

Section 7: Impacts and Benefits

This section provides an overview of the potential impacts and benefits associated with the implementation of the Tahoe-Sierra Region IRWM Plan. This is a preliminary screening level assessment of potential impacts and benefits. Due to the nature of the IRWM planning process, it is not intended to be a complete list. More extensive and project-specific evaluations of impacts and benefits will occur through the project implementation process. This overview of potential impacts and benefits may be used as a benchmark for future evaluation throughout IRWM Plan implementation to understand if the potential benefits have been realized or if unanticipated impacts have occurred.

7.1 Benefits of Plan Implementation

The primary benefit of this IRWM Plan is the development of a shared vision and objectives for regional water management and planning among the stakeholders in the Region and a framework for maintaining that into the future. The process of developing and updating this IRWM Plan has fostered improved coordination, collaboration, and communication among stakeholders, and a greater awareness of concerns throughout the Region.

7.1.1 Plan Benefits

The 60 projects included in this IRWM Plan address at least in part all of the Plan objectives presented in Section 4 (Objectives). Over the 20-year planning horizon of this IRWM Plan, implementation of these projects will produce benefits as described in the following overview by Plan goal. Table 7-1 also provides a summary of the benefits by goal while Table 7-2 provides a summary of plan benefits by project type. In addition to benefits related to the Plan objectives, other anticipated benefits of implementation of this IRWM Plan include improved recreation and tourism, a greater quality and quantity of pedestrian and bike trails for residents and visitors, and improved roadway aesthetics.

- **Protect and Improve Water Quality.** Projects that contribute to the goal of protecting and improving the water quality in the Region include such actions as implementing best management practices (BMPs) and erosion control to reduce non-point source pollution and sedimentation of waterbodies; restoring meadows, riparian areas, and stream environment zones (SEZs) to improve filtration of runoff and removal of nutrients from surface and groundwater; preventing the spread of aquatic invasive species; conducting monitoring to support progress meeting Total Maximum Daily Loads (TMDLs); conducting public education about stormwater and pollution prevention; replacing aging wastewater infrastructure to reduce leakage; implementing wellhead protection for groundwater resources; and improving drinking water treatment. The primary benefit of implementation of these projects is improved ambient water quality for ecological benefit and meeting TMDLs, as well as the reduced potential for human exposure to potentially harmful substances. These projects would also improve the efficiency of water and wastewater treatment processes, help meet established regulatory requirements, support water-based recreation, help to address increased water quality vulnerabilities associated with climate change, and reduce the spread of aquatic invasive species.

- Protect the Community Water Supply and Treatment/Delivery System. Projects that contribute to the goal of protecting water supply and treatment/delivery include replacing aging water lines and rehabilitating groundwater wells, installing water meters to promote water conservation, improving water treatment capabilities, constructing interties to support redundancy and provide emergency supply, promoting low-water use landscaping and other water conservation strategies, and restoring meadows and wetlands to improve water quality, storage and groundwater infiltration. The benefits of implementation of these projects are reduced water demand and water loss, increased water production and treatment capacity, increased subsurface water storage and infiltration, and preparation for increased water supply variability associated with climate change. These projects would also improve fire protection capabilities.
- Manage Groundwater for Sustainable Yield. Projects that contribute to the goal of managing groundwater include such actions as restoring meadows and wetlands or constructing infiltration basins to improve infiltration of stormwater; promoting water conservation to reduce groundwater pumping; constructing additional interconnections or treatment facilities to reduce the reliance on groundwater supply; rehabilitating aging groundwater wells and improving wellhead protection; and monitoring groundwater flow, nutrient content, and pumping rates. The primary benefit of implementation of these projects is protection of recharge zones and improved infiltration for groundwater recharge. Other benefits include reduced groundwater pumping, wellhead protection and improved quality of stormwater for infiltration, and continued monitoring of groundwater and groundwater flow.
- Contribute to Ecosystem Restoration. Projects that contribute to the goal of ecosystem restoration include such actions as restoring SEZs, stream channels and floodplains, wetlands, and meadows to their natural functions; reconnecting fragmented drainages and wetlands to improve function; implementing best management practices for stormwater runoff in areas with disturbed ground surfaces and other areas prone to erosion to reduce sedimentation of water bodies; implementing programs to prevent the introduction and spread of aquatic invasive species, and control and monitor existing populations; removing terrestrial invasive species; and relocating wastewater pipelines to provide protection from overflows. The primary benefit of implementation of these projects is improved habitat function and water quality, including Lake Tahoe's clarity, as well as reduced impacts caused by development. These projects would also contribute to the prevention, control, and monitoring of aquatic and terrestrial invasive species; improve water supply; and improve fire protection capabilities.
- Implement Integrated Watershed Management Throughout the Region. Aspects of projects that contribute to the goal of implementing integrated watershed management include inter-agency coordination and multi-organization efforts, public engagement, and public education; as well as monitoring and implementation of new concepts supporting advances in watershed science. The primary benefits of efforts in support of this goal are increased coordination and cooperation between organizations throughout the Region and improved public education and awareness. Other benefits include improved adaptability to climate change, reductions in greenhouse gas emissions, reduced flood risk, and continuous improvements to watershed science.

Table 7-1: Potential Benefits and Impacts from Plan Implementation Organized by Goal

Goal	Within IRWM Region		Inter-Regional	
	Potential Benefits	Potential Impacts	Potential Benefits	Potential Impacts
Protect and Improve Water Quality	<ul style="list-style-type: none"> • Meet regulatory requirements • Reduced human and ecological exposure to pollutants • Preservation of aquatic habitat • Improvement of water-based recreation • Improved efficiency of drinking water supply and wastewater treatment • Benefits extend to broad Region, including DACs 	<ul style="list-style-type: none"> • Projects that involve construction could result in temporary impacts to aesthetics, air quality, biological resources, cultural resources, noise, soils, and transportation systems • No environmental justice nor DAC impacts are anticipated 	<ul style="list-style-type: none"> • Improved water quality in the Region would also benefit the downstream water users in the State of Nevada • Control of aquatic invasive species would reduce the potential for transport and deposition into other regions 	No inter-regional impacts anticipated
Protect the Community Water Supply and Treatment/Delivery System	<ul style="list-style-type: none"> • Reduced water demands • Reduced water loss • Enhanced supply reliability • Increased quantity of available water for beneficial uses • Less energy usage for treatment and delivery of water • Increased water storage • Improved fire protection capabilities • Benefits extend to broad Region, including DACs 	<ul style="list-style-type: none"> • Development of water supply projects could result in ground disturbance and have temporary impacts to aesthetics, air quality, biological resources, cultural resources, noise, soils, and transportation systems. • No environmental justice nor DAC impacts are anticipated 	No inter-regional benefits anticipated	No inter-regional impacts anticipated

Table 7-1 (cont.): Potential Benefits and Impacts from Plan Implementation Organized by Goal

Goal	Within IRWM Region		Inter-Regional	
	<i>Potential Benefits</i>	<i>Potential Impacts</i>	<i>Potential Benefits</i>	<i>Potential Impacts</i>
Manage Groundwater for Sustainable Yield	<ul style="list-style-type: none"> • Protection of recharge zones and improved groundwater recharge • Reduced water demands and/or groundwater pumping • Improved wellhead protection • Improved quality of recharge water • Public education • Continued monitoring of groundwater and groundwater flow • Benefits extend to broad Region, including DACs 	<ul style="list-style-type: none"> • Projects that involve construction could result in temporary impacts to aesthetics, air quality, biological resources, cultural resources, noise, soils, and transportation systems • No environmental justice nor DAC impacts are anticipated 	No inter-regional benefits anticipated	No inter-regional impacts anticipated
Contribute to Ecosystem Restoration	<ul style="list-style-type: none"> • Improved habitat function and quality • Reduced risk to native species from invasive species • Reducing peak flow • Reduced erosion and sedimentation, and improved water quality • Improved water supply • Improved fire protection capabilities • Benefits extend to broad Region, including DACs 	<ul style="list-style-type: none"> • Projects could have temporary negative impacts to aesthetics, biological resources, cultural resources, and soils. • No environmental justice nor DAC impacts are anticipated 	<ul style="list-style-type: none"> • Improved habitat function in the Region would benefit the downstream water users in the State of Nevada through improved water quality and flood control • Control of aquatic invasive species would reduce the potential for transport and deposition into other regions 	No inter-regional impacts anticipated

Table 7-1 (cont.): Potential Benefits and Impacts from Plan Implementation Organized by Goal

Goal	Within IRWM Region		Inter-Regional	
	<i>Potential Benefits</i>	<i>Potential Impacts</i>	<i>Potential Benefits</i>	<i>Potential Impacts</i>
Implement Integrated Watershed Management Throughout the Region	<ul style="list-style-type: none"> • Increased cooperation and coordination between organizations • Increased public education and engagement • Reduced flood risks • Improvements to watershed science for future benefits • Benefits extend to broad Region, including DACs 	No environmental justice nor DAC impacts are anticipated	<ul style="list-style-type: none"> • Increased cooperation and coordination with neighboring jurisdictions and jurisdictions that overlap with other regions, and with neighboring regions • Reduced flood risk for downstream water users in the State of Nevada • Improvements to watershed science for future benefits 	No inter-regional impacts anticipated
Actions to Adapt to Climate Change	Actions to improve adaptability to climate change are incorporated in the other types of projects described above, as appropriate.			
Actions to Reduce Greenhouse Gas Emissions	Actions to reduce greenhouse gas emissions are incorporated in the other types of projects described above, as appropriate.			

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Table 7-2: Potential Benefits and Impacts from Plan Implementation Organized by Project

Project Category	Within IRWM Region		Inter-Regional	
	<i>Potential Benefits</i>	<i>Potential Impacts</i>	<i>Potential Benefits</i>	<i>Potential Impacts</i>
Water Supply and Wastewater Projects	<ul style="list-style-type: none"> Enhanced supply reliability Increased quantity of available water for beneficial uses Reduced water demands Less energy usage for treatment and delivery of water Benefits extend to broad Region, including disadvantaged communities 	<ul style="list-style-type: none"> Development of water supply projects could result in ground disturbance and have temporary impacts to aesthetics, air quality, biological resources, cultural resources, noise, soils, and transportation systems. No environmental justice or DAC impacts are anticipated. 	<ul style="list-style-type: none"> Improved water supply reliability and reduced water demands within Region could impact regional and state-wide water supply reliability. 	No inter-regional impacts anticipated.
Stormwater and Flood Control Projects	<ul style="list-style-type: none"> Reduced human and ecological exposure to pollutants Improved efficiency of drinking water supply and wastewater treatment Preservation of aquatic habitat Improvement to agricultural users Improvement of water-based recreation Benefits extend to broad Region, including any disadvantaged communities 	<ul style="list-style-type: none"> Projects to improve water quality that involve construction could result in temporary impacts to aesthetics, air quality, biological resources, cultural resources, noise, soils, and transportation systems. No environmental justice or DAC impacts anticipated. 	<ul style="list-style-type: none"> Improved water quality in the Region would also benefit the downstream water users in the State of Nevada Reduced flood risk for downstream water users in the State of Nevada 	No inter-regional impacts anticipated

Table 7-2 (cont.): Potential Benefits and Impacts from Plan Implementation Organized by Project

Project Category	Within IRWM Region		Inter-Regional	
	<i>Potential Benefits</i>	<i>Potential Impacts</i>	<i>Potential Benefits</i>	<i>Potential Impacts</i>
Restoration Projects	<ul style="list-style-type: none"> • Improved habitat quality • Reduced risk to native species from invasive species • Improved water supply • Improved water quality • Benefits extend to broad Region, including any disadvantaged community • Potentially improved air quality • Improved efficiency of existing infrastructure • Reduced need for new infrastructure • Maximize beneficial use of resources • Benefits extend to broad Region, including any disadvantaged communities 	<ul style="list-style-type: none"> • Projects to remove invasive species could have temporary negative impacts to aesthetics, biological resources, cultural resources, and soils. • No environmental justice or DAC impacts anticipated. 	<ul style="list-style-type: none"> • Control of aquatic invasive species would reduce the potential for transport and deposition into other regions. 	No inter-regional impacts anticipated
Actions to Adapt to Climate Change	Actions to incorporate climate change will occur in conjunction with other types of projects described above, as appropriate.			
Actions to Reduce Greenhouse Gas Emissions	Actions to incorporate greenhouse gas emissions reduction will occur in conjunction with other types of projects described above, as appropriate.			

- Actions to Adapt to Climate Change. Projects that contribute to climate change adaptation include stormwater management, groundwater recharge, ecosystem resiliency, water conservation.
- Actions to Reduce Greenhouse Gas Emissions. Projects that contribute to greenhouse gas emissions include construction and improvement of bike trails, water conservation, energy efficiency, and increased vegetation for carbon sequestration.

7.1.2 Plan Beneficiaries

Beneficiaries of this IRWM Plan are anticipated to include residents of the Region, businesses, water suppliers, wildlife and habitats, downstream water users, and local, regional, State and Federal agencies. Benefits from many of the projects will extend beyond the immediate vicinity of the projects to include the entire Region, larger portions of the Region, and in some cases people and habitats outside of the Region.

Almost half of the projects, 27 of 60, are located within disadvantaged communities (DACs) or were identified by the project proponents as benefiting DACs in the Region. Projects benefiting DACs include implementing BMPs, improving erosion control, and improving trails and roadway shoulders to improve stormwater management and water quality and also improve aesthetics; replacing aging infrastructure and treatment facilities, and rehabilitating groundwater wells; installing water meters; controlling terrestrial and aquatic invasive species; supporting water conservation programs; and restoring meadows and SEZs.

The Washoe Tribe has been actively involved in the development of this IRWM Plan, and several projects will benefit them directly, such as through replacement of aging infrastructure, or indirectly such as through improved water supply and water quality along the West Fork Carson River. In addition to benefits for the Washoe Tribe, the Pyramid Lake Paiute are also anticipated to benefit through sediment reductions and control of aquatic invasive species in the Truckee River, which discharges to Pyramid Lake and supports the Lahontan and Paiute Cutthroat Trout populations.

7.1.3 Interregional Benefits

Implementation of this IRWM Plan is anticipated to have limited benefits to other regions in California as downstream water users are in Nevada and not California, and the Region is separated from other regions in California by mountain peaks. Some of the projects in the Lake Tahoe Basin are anticipated to benefit the entire Basin, including the Nevada side, and water users in Nevada may see benefits of plan implementation including water quality improvements, and reductions in peak flow.

Projects for the control and prevention of aquatic invasive species provide interregional benefits in both California and Nevada as they reduce the spread of these species to other waterbodies through water flow or inadvertent transport by visitors.

7.2 Impacts of Plan Implementation

Negative impacts that may be associated with the IRWM Plan projects include short-term, site specific impacts from construction or site grading; and long-term impacts associated with project operation. Tables 7-1 and 7-2 identify potential impacts of Plan Implementation as well.

Individual projects will evaluate the significance of any impacts through project-specific and/or programmatic environmental compliance processes that are consistent with the California Environmental Quality Act (CEQA) and, if applicable, the National Environmental Policy Act (NEPA). Under CEQA, impacts determined to be significant must be mitigated to a level of non-significance unless the lead agency makes findings of overriding consideration. As the IRWM Plan itself does not lead to the implementation of any specific projects, it is exempt from CEQA. The following provisions of the State CEQA Guidelines apply to IRWM Plans:

- Statutory Exemption (15262 for Feasibility and Planning Studies)
- Categorical Exemption (15306 for Information Collection)

For the purposes of this Plan, impacts are discussed at a screening level in this subsection. CEQA reviews performed for specific projects will evaluate impacts in the following topic areas in much greater detail.

- Aesthetics – Project-related construction activities and new infrastructure may affect aesthetics. However, it is likely that these activities would be in areas that are already disturbed, or would include mitigation measures that would return disturbed areas to their pre-construction conditions at a minimum.
- Air Quality – Short-term air quality impacts could result from construction of Plan projects. However, through the CEQA process potential air emissions would be minimized through application of BMPs identified by local air districts or other mitigation measures.
- Biological Resources – Short-term biological impacts could result from construction activities of Plan projects, as well as from non-native plant removal. These negative effects would be largely avoided or minimized through mitigation efforts related to CEQA. The IRWM Plan includes preservation and restoration of ecosystem health as one of the Plan goals, and therefore many projects would result in overall long-term benefits to biological resources despite any short-term impacts.
- Cultural Resources – Impacts to cultural resources (including historical, archeological, and paleontological resources) could result from construction activities from Plan projects. As part of the CEQA process for each project, mitigation measures will be developed to avoid or minimize these potential impacts.
- Geology and Soils – Plan projects with the potential to impact geologic resources would undergo geological feasibility studies, which would specify the appropriate engineering standards the contractor would have to comply with during construction. Compliance with these standards would mitigate project site geological and soil impacts.

- Hydrology and Water Quality – It is anticipated that impacts to hydrology and water quality would be generally beneficial because in the long-term, Plan projects are intended to improve water supply reliability and water quality. For short-term erosion or sedimentation, project-specific BMPs would be identified as part of the National Pollutant Discharge Elimination System (NPDES) permitting process.
- Land Use and Planning – The IRWM Plan was developed in coordination with other planning documents for the Region, including local and regional General Plans. Therefore, no significant land use changes or inconsistencies with policies are anticipated. It is hoped that the IRWM process will facilitate improvement of land and water use planning in the Region.
- Noise – Noise impacts could result from construction activities from some of the proposed Plan projects. However, through the CEQA process most of these activities would be minimized through mitigation efforts and no long-term noise impacts are expected.
- Population and Housing – No adverse impacts to population and housing are anticipated. IRWM Plan implementation would help to meet the water demands of the existing and anticipated future population.
- Public Services and Utilities – No adverse impacts to utilities are anticipated. Many of the Plan projects are intended to enhance water supply, water quality, and improve stormwater management and flood control. These types of projects would benefit the utilities and service systems in the Region.
- Recreation – Many of the Plan projects are intended to improve water quality and watershed health, and thereby indirectly improve recreational opportunities. However, some reduction in recreational opportunities may result from implementation of habitat restoration/improvement projects.
- Transportation and Circulation – Transportation and circulation could be temporarily impacted during construction of some of the Plan projects. Construction of projects located near roadways can result in temporary lane closures and detours. Traffic congestion may also temporarily increase due to transportation of equipment and workers. However, through the CEQA process most of these activities would be minimized and no long-term transportation and circulation impacts are expected.



Installation of New Waterline in the Street
(Photo courtesy of North Tahoe PUD)

NEPA has similar environmental review topics and if NEPA compliance is necessary, appropriate mitigations to address NEPA-specific concerns will be included during environmental document preparation.