

**PROPOSITION 1E STORMWATER FLOOD MANAGEMENT GRANT APPLICATION
CITY OF PALM SPRINGS
TAHQUITZ CREEK LEVEE RECONSTRUCTION
EXHIBIT E
ECONOMIC ANALYSIS: WATER QUALITY AND OTHER EXPECTED BENEFITS**

Description of Project

FEMA completed digital Flood Insurance Rate Maps (DFIRM's) for Riverside County, which were adopted August 28, 2008. As part of this process, FEMA required that communities provide evidence to demonstrate that levees meet the minimum requirements established in Title 44, Chapter 1 of the Code of Federal Regulations, Section 65.10. The Tahquitz Creek Levee has been identified as a "Provisionally Accredited Levee" ("PAL"), Levee ID 16, as the City has been unable to demonstrate that this levee meets all of the requirements set forth in 44 CFR 65.10. The levee does not meet freeboard and other requirements, and must be repaired and reconstructed in order to satisfy FEMA's requirements and ensure the levee continues to provide flood control protection to properties behind it, including the City's WWTP. The failure of the Tahquitz Creek levee during a 100-year storm represents a risk of releasing millions of gallons of untreated wastewater into the Tahquitz Creek, resulting in significant pollution of stormwater runoff and groundwater within Tahquitz Creek.

The Goals and Objectives of this Proposal is to allow for the repair and reconstruction of an existing flood control levee along the Tahquitz Creek within Palm Springs, CA, from its confluence with the Palm Canyon Wash extending upstream approximately 0.75 miles adjacent to the City's WWTP. The repair and reconstruction of the levee would ensure the levee satisfies federal requirements for levee construction established in 44 CFR 65.10, and that the levee would withstand the effects of a 100-year storm in Tahquitz Creek and provide flood control protection to the adjacent WWTP.

This Proposal includes one project – Tahquitz Creek Levee Reconstruction. As a single project, the Proposal has independent utility and provides a complete synergy and linkage of the Purpose and Need and Goals and Objectives of the Proposal. There are no complications associated with coordinating implementation or operation of various projects, and the City is the only implementing agency associated with this project.

The water quality benefits to be realized from this project can be realized solely through implementation of this one project.

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Cost Details

The overall estimated cost of this project is \$1,200,000. The estimated costs are identified on Table 6 included with Exhibit A – Work Plan, of this proposal. Generally, the costs are identified as follows:

Direct Project Administration Costs	\$50,000
Planning/Design/Engineering/ Environmental Documentation	\$400,000
Construction/Implementation	\$500,000
Environmental Compliance/ Mitigation/Enhancement	\$50,000
Construction Administration	\$100,000
Construction/Implementation Contingency	\$100,000
Total	\$1,200,000

Water Quality Benefits

Regional Context

Palm Springs is within the boundary of the Coachella Valley Regional Water Management Group (CVRWVG). The CVRWVG Region is located in central Riverside County, within the Colorado River Funding Area, as defined by the Department of Water Resources. The boundary for the CVRWVG Management Region is chiefly the same boundary as the Whitewater River Basin. The Integrated Regional Water Management (IRWM) program is a local water resources management approach directed by the California Department of Water Resources (DWR).

The Coachella Valley IRWM region is chiefly the same as the Whitewater River watershed, also known as the Coachella Valley. The region is about 65 miles long on a northwest-southeast trending axis and covers approximately 1,420 square miles. The area is drained primarily by the Whitewater River that flows southward to the Salton Sea at an elevation of approximately 220 feet below sea level. The region's watershed boundaries to the north and northwest are the rugged and barren mountain ranges of the Colorado Desert, the San Bernardino Mountains, Little San Bernardino Mountains, and Mecca Hills. The watershed boundaries to the east and south are Mortmar, the

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Salton Sea, and Travertine Rock. This eastern boundary is defined by the watershed that encloses all surface drainage emptying into the north end of the Salton Sea. The Salton Sea is not within the IRWM region. The southernmost boundary turns west from the Salton Sea and follows the CVWD political boundary to the watershed divide. The watershed boundaries to the south and west are the high, precipitous Santa Rosa Mountains and San Jacinto Mountains, which create an effective barrier against the easterly moving coastal storms. The western boundary is composed of a political line that separates Desert Water Agency and Mission Springs Water District from San Gorgonio Pass Water Agency.

The Coachella Valley IRWM region currently faces multiple potential water supply and quality issues, including rapid population and water demand growth; significant reliance on imported water supply; groundwater degradation; habitat loss; flooding; and water quality issues from a variety of sources including agriculture, urban runoff, and failing septic systems (see Chapter 3 Issues and Needs for a more detailed description of each issue). Thus, the IRWM Plan promotes collaborative water management efforts and outlines strategies for addressing the current water management issues within the Coachella Valley.

Surface waters of the Coachella Valley IRWM region consist of the Whitewater River Stormwater Channel (WRSC) and principal tributaries to the WRSC, including the San Gorgonio River, Snow Creek, Falls Creek, Chino Creek, Mission Creek, Morongo Creek, Tahquitz Creek, Andreas Creek, Palm Canyon Wash, Deep Canyon Creek, and the Palm Valley Channel. The WRSC and the majority of its tributaries are ephemeral streams, and are normally dry. Surface water from the above-mentioned creeks and rivers is almost entirely put to a beneficial use, such as groundwater recharge.

DWA receives about 5% of its water supply (or 2,500 AFY) through surface water sources, including Chino Creek, Snow Creek, and Falls Creek. These creeks are all tributary to the Whitewater River. CVWD also diverts mountain runoff from the Whitewater River Canyon near Windy Point to the Whitewater Spreading Facility for groundwater recharge. In addition, the Agua Caliente Band of Cahuilla Indians may divert surface water supplies from Tahquitz Creek, Andreas Creek, and the Whitewater River. Surface water that is not diverted by the tribe is put to beneficial use, such as groundwater recharge.

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Local Context – Tahquitz Creek

The City of Palm Springs is generally protected from flooding by the Whitewater River due to levees constructed on the southern and western banks of the Whitewater River adjacent to the City. Tahquitz Creek, however, is one the two most hazardous sources of flooding within the City of Palm Springs as portions of the stream are uncontrolled. Floodflows are not properly channelized and directed safely through the City along its entire length to its confluence with the Whitewater River.

The 100-year peak discharge of Tahquitz Creek at its confluence with Palm Canyon Wash (adjacent to the Tahquitz Creek Levee) is estimated at 8,000 cubic feet per second.

Wastewater Treatment – Recycling Water

The City of Palm Springs owns and operates a 10.9 million gallon per day wastewater treatment plant (WWTP). The WWTP is located immediately adjacent to Tahquitz Creek. Due to flooding experienced in its past, in 1984 the City constructed a concrete lined levee adjacent to its WWTP. However, in accordance with FEMA regulations established in 44 CFR 65.10, this levee does not meet standards necessary to ensure the levee adequately protects the WWTP from flooding within Tahquitz Creek.

Desert Water Agency, the City's local domestic water provider, began its recycled water program with the opening of its reclamation plant in 1988. Through that plant, DWA is able to take wastewater and treat it to service other needs. Through its recycling program, DWA provides irrigation water to golf courses, parks, medians and the Palm Springs High School. The use of recycled water in landscaping saves millions of gallons of potable drinking water. Water recycling also saves energy – only using a quarter of the energy required to pump groundwater from deep wells. Recycled water use protects our water supply since its use reduces the amount of nitrates which could reach our groundwater.

DWA's reclamation process is dependent upon the City's wastewater treatment process. Wastewater first goes to the City of Palm Springs' WWTP where it is initially treated before DWA accepts it for further treatment at its reclamation plant. DWA treats the water again before it is ready for irrigation use.

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Without the City's wastewater, DWA is unable to produce reclaimed water to satisfy its recycled users demand.

According to the City's 2010 Annual Report to the Colorado River Regional Water Quality Control Board (RWQCB), the City accepted and treated 2,069.51 MG (over 2 Billion gallons) of wastewater. Of the total wastewater treated, 607.903 MG (over 600 Million gallons) was discharged to groundwater recharge via percolation ponds, and 1,461.603 MG (almost 1.5 Billion gallons) was delivered off-site to DWA for further treatment and ultimate use as irrigation water as part of DWA's reclamation efforts. A copy of the City's 2010 annual report to the RWQCB is included as Attachment No. 1 to Exhibit D.

The City and DWA have an interdependent relationship on recycled use of wastewater for reclamation purposes. As indicated in its 2010 annual report to the RWQCB, the City provided over 1.5 Billion gallons of its wastewater to DWA for reclamation purposes – equivalent to over 70% re-use.

In the event a flood occurs in Tahquitz Creek which causes the Tahquitz Creek Levee to fail, the threat exists that flooding will inundate the City's WWTP which would have two significantly devastating results:

1. Render the City's WWTP inoperable, sending millions of gallons of untreated wastewater into Tahquitz Creek; and
2. Interrupt the City's ability to provide treated wastewater to DWA to satisfy its reclamation demand.

Project Benefits

Environmental

The Tahquitz Creek Levee Reconstruction project will ensure the City's WWTP remains protected from 100 year floods in Tahquitz Creek, allowing the City to continue effectively treating billions of gallons of wastewater, and maintaining delivery of treated wastewater to DWA for reclamation purposes.

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In addition, the risk of a failure of the existing levee has the potential to cause release of untreated wastewater into Tahquitz Creek. Tahquitz Creek has been identified by the RWQCB to have the following beneficial uses:

COLD – Cold Freshwater Habitat
REC1 – Contact Water Recreation
GWR – Ground Water Recharge
MUN – Municipal and Domestic Supply
REC2 – Non-Contact Water Recreation
WILD – Wildlife Habitat

In the event a flood occurs in Tahquitz Creek causing failure of the levee adjacent to the City's WWTP, and further causing discharge of untreated wastewater into Tahquitz Creek, the beneficial uses of Tahquitz Creek would be affected.

Economic

Maintaining DWA's supply of treated wastewater for its reclamation use also ensures DWA continues to satisfy its users demands, which also maintains DWA's recovery of costs through reclaimed water charges. DWA's current recycled water consumption rate is \$0.50 per 100 cubic feet. Using the City's 2010 annual report data, the City provided 1,461.603 MG (or 195,387,901 cubic feet) of treated wastewater to DWA for reclamation.

Applying DWA's consumption rate of \$0.50 per 100 cubic feet is equivalent to \$976,939.50 annually in revenue collected by DWA from its reclaimed water users.