply Reliability	<ul style="list-style-type: none"> <li>• Expands local surface and groundwater supplies.</li> <li>• Reduces the amount of salt and other contaminants entering local surface and groundwater supplies.</li> <li>• Reduces operation and maintenance costs.</li> </ul>
Water Use Efficiency	<ul style="list-style-type: none"> <li>• Expands the range of available technologies.</li> <li>• Extends the life of fixtures and appliances.</li> <li>• Reduces operation and maintenance costs.</li> <li>• Reduces the perceived need for water softeners.</li> </ul>



## ***Water Recycling***

<b>Pillar</b>	<b>Benefit to Other Pillars</b>
<ul style="list-style-type: none"> <li>Climate Change</li> </ul>	<ul style="list-style-type: none"> <li>Offsets carbon footprint associated with imported water.</li> <li>Reduces dependence on outside water sources facing reduced rainfall and snow pack.</li> <li>Stretches local sources of supply stressed by changes in the local climate.</li> </ul>
<ul style="list-style-type: none"> <li>Environmental Enhancement and Habitat</li> </ul>	<ul style="list-style-type: none"> <li>Provides source water for riparian habitat and environmental enhancement.</li> <li>Provides reliable source for stabilization of lake levels and restoration of local rivers and streams.</li> <li>Supports and protects areas of biological significance including habitat for threatened and endangered species.</li> </ul>
<ul style="list-style-type: none"> <li>Environmental Justice</li> </ul>	<ul style="list-style-type: none"> <li>Stretches local water resources to meet public demand.</li> <li>Frees up potable supply for public consumption.</li> </ul>
<ul style="list-style-type: none"> <li>Flood Control and Stormwater Management</li> </ul>	<ul style="list-style-type: none"> <li>Reduced operation and maintenance costs through reduced discharges to flood control system.</li> </ul>
<ul style="list-style-type: none"> <li>Parks, Recreation, and Open-Space</li> </ul>	<ul style="list-style-type: none"> <li>Provides economical water source to support recreational activities.</li> <li>Improves esthetics through stabilization of lake levels and stream flow.</li> <li>Provides a reliable long term lower cost alternative for irrigation needs of parks and golf courses.</li> <li>Provides source water for esthetic features such as fountains and ornamental ponds.</li> </ul>
<ul style="list-style-type: none"> <li>Water and Land Use</li> </ul>	<ul style="list-style-type: none"> <li>Provides a reliable lower cost alternative for landscape irrigation.</li> <li>Provides a reliable source of supply to support growth and development.</li> <li>Reduces demand for potable water.</li> <li>Provides incentive for replacing septic systems with sewer systems.</li> <li>Provides alternative water source for toilet flushing in commercial and residential development.</li> <li>Provides alternative supply for industrial and commercial use fostering sustainable economic growth, and local job opportunities.</li> </ul>
<ul style="list-style-type: none"> <li>Water Quality Improvement</li> </ul>	<ul style="list-style-type: none"> <li>Reduces the amount of salt and other contaminants entering local surface and groundwater supplies.</li> <li>Injection into barrier wells prevents ocean water intrusion into coastal groundwater basins.</li> </ul>
<ul style="list-style-type: none"> <li>Water Supply Reliability</li> </ul>	<ul style="list-style-type: none"> <li>Helps to drought-proof the region.</li> <li>Reliable source for groundwater recharge.</li> <li>Provides a direct local supply to users.</li> <li>Expands available water sources.</li> <li>Provides reliable source of supply for industrial use and irrigation.</li> <li>Reduces the need for imported water.</li> <li>Reduces demands on potable water supply.</li> </ul>
<ul style="list-style-type: none"> <li>Water Use Efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Substitutes recycled water for potable water.</li> <li>Stretches the local water supply.</li> <li>Recycled water projects focus public attention on water conservation.</li> </ul>

## ***Water Use Efficiency***

<b>Pillar</b>	<b>Benefit to Other Pillars</b>
Climate Change	<ul style="list-style-type: none"> <li>• Reduces carbon footprint associated with transporting and processing water.</li> <li>• Reduces carbon footprint associated with water use and consumption.</li> </ul>
Environmental Enhancement and Habitat	<ul style="list-style-type: none"> <li>• Provides opportunity for conservation of local surface and groundwater flows.</li> <li>• Reduces poor quality urban runoff from reaching natural systems.</li> <li>• Encourages planting of native plant species.</li> <li>• Reduces standing plant biomass associated with fire threat in the riverbed.</li> </ul>
Environmental Justice	<ul style="list-style-type: none"> <li>• Provides conservation of local surface and groundwater resources.</li> <li>• Insures baseline water supply through tiered water rates.</li> <li>• Provides funding programs for upgrading inefficient fixtures and appliances.</li> </ul>
Flood Control and Stormwater Management	<ul style="list-style-type: none"> <li>• Reduces volume of poor quality runoff from suburban and urban development entering flood control system.</li> </ul>
Parks, Recreation, and Open-Space	<ul style="list-style-type: none"> <li>• Encourages maintenance of open spaces and corridors for trails.</li> <li>• Encourages efficient use of turf and the planting of native species in local parks.</li> <li>• Provide educational opportunities through signage and demonstration projects to educate public about water efficiency landscaping and irrigation..</li> </ul>
Water and Land Use	<ul style="list-style-type: none"> <li>• Increase reliability of water supply to sustain development.</li> <li>• Reduces the per capita water demand to sustain development.</li> </ul>
Water Quality Improvement	<ul style="list-style-type: none"> <li>• Reduces volume of poor quality runoff from suburban and urban development.</li> <li>• Reduces salt imported to region.</li> </ul>
Water Recycling	<ul style="list-style-type: none"> <li>• Encourages water recycling and opportunities for alternate technologies (i.e., grey water systems, cisterns for roof runoff).</li> <li>• Provides alternative supply for landscape use.</li> <li>• Provides alternative supply for commercial and industrial uses.</li> </ul>
Water Supply Reliability	<ul style="list-style-type: none"> <li>• Increase reliability of local water supply.</li> <li>• Increases the flexibility of the local water supply.</li> <li>• Reduces stress on existing infrastructure.</li> </ul>



## ***Water and Land Use***

<b>Pillar</b>	<b>Benefit to Other Pillars</b>
Climate Change	<ul style="list-style-type: none"> <li>• Smart growth through higher density development reduces the carbon footprint associated with transporting and processing water.</li> <li>• Provides better local job to housing ratio reducing the carbon footprint associated with commuting.</li> </ul>
Environmental Enhancement and Habitat	<ul style="list-style-type: none"> <li>• Preserves and improves habitat.</li> <li>• Helps improve watershed functionality.</li> <li>• Integrates habitat into a built environment.</li> <li>• Enhances habitat connectivity and quality of life.</li> <li>• Redevelopment and retrofitting provides opportunities for habitat restoration</li> </ul>
Environmental Justice	<ul style="list-style-type: none"> <li>• Redevelopment and retrofitting improves the quality of housing.</li> <li>• Improves quality of life.</li> <li>• Sewer systems protect groundwater quality, reducing the risk of contamination associated with septic system failure.</li> </ul>
Flood Control and Stormwater Management	<ul style="list-style-type: none"> <li>• Promote natural groundwater recharge to reduce stormflow.</li> <li>• Improves quality of stormwater runoff.</li> <li>• Reduces risk of local flooding.</li> <li>• Avoided flood control infrastructure costs.</li> <li>• Provides opportunities for public-private partnerships.</li> <li>• Reduces cost of regulatory compliance.</li> </ul>
Parks, Recreation, and Open-Space	<ul style="list-style-type: none"> <li>• Creates local recreation opportunities and reduces travel costs.</li> <li>• Increases opportunities for local tourism.</li> <li>• Improves community aesthetics.</li> <li>• Provides more open space.</li> </ul>
Water Quality Improvement	<ul style="list-style-type: none"> <li>• Strategies linking water and land use improve surface and groundwater quality.</li> <li>• Reduces nuisance flow from urban development into surface waters.</li> <li>• Reduces cost of regulatory compliance.</li> </ul>
Water Recycling	<ul style="list-style-type: none"> <li>• Integration of recycled water into new development promotes sustainable growth.</li> <li>• Higher density development reduces the cost of recycled water infrastructure.</li> <li>• Sustainable development provides market for recycled water.</li> <li>• Provides prescriptive measures for the use of recycled water for irrigation and other non-potables uses.</li> </ul>
Water Supply Reliability	<ul style="list-style-type: none"> <li>• More open space promotes groundwater recharge.</li> <li>• Decreases per-capita water use</li> <li>• Enhances local supply reliability.</li> </ul>
Water Use Efficiency	<ul style="list-style-type: none"> <li>• Promotes the efficient use of water.</li> <li>• Provides prescriptive measures for the efficient use of water.</li> <li>• Provides market for green products and water saving devices.</li> </ul>



## ***Flood Control and Stormwater Management***

<b>Pillar</b>	<b>Benefit to Other Pillars</b>
Climate Change	<ul style="list-style-type: none"> <li>• Large recharge basins may help reduce the heat island effect.</li> <li>• Increased groundwater recharge reduces the need for more energy intensive imported water.</li> </ul>
Environmental Enhancement and Habitat	<ul style="list-style-type: none"> <li>• Channels provide corridors between open spaces.</li> <li>• Provides more opportunities for wetland construction.</li> <li>• Connects isolated biological communities.</li> <li>• Non-structural flood control channels provide habitat.</li> <li>• Serves as a multi-purpose source of funding for habitat projects.</li> <li>• Prevents channel erosion.</li> <li>• Expands habitat.</li> <li>• Easements provide fire breaks and emergency access.</li> </ul>
Environmental Justice	<ul style="list-style-type: none"> <li>• Protects lives and property.</li> <li>• Reduces flood insurance costs.</li> <li>• Provides improved water quality for recreation.</li> <li>• Better understanding of risk improves safety and water quality</li> </ul>
Parks, Recreation, and Open-Space	<ul style="list-style-type: none"> <li>• Easements provide trail opportunities.</li> <li>• Provides additional land for parks during dry season.</li> <li>• Prevents erosion of parks.</li> <li>• Promotes multi-agency projects provide opportunities to expand parks system.</li> </ul>
Water and Land Use	<ul style="list-style-type: none"> <li>• Protects lives and property.</li> <li>• Reduces the need for flood insurance.</li> <li>• Integrated flood strategies enhance the value of developed property.</li> <li>• Reduced risk to infrastructure from debris dams associated entering flood control system.</li> </ul>
Water Quality Improvement	<ul style="list-style-type: none"> <li>• Integrated flood strategies improve the quality of surface water, ocean water, and groundwater.</li> <li>• Supports regulatory compliance and reduces compliance cost.</li> <li>• Reduce the flow of poor quality runoff from urban development</li> </ul>
Water Recycling	<ul style="list-style-type: none"> <li>• Provides additional conveyance opportunities.</li> <li>• Provides facilities to recharge recycled water.</li> <li>• High quality stormwater dilutes the salt of recycled water and imported water recharge.</li> </ul>
Water Supply Reliability	<ul style="list-style-type: none"> <li>• Increases opportunities for groundwater recharge.</li> <li>• Provides temporary storage for other uses.</li> <li>• Provides additional conveyance opportunities.</li> <li>• Increases available local water supply.</li> <li>• High quality stormwater dilutes the salt of recycled water and imported water recharge</li> </ul>
Water Use Efficiency	<ul style="list-style-type: none"> <li>• Expanded local recharge reduces the need for irrigation.</li> </ul>

## ***Environmental Enhancement and Habitat***

<b>Pillar</b>	<b>Benefit to Other Pillars</b>
Climate Change	<ul style="list-style-type: none"> <li>• Provides compliance opportunities for carbon offsets.</li> <li>• Reduces heat island effect.</li> <li>• Provides real carbon reduction with vegetated “carbon sinks”.</li> <li>• Improved air quality.</li> </ul>
Environmental Justice	<ul style="list-style-type: none"> <li>• Increases available open space.</li> <li>• Environmental services are an important link to public health – clean air, natural treatment of water.</li> <li>• Improves quality of life.</li> <li>• Creation of habitat mitigates urban impacts</li> </ul>
Flood Control and Stormwater Management	<ul style="list-style-type: none"> <li>• Provide opportunities for retention, detention, and local flood control.</li> <li>• Improves stormwater quality.</li> <li>• Treats urban nuisance flows.</li> <li>• Provides additional flood control system capacity.</li> </ul>
Parks, Recreation, and Open-Space	<ul style="list-style-type: none"> <li>• Provides recreational opportunities.</li> <li>• Provides environmental education opportunities through signage and interpretive centers.</li> </ul>
Water and Land Use	<ul style="list-style-type: none"> <li>• Increases value of properties adjacent to habitat areas.</li> <li>• Promotes groundwater recharge.</li> <li>• Protects property from local flood impacts.</li> <li>• Redevelopment strategy for blighted areas.</li> <li>• Promotes consistency with General Plan.</li> </ul>
Water Quality Improvement	<ul style="list-style-type: none"> <li>• Provides large permeable area for stormwater infiltration.</li> <li>• Wetlands provide enhanced water quality.</li> <li>• Provide erosion control and reduce accompanying sediment load.</li> </ul>
Water Recycling	<ul style="list-style-type: none"> <li>• Provides a market for recycled water.</li> <li>• Treatment wetlands reduce recycling costs.</li> </ul>
Water Supply Reliability	<ul style="list-style-type: none"> <li>• Increases groundwater recharge for local supply.</li> <li>• Provides large permeable area for stormwater infiltration.</li> <li>• Arundo removal provides additional surface flow.</li> </ul>
Water Use Efficiency	<ul style="list-style-type: none"> <li>• Natural habitat reduces demand as it is sustained by rain only.</li> <li>• Promotes removal of water-guzzling exotic plants.</li> </ul>



## ***Parks, Recreation, and Open-Space***

Pillar	Benefit to Other Pillars
Climate Change	<ul style="list-style-type: none"> <li>• Reduces heat island effect.</li> <li>• Provides opportunities for carbon offsets.</li> <li>• increases opportunities for local outdoor recreation reducing travel.</li> <li>• Provides real carbon reduction with vegetated “carbon sinks”.</li> <li>• Green spaces improve air quality.</li> </ul>
Environmental Enhancement and Habitat	<ul style="list-style-type: none"> <li>• Parkland provides opportunity for habitat.</li> <li>• Trails and linear parks provide corridor function.</li> <li>• Provide opportunities for environmental education through signage and interpretive centers.</li> <li>• Removal of invasive species provides additional surface flows.</li> </ul>
Environmental Justice	<ul style="list-style-type: none"> <li>• Provides low or no cost recreational opportunities.</li> <li>• Provides a public health benefit.</li> <li>• Provide job opportunities.</li> <li>• Provide opportunities for environmental education through signage and interpretive centers.</li> </ul>
Flood Control and Stormwater Management	<ul style="list-style-type: none"> <li>• Provides opportunities for retention or detention basins.</li> <li>• Provide flood buffer for private property.</li> <li>• Provide additional flood control system capacity.</li> <li>• Parkland buffers improve stormwater quality.</li> <li>• Provide natural treatment of urban nuisance flows.</li> </ul>
Water and Land Use	<ul style="list-style-type: none"> <li>• Increases park-land to housing ratio.</li> <li>• Helps increase property values.</li> <li>• Promotes opportunities for clustering and high-density housing.</li> <li>• Promotes groundwater recharge.</li> <li>• Parks reduce stormwater impacts to urbanized areas</li> </ul>
Water Quality Improvement	<ul style="list-style-type: none"> <li>• Provides large permeable area for stormwater infiltration improving groundwater quality.</li> <li>• Parks with wetland features provide enhanced surface water quality.</li> <li>• Provide erosion control and reduce accompanying sediment load.</li> <li>• Provide opportunities for environmental education through signage and interpretive centers..</li> <li>• Supports regulatory compliance.</li> </ul>
Water Recycling	<ul style="list-style-type: none"> <li>• Provides market for recycled water.</li> </ul>
Water Supply Reliability	<ul style="list-style-type: none"> <li>• Provides location for groundwater recharge facilities.</li> <li>• Provides opportunities for dual use facilities (i.e., buried reservoirs and wells).</li> <li>• Provides large permeable area for stormwater infiltration.</li> </ul>
Water Use Efficiency	<ul style="list-style-type: none"> <li>• Provides opportunities for use of non-invasive and native species to maximize Water Use Efficiency</li> <li>• Promotes native vegetation as an alternative for residential landscaping.</li> <li>• Reduces the need for residential turf.</li> <li>• Efficient irrigation systems in parks reduce water usage.</li> </ul>

### *Climate Change*

Pillar	Benefit to Other Pillars
Environmental Enhancement and Habitat	<ul style="list-style-type: none"> <li>Increases stormwater capture.</li> <li>Increases recharge capacity.</li> <li>Increases LID opportunities minimizing impacts to habitat.</li> <li>Reduces greenhouse gas emissions.</li> <li>Promotes removal of invasive species.</li> <li>Increase California-friendly planting opportunities</li> <li>Increases fixed carbon.</li> </ul>
Environmental Justice	<ul style="list-style-type: none"> <li>Increases fixed carbon.</li> <li>Benefits public health.</li> <li>Increases funding opportunities for community enhancement.</li> <li>Increases stability of utility rates.</li> </ul>
Flood Control and Stormwater Management	<ul style="list-style-type: none"> <li>Increases stormwater capture and storage capacity.</li> <li>Increases recharge opportunities.</li> <li>Decrease chances of threatening floods.</li> </ul>
Parks, Recreation, and Open-Space	<ul style="list-style-type: none"> <li>Reduction of greenhouse gas emissions.</li> <li>Reduce heat island effect.</li> <li>Increases fixed carbon.</li> <li>Increases recharge capacity</li> <li>Low impact development increases opportunity for parkland.</li> <li>Promotes recycled water use.</li> <li>Trails usage encourages non-gasoline modes of transportation.</li> </ul>
Water and Land Use	<ul style="list-style-type: none"> <li>Encourages usage of low water landscaping.</li> <li>Encourages low impact development.</li> <li>More opportunity to designate open space and recharge-type land uses.</li> <li>Promotes efficient energy use.</li> <li>Accommodates sustainable growth.</li> </ul>
Water Quality Improvement	<ul style="list-style-type: none"> <li>Provides cheaper, natural treatment for surface water and groundwater recharge.</li> <li>More stable snow-pack reduces early seasonal run-off.</li> </ul>
Water Recycling	<ul style="list-style-type: none"> <li>Provides markets for recycled water.</li> <li>Promotes water recycling.</li> </ul>
Water Supply Reliability	<ul style="list-style-type: none"> <li>Increases groundwater supply and recharge opportunities.</li> <li>Local supply development reduces demand on imported water.</li> <li>Expands local water supplies.</li> </ul>
Water Use Efficiency	<ul style="list-style-type: none"> <li>Promotes the efficient allocation of water resources.</li> <li>Promotes efficient water practices</li> <li>Encourages appropriate water source for appropriate use.</li> <li>Provides for more rebate program opportunities.</li> </ul>



## *Environmental Justice*

Pillar	Benefit to Other Pillars
Climate Change	<ul style="list-style-type: none"> <li>Urban greening reduces heat island effect.</li> <li>Improvements to infrastructure are more energy efficient.</li> </ul>
Environmental Enhancement and Habitat	<ul style="list-style-type: none"> <li>Brownfield and other redevelopment improves habitat quality.</li> </ul>
Flood Control and Stormwater Management	<ul style="list-style-type: none"> <li>Improves nuisance water quality.</li> <li>Reduces septic flow into surface water and improves surface water quality.</li> </ul>
Parks, Recreation, and Open-Space	<ul style="list-style-type: none"> <li>Provides mechanism for open space development.</li> <li>Community involvement reduces operation and maintenance costs.</li> <li>Promotes use of local amenities.</li> </ul>
Water and Land Use	<ul style="list-style-type: none"> <li>Promotes sense of well being within community.</li> <li>Allows redevelopment of outdated community infrastructure.</li> <li>Improved community planning</li> <li>Upgrades community amenities.</li> </ul>
Water Quality Improvement	<ul style="list-style-type: none"> <li>Early intervention prevents regional water quality problems from developing.</li> <li>Prevents groundwater contamination.</li> <li>Lowers public health costs.</li> <li>Focus public scrutiny on local water quality issues.</li> <li>Reduces surface water and ocean water impacts.</li> </ul>
Water Recycling	<ul style="list-style-type: none"> <li>Provides new water for recycling.</li> <li>Prescribes recycled water for landscaping.</li> <li>Maintains water quality for future use.</li> </ul>
Water Supply Reliability	<ul style="list-style-type: none"> <li>Expands local water portfolio.</li> <li>Increases water supply redundancy.</li> </ul>
Water Use Efficiency	<ul style="list-style-type: none"> <li>Infrastructure upgrades available to all communities.</li> <li>Decreases operation and maintenance costs for utilities and consumers.</li> </ul>

The anticipated benefit of each project for each of the Plan objectives was provided by project proponents in their applications. This information was used to rank projects, as explained in Chapter 7. The expected impact and benefit will be further detailed during the different project development phases (i.e. planning, design, CEQA). The realized benefit of the projects, both at the watershed aggregated level and at the individual project level, will be monitored as projects are implemented, as detailed in Chapter 9.

## References

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