Kings Basin Water Authority

Storm Water Resources Plan

December 2018

Adopted

Prepared for:
Kings Basin Water Authority
Fresno, California

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This Plan was adopted on March 20, 2019. Pursuant to direction from the State Water Resources Control Board, Table 3-1 and Appendix B were augmented with reference information, after adoption. These additions do not change the overall intention of the Plan; therefore, the Plan has not been re-adopted.

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Abbreviations

ACS ..... American Community Survey
ADWT ..... Advanced Water Treatment
AF ..... acre-feet
AFY ..... acre-feet per year
Basin Plan ..... Water Quality Control Plan for the Tulare Lake Basin
BMP ..... Best Management Practices
CASGEM ..... California State Groundwater Elevation Monitoring
CDFW ..... California Department of Fish and Wildlife
CERES ..... California Environmental Resources Evaluation System
CEMA ..... California Emergency Management Agency
CEQA ..... California Environmental Quality Act
CVC ..... Climate Vulnerable Community
CVP ..... Central Valley Project
CV-RWQCB ..... Central Valley Regional Water Quality Control Board
CV-SALTS ..... Central Valley Salinity Alternatives for Long-Term Sustainability
CWA ..... United States Clean Water Act
CWC ..... California Water Code
CWSRF ..... Clean Water State Revolving Fund
DAC ..... Disadvantaged Community
DBCP ..... Dibromo-chloro-propane
DDW ..... SWRCB Division of Drinking Water
DWR ..... Department of Water Resources
DWSRF ..... Safe Drinking Water State Revolving Fund
EDA ..... Economically Distressed Areas
EPA ..... Environmental Protection Agency
FEMA ..... Federal Emergency Management Agency
FMFCD ..... Fresno Metropolitan Flood Control District
GAMA ..... Groundwater Ambient Monitoring and Assessment
gpcd ..... gallons per capita per day
GSA ..... Groundwater Sustainability Agency
GSP ..... Groundwater Sustainability Plan

ICARP ..... Integrated Climate Adaptation and Resiliency Program
ILRP ..... Irrigated Lands Regulatory Program
IRWM ..... Integrated Regional Water Management
IRWMG ..... Integrated Regional Water Management Group
IRWMP ..... Integrated Regional Water Management Plan
KBWA/Authority ..... Kings Basin Water Authority
KRCD ..... Kings River Conservation District
KRWA ..... Kings River Water Association
KRWQC ..... Kings River Water Quality Coalition
LID ..... Low Impact Development
MEP ..... maximum extent practicable
MHI ..... Median Household Income
M&I ..... Municipal & Industrial
MS4 ..... Municipal Separate Storm Sewer Systems
NAWQA ..... National Water Quality Assessment
NGO ..... Non-Governmental Organization
NPDES ..... National Pollutant Discharge Elimination System
NPS ..... non-point source
NRCS ..... Natural Resources Conservation Service
Reclamation ..... United States Bureau of Reclamation
RWQCB ..... Regional Water Quality Control Board
SB ..... Senate Bill
SDAC ..... Severely Disadvantaged Communities
SDWA ..... Safe Drinking Water Act
SGMA ..... Sustainable Groundwater Management Act
SHE ..... Self-Help Enterprises
SRA ..... Source Reduction Assistance
SSJVWQC ..... South San Joaquin Valley Water Quality Coalition
SWAMP ..... Surface Water Ambient Monitoring Program
SWGP ..... Storm Water Grant Program
SWMPA ..... Storm Water Management Planning Act
SWP ..... State Water Project
SWRCB ..... State Water Resources Control Board

SWRP ..... Storm Water Resources Plan
TCP 1,2,3-trichlorpopane
TMDL ..... Total Maximum Daily Load
USDA ..... United States Department of Agriculture
USGS ..... United States Geological Survey
UWMP ..... Urban Water Management Plan
USFWS ..... US Fish and Wildlife Service
WaterSMART ..... Sustain and Manage America's Resources for Tomorrow Program
WDR ..... Waste Discharge Requirements
WRFP ..... Water Recycling Funding Grant and Loan Program
WWDP ..... Water and Wastewater Disposal Program

1 Introduction

The Kings Basin Water Authority (Authority or KBWA) brings agencies and groups together to coordinate and collaborate on regional water management in the Kings Basin. This Storm Water Resource Plan (SWRP) is prepared for use by all Members and Interested Parties within the Kings Basin (as discussed in the Authority's Integrated Regional Water Management Plan) and as required by the Storm Water Management Planning Act (SWMPA) and Senate Bill 985 (SB985). The SWMPA is implemented through Water Code Section 10563 and focuses on diverting runoff to publicly owned sites that can clean, store, infiltrate, and/or use the runoff.

1.1 Background

Historically, water management in the Kings Basin has been limited to independent operations by local water agencies and individual water users. Local agencies initiated a process of regional cooperation in 2001 and prepared an Integrated Regional Water Management Plan (IRWMP) in 2007. This regional effort continued to grow and evolved into the formation of the Upper Kings Basin Integrated Regional Water Management Authority (Kings Basin Water Authority, KBWA, or Authority) in 2009. The region and its IRWMP were accepted by the Department of Water Resources (DWR) during the IRWMP Regional Acceptance Process of 2009.

The 2007 IRWMP was updated in 2012 to comply with new IRWMP standards established by DWR. It described the new governance structure, document changes in policies and procedure, and included information on new stakeholders and their input on water management issues. The IRWMP was updated again in 2018 to comply with new requirements. As of 2018, the Authority included 17 official members and 41 interested parties.

Senate Bill 985, "the Storm Water Management Planning Act, implemented through Water Code Section 10563, substantively focuses on diverting runoff from existing storm drains, channels, and conveyance structures to sites (particularly publicly owned sites) that can clean, store, infiltrate and/or make productive use of the runoff." A watershed-based SWRP must comply with the relevant Water Code provisions in order for individual storm water and dry-weather runoff capture projects in the Plan to be eligible for bond funds. Funding for construction of watershed projects is available from the State of California through Proposition 1, the water bond measure approved by voters in November 2014, which authorized $200 million in grants for multi-benefit storm water management projects.

Water Code Section 10563(c)(1) requires agencies to prepare and adopt an SWRP as a condition for receiving funds for storm water and dry-weather runoff capture projects from any bond measure approved by voters after January 2014. The Kings Basin Integrated Regional Water Management Group (IRWMG) decided to develop this SWRP to coordinate with the IRWMP update and allow stakeholders in the area to be eligible to secure grant funds for constructing watershed projects beneficial to region.

1.2 Purpose and Need

The currently mandated approach to storm water management, based on local watershed management and known as Low Impact Development (LID), seeks to replicate natural hydrology and watershed processes by managing storm water and dry weather runoff onsite or within the

watershed where rainfall occurs. Properly implemented, the LID approach can yield multiple water quality benefits both by reducing the volume of runoff delivered to receiving waters and providing sedimentation and filtration to runoff reaching receiving water, thus reducing the total load of pollutants discharged.

Traditional approaches to storm water management have focused on implementation of management practices and limited treatment prior to conveyance off-site and ultimately into percolation/evaporation basins or to surface waters. The Municipal Separate Storm Sewer Systems (MS4s) and flood control infrastructure used for this purpose has been mostly successful in terms of flood control and in providing some degree of treatment; however, these traditional approaches do not fully address the water quality impacts from storm water discharges and tend not to provide multiple benefits such as water supply augmentation and ecological enhancement of the local watershed.

Many of the agencies within the Authority boundary have had storm drainage master plans for their own service areas for many years. All of these plans, developed using traditional methods and approach, have emphasized capture and control of storm water within the limits of the agency and management of upland runoff only to the extent that the runoff has affected the agency's service area. Areas outside these agencies have been mostly left without managed storm water controls, and there has not been any inter-agency project coordination or watershed-based storm water planning.

In addition, the transport of storm water from the location of rainfall via constructed municipal storm drain systems (pipelines, reinforced channels, outfalls, and similar facilities) has caused downstream hydromodification and destabilization of surface water bodies, which has impacted beneficial uses of those receiving waters.

Watershed-based approaches to storm water management can also yield non-measurable social and community benefits that traditional projects do not provide. The watershed approach to storm water management is in accordance with recent regulatory compliance approaches mandated by the US Environmental Protection Agency (EPA) and implemented by the Regional Water Quality Control Boards, and the State Water Resources Control Board's (SWRCB's) guiding principles that view storm water and dry-weather runoff as resources, potentially contributing numerous benefits in addition to flood control, including:

- *Supply of fresh water to surface water bodies to enhance stream flows (that are hydrologically connected to groundwater aquifers) and to sustain aquatic life and wildlife habitats;*
- *Supply fresh water to streams that are hydrologically connected to groundwater aquifers;*
- *Recharge of groundwater aquifers through pervious urban or agricultural areas to support sustainable groundwater levels and increase local water supplies;*
- *Supply of fresh water to increase recreational uses including hunting, swimming, fishing, and boating;*
- *Augmentation of water supplies through rainwater harvesting and/or recharge;*
- *Elimination or minimization of erosion and/or destabilized land; and*
- *Minimization of hydromodification (unnatural alteration of natural drainage features) of streams, rivers, wetlands, and lakes.*

The nature of water quantity and water quality impacts of storm water discharges varies from region to region; therefore, municipalities and other participating stakeholders may identify ways to tailor watershed storm water management measures to best address site-specific watershed conditions while complying with regulatory requirements to control storm water discharges. The overall objective of this Plan is to provide baseline requirements required as a condition of receiving funding of storm water and dry weather runoff capture projects funded partially or entirely with State funds. The objectives set forth in this Plan will not necessarily be applied to all individual projects within the Basin.

This Plan addresses existing regional watershed issues, identifies natural watershed processes and problems, and presents solutions to recognized problems by proposing projects. The proposed projects are described conceptually in the submitted Project Forms and include groundwater recharge, flood reduction, wetland enhancements, stream restoration, and habitat production. The Project Submittal Forms provide high-level project profiles, enabling each project to be evaluated and ranked for prioritization.

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2 Watershed Identification

The Kings Basin SWRP watershed is a portion of the Tulare Lake Basin hydrologic region which includes portions of Fresno, Tulare, and Kings counties. This SWRP was developed by the Authority with substantial collaboration from its Member Agencies, each of which manage portions of the overall Kings Basin watershed. This SWRP relies upon and is coordinated with the IRWMP, also prepared by the Authority. The Authority includes the agencies shown in **Table 2-1**.

Table 2-1. Kings Basin Water Authority Members and Interested Parties

Members	Interested Parties	
Alta Irrigation District	Armona Community Services District	Liberty Canal Company
City of Clovis	Bakman Water Company	Liberty Water District
City of Dinuba	Biola Community Services District	London Community Services District
City of Fresno	California Native Plant Society	Malaga County Water District
City of Kerman	California State University, Fresno	Mid-Valley Water District
City of Parlier	City of Kingsburg	North Fork Kings Groundwater Sustainability Agency
City of Reedley	City of Orange Cove	
City of Sanger	City of San Joaquin	Orosi Public Utility District
City of Selma	Community Water Center	Pinedale County Water District
County of Fresno	County of Kings	Reed Ditch Company
County of Tulare	Crescent Canal Company	Riverdale Irrigation District
Consolidated Irrigation District	Cutler Public Utility District	Riverdale Public Utility District
Fresno Irrigation District	East Orosi Community Services District	Sanger Environmental Fund
Fresno Metropolitan Flood Control District	Easton Community Services District	Self-Help Enterprises
Kings County Water District	El Rio Reyes Conservation Trust	Sierra Club, Tehipite Chapter
Kings River Conservation District	Hardwick Water Company	Sierra Resource Conservation District
Raisin City Water District	James Irrigation District	Sultana Community Services District
	Kings River Conservancy	Terranova Ranch, Inc.
	Kings River Water Association	Tulare Basin Wildlife Partners
	Laguna Irrigation District	University of California Cooperative Extension – Fresno County
	Lanare Community Services District	
	Laton Community Services District	

2.1 Watershed Boundaries

The Valley slopes very gently from northeast to southwest. The high ground is in the northeast, adjacent to the San Joaquin River, meaning that very little of the region actually drains directly to the San Joaquin River. The overall region is nearly, but not precisely, bounded on the south by the Kings River and on the west by the man-made extension of the North Fork of the Kings River, known as Fresno Slough.

The SWRP boundary is shown on **Figure 2-1**. The area is within the San Joaquin Valley Basin, including all of the Kings (Basin 5-022.08) Subbasin and portions of the Kaweah (Basin 5-022.11)

and Tulare Lake (Basin 5-022.12) Subbasins as defined by the DWR. This boundary does not include the entire upland area of some watersheds, nor does it include all of the lands over which some watersheds flow as they go to the Kings and San Joaquin Rivers for drainage to the ocean. Where there are upland or downslope areas involved, these are mentioned in the discussion of the watershed but are not rigorously analyzed.

A large portion of the San Joaquin Valley groundwater basin, currently in a state of critical overdraft, underlies the Authority's boundary. Therefore, beneficial storm water management by member agencies, including projects that recharge the groundwater basin or otherwise contribute positively to groundwater balance, will potentially benefit others within the region.

2.2 Internal Boundaries/Neighboring Watersheds

2.2.1 Municipalities and Local Agencies

The boundary overlaps portions of three counties: Fresno, Tulare, and Kings and their associated Local Agency Formation Commissions. Additionally, several municipalities are within the boundary, including the cities of Fresno, Clovis, Dinuba, Kerman, Kingsburg, Parlier, Reedley, Sanger, and Selma and the communities of Caruthers, Orange Cove, Riverdale, San Joaquin, Sultana, and Tranquillity. Many of these municipalities are responsible for water, wastewater, and storm drain services, as further discussed in the IRWMP.

2.2.2 Nearby IRWMs

The surrounding IRWMs are shown in **Figure 2-2**. The Authority boundary is adjacent to four other IRWM planning regions: Madera, Southern Sierra, Kaweah River Basin and Westside-San Joaquin. Members Agencies have a long history of open communication and coordination of storm water, surface water, and groundwater management on inter-regional, regional, and local scales, which predates the IRWM program.

2.2.3 Areas Not Included

Two nearby agencies, located within the KBWA boundary, have prepared separate plans and the areas covered therein are not specifically included in the KBWA SWRP. The Fresno Metropolitan Flood Control District (FMFCD) has prepared a functional equivalent document, which has been reviewed and concurred with by the SWRCB. The Authority worked with FMFCD staff to help assure coordination with its work and to avoid gaps and overlaps in covered areas. FMFCD identified storm water management projects within its service area and requested their inclusion and ranking along with the other projects from Authority agencies in this Plan. The KBWA and FMFCD will continue to coordinate a combined project list. Additionally, Tulare County has prepared an SWRP for a portion of the county, entitled *Cottonwood Creek Storm Water Resource Plan*. It was released for public review and comment in September 2018 and is anticipated to be adopted by the end of 2018. The area included in the Cottonwood Creek SWRP is not included in the KBWA SWRP. **Figure 2-1** illustrates the KWBA SWRP boundary and those two mentioned above.

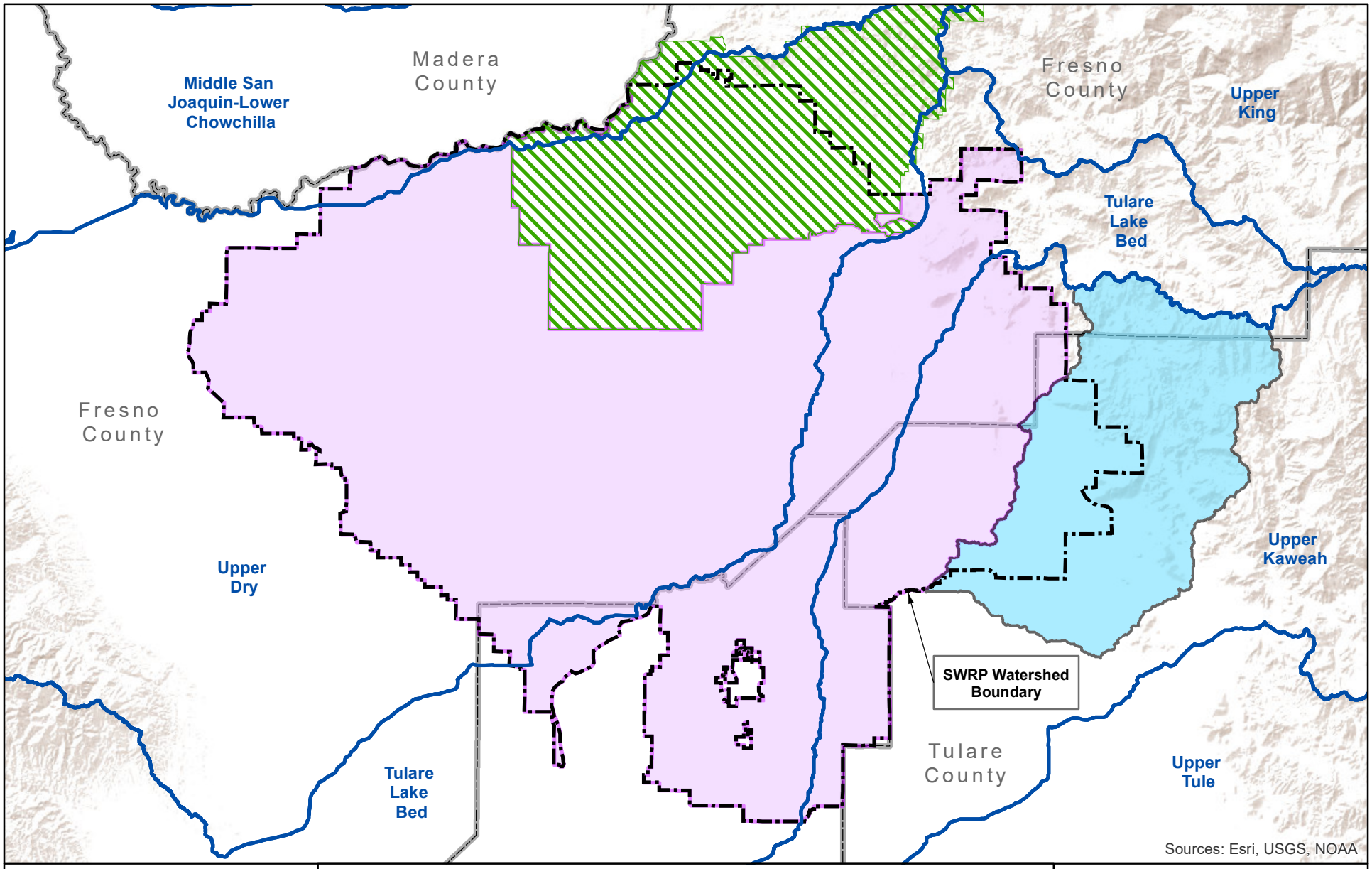

Figure 2-1

Kings Basin SWRP

Watershed and Boundary Map

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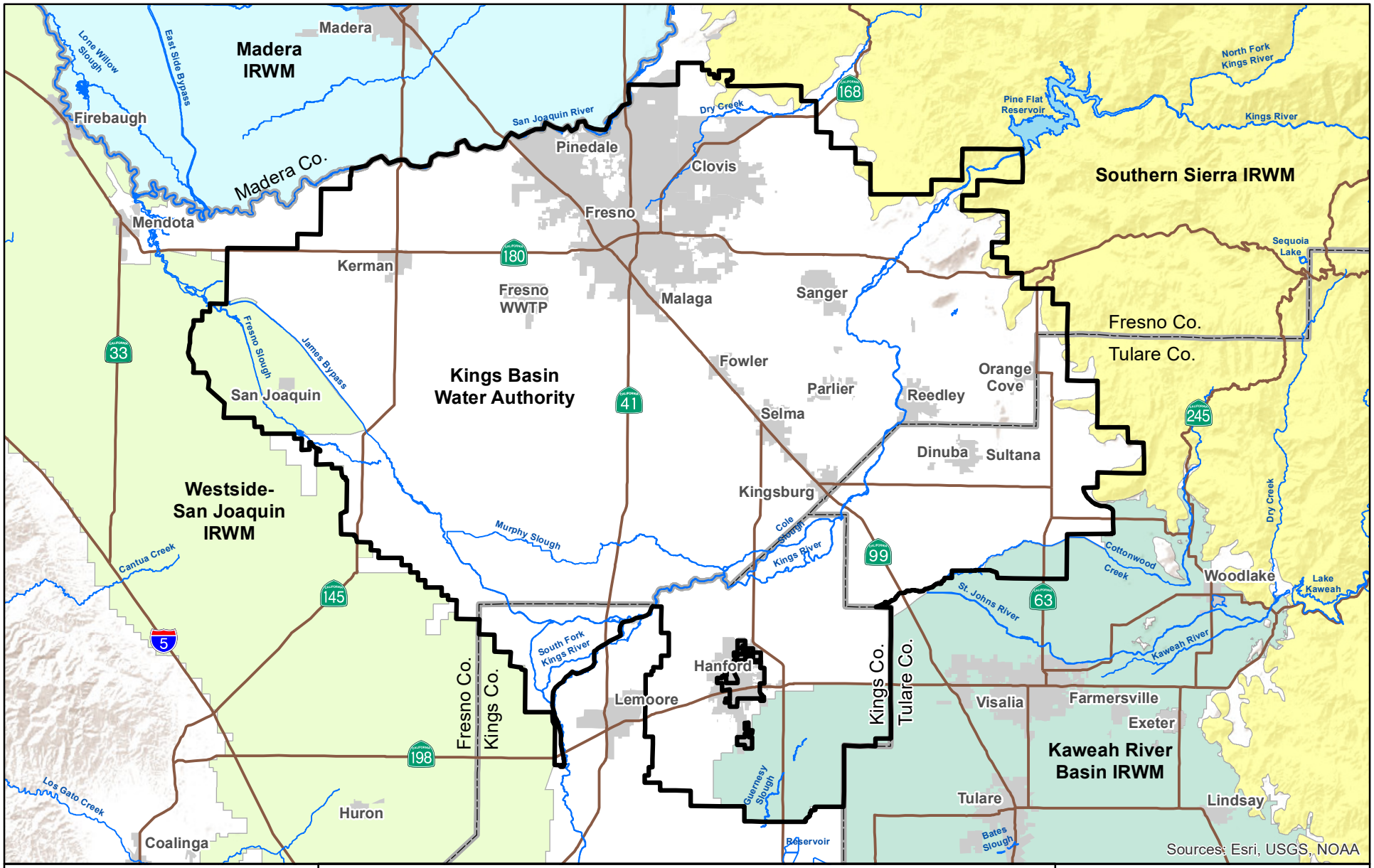

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- Kings Basin IRWMP
- City
- County
- Kaweah River Basin IRWMP
- Madera IRWMP
- Southern Sierra IRWMP
- Westside-San Joaquin IRWMP

Figure 2-2

Kings Basin SWRP

Neighboring IRWMs and Agencies

11/15/2018 : \\ppeng.com\pzdata\Clients\Upper Kings Basin IRWMA - 2048\20481602 - 2016 KBWA IRWMP Annual Report\GIS\Map\Report Maps\Fig2_2_neighboring_IRWMPs_updated.mxd

2.3 Importance of Storm Water Planning

The watershed and sub-watersheds within this SWRP include a variety of stakeholders including local agencies, municipalities, disadvantaged communities (DACs), and non-profit organizations that have an interest in improving the water resource reliability and working collaboratively. The SWRP process and the selection of this boundary provides an appropriate method of considering these interests, facilitating cooperation, and developing solutions on a regional scale.

2.4 Water Quality Priorities

2.4.1 Surface Water Quality Priorities

Water quality priorities for the Plan area focus on maintaining and enhancing the beneficial uses. Surface water in the area is used primarily for habitat and agriculture. This water is generally high quality; however, limitation and control of pesticide residue, toxicity, and sediment are priorities.

Pollution can enter a water body from point sources such as wastewater treatment plants and industries that directly discharge to a waterway and also from nonpoint sources (NPS) which enter the waterways over a broad area. Examples of NPSs include runoff from a municipal storm drain system and agricultural farmland or grazing areas located adjacent to stretches of the waterway. Some NPS contaminants are naturally occurring in local rocks and soil, such as salts, boron, and heavy metals, including arsenic, chromium, and selenium. Natural sources of nitrates also occur.

The Federal Clean Water Act (CWA) contains two strategies for managing water quality including: (1) a technology-based approach that envisions requirements to maintain a minimum level of pollutant management using the best available technology; and (2) a water quality-based approach that relies on evaluating the condition of surface waters and setting limitations on the amount of pollution that the water can be exposed to without adversely affecting the beneficial uses of those waters. Section 303(d) of the CWA requires that the States make a list of waters that are not attaining standards after technology-based limits are put into place. Impaired water bodies with Total Maximum Daily Load (TMDL) assignments within the Kings River watershed are listed in **Table 2-2**.

Table 2-2. 2010 303(d) List of Impaired Water bodies within the Kings River watershed

Water Body	Pollutant	TMDL Range	Potential Sources	TMDL Completion
Kings River below Pine Flat	Chloropyrifos	0.015-0.025 µg/L	Pesticide residue	2021
	Unknown Toxicity	Uncertain	Uncertain	

Source: State Water Resources Control Board, 2010
http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

The Federal CWA, as well as the State Porter-Cologne Water Quality Control Act, requires water quality control plans to establish water quality standards which address beneficial uses of water sources. The Central Valley Regional Water Quality Control Board (CV-RWQCB) has established and adopted the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan). The Basin Plan describes designated beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives. Beneficial uses, together with their corresponding water quality objectives, address federal regulatory criteria

for water quality standards. Hence, the Basin Plan serves as a regulatory reference for meeting both State and Federal requirements for surface and groundwater water quality control in the Tulare Lake Basin.

Both the Kings and San Joaquin river supplies, major sources of annual groundwater recharge, are considered to be very high-quality when the water is released from Pine Flat Dam and Friant Dam, respectively. Some other streams and creeks flow into the Basin, but their flows are mostly intercepted by existing flood control structures such as Fancher Creek Dam and the water diverted to one of the major rivers. Because the two rivers are both dammed above the Basin, the natural sediment load caused by stream runoff is largely dropped in the two reservoirs, making the water released downstream very low in sediment.

The San Joaquin River from Friant Dam to Mendota Pool is listed on the 303(d) List of Impaired Water Bodies for Invasive Species and pH. The Kings River from Pine Flat Reservoir to Island Weir is listed on the 303(d) List of Impaired Water Bodies for Alkalinity as CaCO3 and from Island Weir to Stinson and Empire Weirs for Molybdenum. Alkalinity as CaCO3 can reduce the water supply's ability to buffer against pH changes. Molybdenum may contribute to an illness similar to grout with long-term exposure.

2.4.2 Groundwater Quality Priorities

Groundwater in the Plan area is used primarily for municipal, agricultural, and industrial supplies. Groundwater quality is considered acceptable for most of the beneficial uses in much of the area, though some areas have impairments that affect beneficial uses. In some cases, impairments can be mitigated through blending water sources or treatment. In certain parts of the study area, there are issues with nitrates, Dibromo-chloro-propane (DBCP), arsenic, perchlorate, hexavalent chromium and 1,2,3-trichlorpopane (TCP) at certain aquifer depths.

Nitrate contamination in the study area has primarily been in localized locations, not region-wide. Despite increased regulations managed through the RWQCB and SWRCB, many aquifers still exhibit nitrate levels above the drinking water action levels. Nitrates are treatable by filtration and by source blending with higher quality waters.

DBCP is a nematicide that was used primarily on grape vineyards in the 1970s. Once it began showing up in groundwater wells, its use was prohibited, and control standards were implemented in the early 1980s. Whereas the original drinking water action level was 1.0 mg/l, extreme concern over its toxicity and improving measurement technology led to the standard quickly dropping to 1.0 µg/l and later 0.2 µg/l. Primary treatment of DBCP is through use of granular activated carbon filtration.

Other pesticides and herbicides are also found in the region's groundwater. These include atrazine; bromacil; 2,4-DP; diazinon; 1, 2-dibromoethane; dicamba; 1, 2-DCP; diuron; prometon; prometryn; propazine; and simazine. With the exception of diazinon, these chemicals are applied directly to the soil rather than to the plants, but with the exception of DBCP, groundwater concentrations rarely exceed drinking water standards. Most groundwater pesticide residue is found on the east side of the Valley, attributable to the coarse, granular soils which allow for relatively rapid infiltration to a relatively shallow groundwater table. On the west side, the fine-grained soils lead to much slower infiltration and the groundwater tables are typically much deeper. The longer residence times resulting from these conditions allow for natural degradation reactions to eliminate the measurable pesticide residues.

Arsenic is a naturally occurring compound that does not deteriorate. The areas with higher concentrations are concentrated in the western and southern portions of the region. The maximum contaminant level for Arsenic is 0.010 milligrams per liter (mg/L) or 10 micrograms per liter (µg/L). Long-term methods for mitigating arsenic include avoidance, blending, utilizing treated surface water, or treatment technologies, such as ion exchange, activated alumina, reverse osmosis, enhanced lime softening, and enhance coagulation/filtration.

Perchlorate can be found naturally in the environment; however, it is most often introduced by humans in some way. Hexavalent Chromium found in the environment is frequently caused by man-made releases either into the air or onto soil, both of which can affect groundwater quality. 1,2,3,-trichloropropane is recently a regulated constituent and can be nearly entirely connected back to human causes. All constituents discussed above can be mitigated either through treatment, blending or avoidance.

2.5 Surface and Groundwater Resources

The major source of surface water supplies for the region is from the Kings River. Some additional water is supplied to Member agencies in the easterly part of the Authority boundary from the San Joaquin River by the Central Vallley Project (CVP) Friant Division via the Friant-Kern Canal. Surface water is distributed by several local irrigation districts within the watershed. Service areas for both CVP Friant Division and Kings River water are tightly defined, and no water may be delivered outside the designated “Place of Use,” meaning much of the plan area is without surface water completely. The areas without surface water rely entirely on groundwater for supply.

The Kings Basin is a large groundwater subbasin located within the southern part of the San Joaquin Valley Basin in the Central Valley of California. The groundwater basin boundaries as defined in the DWR Bulletin 118 are shown in Figure 3-1 of the 2018 KBWA IRWMP. The Kings subbasin covers an area of 1,530 square miles. This SWRP includes the majority of the Kings Groundwater Basin, which has been determined by DWR to be critically overdrafted and identified as a high priority basin under the Sustainable Management Groundwater Act (SGMA). Groundwater remains the primary source for municipal and industrial demands in the SWRP area. Of note, the cities of Fresno and Clovis have surface water treatment facilities, but these cities are within the FMFCD Functional Equivalent SWRP area identified in Figure 2-1. Continued urban growth and increased demand for both municipal and agricultural water through the decades has led to heavy reliance on groundwater wells to create what has been considered a reliable water supply.

The agricultural demands within the SWRP are primarily permanent crops.

2.6 Local Potable Water Suppliers

Potable water is provided within the planning area by municipalities, local special districts, and public utility companies. These are listed in **Table 2-3**.

Table 2-3. Water Suppliers and Volumes

Water Supplier	Annual Volume (AF)
City of Clovis (2015 UWMP, 2015 deliveries)	20,030
City of Dinuba (2015 UWMP, 2015 deliveries)	4,850
City of Fresno (2015 UWMP, 2015 deliveries)	111,710
City of Kerman (2010 UWMP, 2015 projection)	4,170
City of Kingsburg (2015 UWMP, 2015 deliveries)	2,570
City of Orange Cove*	1,530
City of Parlier*	2,440
City of Reedley (2015 UWMP, 2015 deliveries)	3,980
City of Sanger (2010 UWMP, 2015 projection)	22,290
City of San Joaquin (City of San Joaquin 2040 Community Plan, 2009 deliveries)	2,160
California Water Service Company (City of Selma) (2015 UWMP, 2015 deliveries)	3,950
County of Fresno (2015 deliveries to 22 water systems)	2,350
County of Tulare* (3 water systems)	320
Armona Community Services District (County of Kings 2009 General Plan, Armona Community Plan)	570
Bakman Water Company (2015 UWMP, 2015 deliveries)	3,150
Biola Community Services District	360
Cutler Public Utility District*	1,110
East Orosi Community Services District*	110
Hardwick Water Company*	20
Lanare Community Service District*	130
Laton Community Services District*	410
London Community Services District*	420
Malaga County Water District (2016 deliveries)	1,370
Orosi Public Utility District*	1,940
Pinedale County Water District (2015 deliveries)	2,070
Sultana Community Services District*	200
Riverdale Public Utility District*	700
Notes: * Estimated based 198 gpcd[1] and 2015 population estimate	

2.7 Land Use, Native Habitat, Water Bodies, and Open Space

Much of the Kings Basin is developed as agriculture. Irrigated lands make up about 480,000 acres within the region or 79 percent of the total. A wide variety of crops are grown. Most of these require irrigation water during the dry season which runs from April through October. An extensive

[1] California Water Plan, Urban Water Use Efficiency, California Department of Water Resources, July 29, 2016

network of canals transports water from the Kings River to the irrigated lands and available recharge facilities.

As noted in 2.2.1, the region also includes numerous urban areas, including the Fresno-Clovis metropolitan area, which has a population approaching 1 million people, and small communities. Virtually all of these cities and communities supply municipal water, primarily sourced from the groundwater.

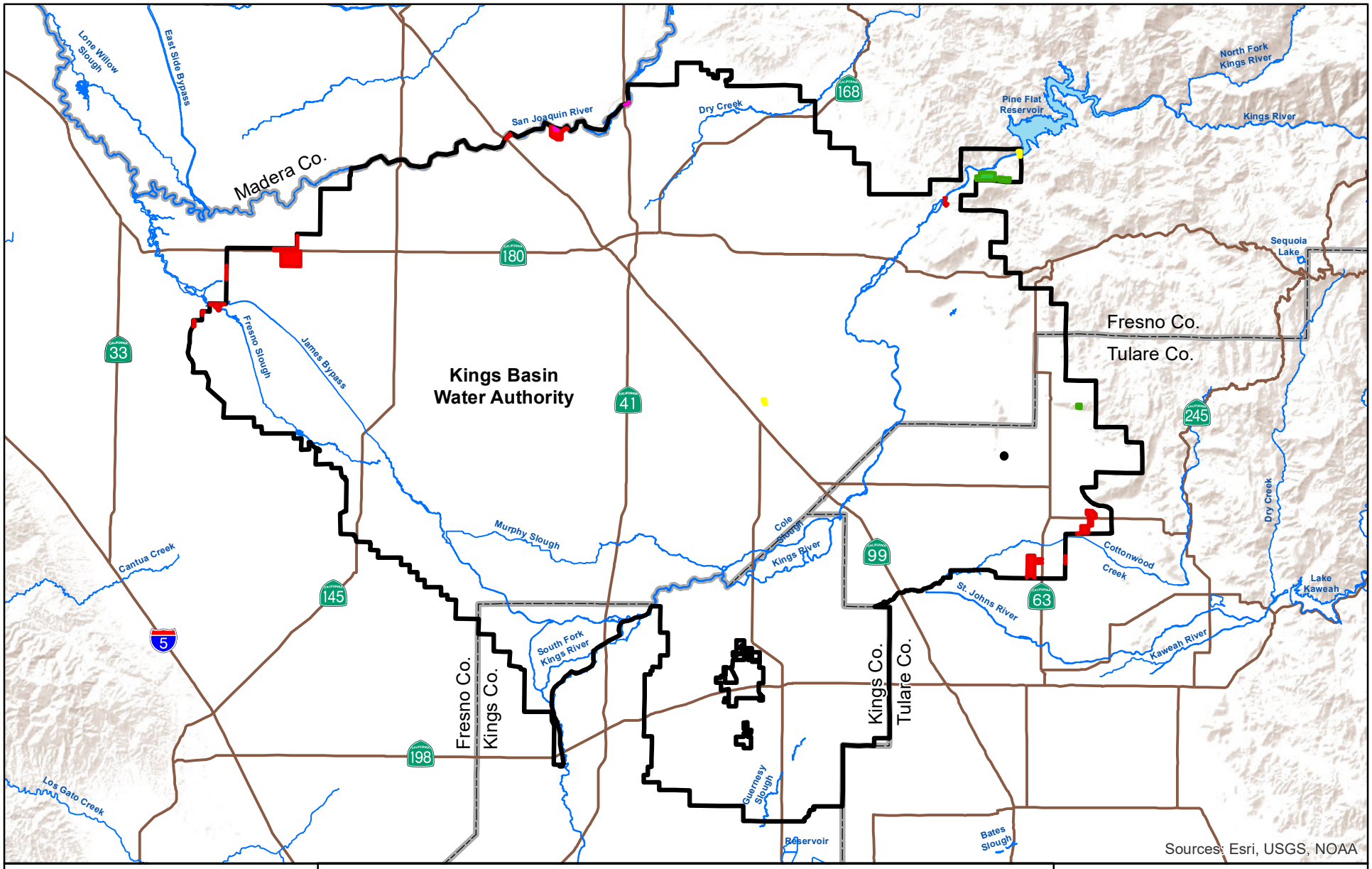
The remaining native land within the Kings region is primarily semi-desert and desert landscape. Geology varies throughout the area, as does wildlife. Numerous creeks run out from the Sierra Nevada foothills and either into the two major rivers or onto the Valley floor. There are a number of state and federally protected areas including river habitat areas, parks, and wildlife refuges. See **Figure 2-3**.

The Kings River corridor makes up the predominance of riparian and wetland habitat in the region, as well as providing the main corridor for fish and wildlife movements.

The natural flow of the Kings River, together with essentially all the flow from the three rivers south of the Kings (the Kaweah, the Tule, and the Kern) historically flowed into the Tulare Lake Basin, which has no natural outlet. Over time, two outlets have been created. The North Fork of the Kings River is a man-made channel which joins with the San Joaquin River near Mendota.

The Kings River is impounded by a series of dams as it flows down from its headwaters in the high Sierra mountains with the largest and most important being the last: Pine Flat dam and reservoir, a 1-million acre-foot reservoir located just above Piedra in the Sierra foothills. Pine Flat is an Army Corps of Engineers flood control facility protecting the cities of Reedley and Kingsburg and other downstream areas. Downstream of Pine Flat Dam, the river flows generally southwest out of the foothills and through the cities of Reedley and Kingsburg. Along the way, portions of its flow are diverted by more than two dozen irrigation districts and canal companies. The river supports many types of vegetation and its riparian corridor is home to both common and sensitive species.

Above Pine Flat, the Upper Kings River includes world-class rapids and is designated a Wild and Scenic River. Near the river's headwaters, at the 13,000-foot elevation in the Sierras, the South Fork of the Kings River flows through Kings Canyon, which, in places, is more than 8,000 feet deep, making it the deepest canyon in the United States. The canyon is surrounded by its namesake Kings Canyon National Park, which draws visitors from around the world to see giant sequoia and numerous animal species, including several that are designated rare and endangered.



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CPAD 2014

California Department of Fish and Wildlife

Other Federal

Other State

US Bureau of Land Management

Figure 2-3

Kings Basin SWRP

State and Federal Protected Areas

11/15/2018 : \\ppeng.com\pzdata\Clients\Upper Kings Basin IRWMA - 2048\20481602 - 2016 KBWA IRWMP Annual Report\GIS\Map\Report Maps\Fig2_3_StateFederal_ProtectedAreas.mxd

2.8 Natural Watershed Processes

Before the Valley was developed for agriculture and with controlled irrigation in the late 1800s, the watershed was unimpaired and surface water from the Kings, Kaweah, Tule, and Kern Rivers flowed out of the Sierra into the San Joaquin Valley and into Tulare Lake. At one time, the lake measured nearly 100 miles across and allowed navigation by boat from the San Joaquin River Delta near Stockton to the Bakersfield area.

As agriculture continued to develop and was mechanized, surface flows were diverted and controlled by dams, canals, and pipelines and used to irrigate crops all across Kings, Tulare, and Kern Counties. As urban areas grew, particularly on the east side of the Valley, impervious areas increased and created additional runoff.

Much of the native soil on the east side of the Valley is sandy or loamy and in their native state allowed significant percolation. As those soils were covered over with rooftops and paving, the volume of percolation decreased, which has had a negative effect on groundwater recharge. The westerly parts of the Valley have always been relatively impervious, being of silty and clay soils which have minimal percolation rates.

Throughout the 20th century, man-made dams were constructed on both rivers to provide flood protection, hydroelectric power, and water supply. The mix of these purposes and benefits varies depending upon the dam and which agency provided construction funding. For example, dams built by the US Bureau of Reclamation (including the Friant Dam on the lower San Joaquin River) are focused on water supply and water storage, while dams built by the Army Corps of Engineers (including Pine Flat) have flood control as their primary purpose with water resources as a secondary goal. Neither of these dams had any hydroelectric generation capability when they were constructed; however, over the years, generators have been added to both, benefitting the water users in both watersheds.

Other natural watershed interruptions include transportation infrastructure such as vehicle and railroad corridors. These corridors add additional impervious surfaces and create barrier locations where previously free flowing surface waters are now engineered into localized paths concentrating flow into smaller portions of the Valley and changing sediment deposition patterns.

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3 Compliance with Water Quality Standards

Storm Water Resource Plans must comply with applicable water quality provisions developed and implemented by the United States EPA, SWRCB, CV-RWQCB and must take into consideration the concerns and needs of local agencies, non-profit organizations, and constituents. These agencies are tasked with oversight, permitting, enforcement, and monitoring. The following sections discuss, in detail, the activities that may generate or contribute to the pollution of storm water and identifies permits needed to construct potential projects as they relate to compliance with TMDL limits, National Pollutant Discharge Elimination System (NPDES) permits, and Waste Discharge Requirements (WDR) for the impacted agencies and areas.

3.1 Activities that Impair Storm Water Quality

Sources of pollution can include NPS, such as runoff from developed areas, agricultural farmland, confined animal units, and/or grazing areas. Contaminants from these sources are often naturally occurring in rocks and soil, including minerals; heavy metals such as arsenic, chromium and selenium; and nutrients. Pollution can also originate from point-sources where pollutants are directly discharged to waterways from operations such as wastewater treatment facilities, industrial, and dairies. Point source pollutants are typically covered by WDR and NPDES. NPS pollution prevention utilizes Best Management Practices (BMPs), efficient water management practices, and source control.

3.2 NPDES: Multiple Separate Storm Sewer System (MS4) Projects

The Municipal Storm Water Permitting Program regulates storm water discharges from MS4s under the NPDES program. Storm water is runoff from rain or snow melt that runs off surfaces, such as rooftops, paved streets, highways or parking lots, and can carry with it, pollutants such as oil, pesticides, herbicides, sediment, trash, bacteria, and metals. The runoff can then drain directly into a local stream, lake, or bay. Often, the runoff drains into storm drains which eventually drain untreated into a local waterbody.

Additionally, municipal or urban areas commonly include large impervious surfaces which contribute to an increase in runoff flow, velocity, and volume. As a result, streams are hydrologically impacted through streambed and channel scouring, in-stream sedimentation, and loss of aquatic and riparian habitat. In addition to hydrological impacts, large impervious surfaces contribute to greater pollutant loading, resulting in turbid water, nutrient enrichment, bacterial contamination, and increased temperature and trash.

MS4 permits were issued in two phases. Under Phase I, which went into effect in 1990, the Regional Water Quality Control Boards (RWQCBs) adopted NPDES storm water permits for medium-size (serving between 100,000 and 250,000 people) and large (serving 250,000 people or more) municipalities. Most of these permits have been issued to groups of co-permittees encompassing entire metropolitan areas. These permits are renewed as they expire, often with revised or additional conditions. The Phase I MS4 permits require the dischargers to develop and implement Storm Water Management Plan/Programs with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the CWA. The management programs specify which BMPs will be used to address certain program areas, including public education and outreach; illicit discharge detection

and elimination; construction and post-construction; and good housekeeping for municipal operations. Most medium and large municipalities are required to conduct regular water quality monitoring.

On April 30, 2003, as part of the Phase II requirements which became effective that year, the SWRCB issued a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ). This General Permit provides statewide coverage for municipalities with populations less than 100,000, as well as non-traditional Small MS4s, such as military bases, public school campuses, prisons, and hospital complexes. The current version of the Phase II Small MS4 General Permit was adopted on February 5, 2013 and became effective on July 1, 2013.

Within the KBWA boundary, there is a single Phase I permittee: the Fresno Metropolitan Flood Control District, which provides coverage for the cities of Fresno and Clovis, the unincorporated portion of the two cities and the surrounding urbanizing area, and California State University, Fresno; however, this area is not included in the KBWA SWRP. The table below lists the Phase II MS4 permittees and new development and redevelopment guidance documents pertaining to stormwater and dry weather runoff management (all agencies have land use authority).

Table 3-1. Phase II MS4 Permittees

Name of Entity	New Development and Redevelopment Governing Documents
City of Dinuba	2008 General Plan; 1989 Storm Drainage Master Plan
City of Fowler	2004 Land Use Plan; 1985 Subdivision Ordinance
City of Kingsburg	1992 General Plan; 2004 Storm Water Management Plan
City of Parlier	2010 General Plan; City Ordinance 87-2 (Design and Improvement Standards)
City of Reedley	2014 Integrated Master Plan for Potable Water, Sanitary Sewer, and Storm Drainage Systems
City of Sanger	2003 General Plan; Subdivision Ordinance (No. 1020 and 1114)
City of Selma	Zoning Ordinance; Stormwater Quality Management Implementation Plan
County of Kings	2009 Subdivision Ordinance; 2018 Storm Water Management Plan
County of Tulare	County Zoning Ordinance (No. 352); 1972 Flood Control Master Plan

3.3 Compliance Requirements for Plan Implementation

Projects implemented in conjunction with this Plan are required to meet any applicable State and Federal requirements and permits. As discussed earlier, the CWA focuses on two elements for protecting surface water quality from human activities. These include a technology-based approach that uses requirements to maintain a minimum level of pollutant management using the best available technology and a water quality-based approach that relies on evaluating the condition of surface waters and setting limitations on the amount of pollution that the water can be exposed to without adversely affecting the beneficial uses of those waters. Section 303(d) of the CWA incorporates these two strategies.

Section 303(d) requires that the States make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list, as deemed appropriate by the EPA, the State is required to determine all the sources of the constituents of concern including those from point sources and non-point sources. The major source of water for the Plan area is the Kings River. The upper reaches generally have high quality water due to their origins in the

Sierra Nevada Mountains. However, as the river merges and collects agricultural return flows, the water quality declines.

In addition to the CWA, the State Porter-Cologne Water Quality Control Act required that water quality control plans be established to create water quality standards to protect the beneficial uses of water sources. The CV-RWQCB established and adopted the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan). The Basin Plan designates beneficial uses to be protected and water quality objectives to protect those uses and sets forth an implementation program for achieving the objectives. The Basin Plan also serves as regulatory reference for meeting both State and Federal requirements for surface and groundwater water quality control in the Tulare Lake Basin. The Basin Plan addresses the surface water quality issues of the Kings River, as measured by their inclusion on the 303(d) list, stating that the likely sources of the contaminants are either surface or subsurface agricultural drainage and declaring that additional on-farm management practices may be necessary as the levels of boron, molybdenum, sulfates, and chlorides become high enough to affect agricultural uses and aquatic resources. A number of BMPs have been recommended. In addition, the Basin Plan calls for continued monthly monitoring of the Kings River by Kings River Conservation District (KRCD) for salinity, pH, and temperature; continued monitoring by RWQCB for constituents and areas of special concern; and storm discharges from Naval Air Station Lemoore for hydrocarbons.

The CV-RWQCB regulates waste discharges to both surface water and groundwater in a variety of ways to protect water quality based upon standards related to the designated beneficial uses. Point source waste discharges are generally regulated by Point of Treatment Wastewater Discharge Requirements that include treatment standards, monitoring, and reporting. The CV-RWQCB also has several water quality protection programs related to discharges from NPS. These include the Dairy General Order and Irrigated Lands Regulatory Program. There are numerous water quality regulations associated with these NPS programs.

The CV-RWQCB has been working with stakeholders through the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative to develop amendments to the basin plans in California's Central Valley, including the Tulare Lake Basin, related to salts and nitrates in surface and groundwater. These amendments are expected to occur within the next few years and will establish processes for exempting agricultural dominated water bodies from "default" drinking water protection, as well as establishing more localized standards for salinity and nitrate degradation.

The CV-RWQCB also often invokes its "Antidegradation Policy" when regulating discharges to surface water and groundwater.

The U.S. Geological Survey (USGS) has done water quality work in the San Joaquin–Tulare Basin through the National Water Quality Assessment (NAWQA) program. The bulk of readily available data has been concentrated in the San Joaquin River and in the areas closer to the Sacramento–San Joaquin Delta; there are few data points for the Kings Basin. Other available USGS information was collected during studies to describe water quality associated with various land uses, rather than identifying local or regional water quality trends and conditions. There is some USGS information on surface water quality, including a bed sediment and tissue sampling event in 1992. Results of bed sediment sampling in 1992 showed levels below detection limits for 16 organochlorine pesticides in the Kings River bed sediments below Pine Flat Dam and below Empire Weir 2 near Stratford.

Three sites in the Kings Basin were sampled for 14 organochlorine pesticides in tissue of fish below Pine Flat Dam, at Peoples Weir near Kingsburg, and below Empire Weir 2 near Stratford.

Detections were made for dichlorodiphenyldichloroethane (P, P'-DDD) (6µg/kg below Empire Weir 2 near Stratford) and dichlorodiphenyldichloroethylene (P, P'-DDE) (16 µg/kg at Peoples Weir near Kingsburg and 95 µg/kg below Empire Weir 2 near Stratford); all other locations showed no detections (USGS, 2004).

The State recently established a new MCL for the compound 1,2,3-trichlorpopane (1,2,3-TCP; TCP), which became effective on January 1, 2018. The presence of TCP is associated with use of a cleaning and degreasing solvent and has also been associated with various pesticide products. Detections of TCP in drinking water supplies have been increasing since about 2001, largely due to improved low detection analytical methods. Based on State monitoring data, the presence of TCP in groundwater is most commonly seen in the Central Valley and the Los Angeles basin.

Kings River Water Association (KRWA) and KRCD are participating in the South San Joaquin Valley Water Quality Coalition (SSJVWQC), which was established in 2002 to deal with water quality issues and concerns affecting the Kings River area and the Tulare Lake Basin. Some of the pending water quality issues identified by the SSJVWQC are:

- *Expiration of the agricultural waiver exemption for water discharge requirements;*
- *The State and Regional Water Quality Control Boards' 303(d) list of impaired waterways to be used to calculate TMDL under the Clean Water Act; and*
- *The Regional Board's triennial review of the San Joaquin and Sacramento River Basin Plan includes examination of TMDL and water quality issues.*

The SSJVWQC participating agencies believe that they will be better served approaching these and other water quality issues using a regional approach rather than individually.

Expanded information on water quality issues within the Region can be found in Section 3.5 of the IRWMP.

3.4 Relation to TMDL and NPDES

This Plan provides a method for the implementation of projects that will assist with the compliance of TMDL requirements. Projects selected for implementation are required to meet all applicable permitting requirements. Additionally, improving surface water quality is one of the Main Benefits outlined in the project selection process. The projects submitted under this Plan either maintain or improve surface water quality.

3.5 CEQA Compliance

Storm water related projects proposed for the study area by public agencies must comply with the California Environmental Quality Act (CEQA). The CEQA process includes work to identify any potential negative impacts that may be associated with implementing the submitted projects including (1) short-term, site specific impacts related to site grading and construction, (2) long-term impacts associated with project operation, and (3) cumulative impacts associated with project construction and/or operation when considered together with other known projects or programs.

The CEQA process will evaluate the significance of any potential impacts. CEQA requires that impacts determined to be significant must be mitigated to a level of non-significance unless the

CEQA lead agency makes findings of overriding consideration in an Environmental Impact Report that reviews the project and options to it.

CEQA review of specific projects will provide a detailed evaluation of the impacts discussed in the CEQA guidelines, which can be found at http://opr.ca.gov/ceqa/. This Plan is exempted from CEQA; notice of exemptions has been filed with Fresno, Tulare and Kings Counties as part of the IRWMP Update process.

3.6 California Health and Safety Code

The California Health and Safety Code includes provisions for the control of vectors including mosquito abatement. The Mosquito Abatement Act of 1915 allows municipalities and counties to create Mosquito Abatement Districts. The risks of mosquitoes due to delinquent water handling practices include malaria, encephalitis, Zika, Dengue, and West Nile virus. Proper BMPs can significantly reduce mosquito populations and their associated illnesses.

Projects performed in accordance with this Plan must adhere to the requirements of the local mosquito abatement districts. The Fresno Mosquito and Vector Control District, Consolidated Mosquito Abatement District, Fresno Westside Mosquito Abatement District, Delta Vector Control District, Tulare Mosquito Abatement District, Delano Mosquito Abatement District, and Kings County Mosquito Abatement District each provide mosquito abatement services within various parts of the plan area.

BMPs established by the local mosquito abatement districts must be implemented for all project types included in this Plan. Depending upon the district, BMPs may include source reduction including elimination, reduction, or modification of larval habitats; biological control such as using predators to reduce larval population; and mosquitocides including larvalcides and adulticides.

3.7 Water Rights

The Kings River is a Fully Appropriated Stream, and the water rights are held by the member agencies of the Kings River Water Association. Water rights from the San Joaquin River are held via contract with the United States Bureau of Reclamation. There are also ephemeral streams along the east side of the SWRP area that have pending licenses filed by multiple agencies.

Groundwater recharge is the augmentation of groundwater, by natural or artificial means, with surface water or recycled water. Some groundwater recharge projects may be based on short-term water surpluses that occur irregularly, assuming that water is available for appropriation. Diversion to underground storage can be a method of capturing what would otherwise be water lost to the region, taking advantage of the natural storage capacity of aquifers, but in order to obtain a water right, there must be a designated beneficial use of the water placed into underground storage. Groundwater storage projects have been successfully constructed and are operating in California with the method of diversion being underground storage and with facilities provided to recover the stored water and deliver it for beneficial use in a manner protective of water quality.

Water rights are required to capture stream flows, including peak storm events, for groundwater recharge with later beneficial use. Except where the storage and beneficial use are authorized under an existing riparian right, appropriative right, or a change in one of those rights, diversion for groundwater storage will require filing an application with the SWRCB to obtain a water rights permit. In the water rights application, ultimate beneficial uses (i.e., municipal, irrigation,

municipal, industrial, water quality, etc.) of the water diverted to underground storage will need to be specified.

Consideration of project operation timelines and approval requirements will dictate the need for a standard permit or temporary permit. An application for a standard permit should be filed for proposed long-term projects. A temporary permit should be filed for projects of a temporary nature where an urgent need exists. Assuming there is an urgent need, an application for a temporary permit may be filed simultaneously with an application for a standard permit to cover the period until a standard long-term permit is issued. Temporary permits expire within 180 days after the date of issuance, unless otherwise specified; however, they may be renewed by the SWRCB. Water right permits carefully spell out the amounts, conditions, and construction timetables for the proposed water project. Both standard and temporary permits require detailed reporting of the quantity of water diverted into underground storage and the quantity recovered for beneficial use.

- *Standard Permit – A standard permit development timeline is 15 years; however, for groundwater development, a longer period may be warranted. When the project is completed, the terms of the permit have been met, and the largest volume of water under the permit is put to beneficial use, the Board confirms the terms and conditions and issues a license to the appropriator. This license is the final confirmation of the water right and remains effective as long as its conditions are fulfilled and beneficial use continues.*
- *Temporary Permits – No development period is specified, but the permittee must report on ultimate beneficial use of the diverted water. For these projects, the permittee will need to file temporary permit renewals until the amount beneficially used is equivalent to the diversion amount.*

Projects that are not required to apply for permits include projects that meet the following criteria:

- *Projects designed and used solely for flood protection and not for beneficial use; where capture of flood waters is necessary to protect public health and safety and is not intended to store the water for later beneficial use by any party. This assumes that the water is held no longer than needed for flood control and that no right is asserted to any of the incidental groundwater recharge that results from the flood control.*
- *Projects that propose to replenish groundwater with recycled water, where the recycled water comes directly from a wastewater treatment plant and is not conveyed using a surface water stream system or a subterranean stream. In this situation, a wastewater change petition may be necessary if the wastewater was previously discharged to a stream.*
- *Projects diverting water under a valid pre-1914 appropriative right.*
- *Projects that use water delivered under a water supply contract or purchase agreement in which the water purveyor delivering the water has a right to divert water to underground storage at the proposed location.*

3.8 Proposed Modification of an Existing Stream Bed or Channel

Project types within the Plan that include substantial change or use of any material from a river, stream, or lake should avoid and minimize erosion, sediment transport, and hydromodification, and fully mitigate environmental impacts resulting from the project, as required by CWA Sections 401 and 404 and any other federal and state laws, regulations, and permits.

If a stream bed modification is identified as part of the Project, a complete notification package and fee must be submitted to the California Department of Fish and Wildlife (CDFW) regional office that serves the county where the activity will take place. The CDFW Code, Section 1602 requires an entity to notify CDFW and obtain a Streambed Alteration Permit prior to commencing any activity that may do one or more of the following:

- *Substantially divert or obstruct the natural flow of any river, stream, or lake.*
- *Substantially change or use any material from the bed, channel or bank of any river, stream, or lake.*
- *Deposit debris, waste, or other materials that could pass into any river, stream or lake.*

"Any river, stream, or lake" includes those that are seasonal (dry for periods of time) as well as those that are perennial (flow year-round). This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

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4 Consultation and Coordination

4.1 RWMGs Implementing Existing IRWM Plans

To assure cooperative and collaborative approaches to storm water drainage issues within the overall Plan area, there must be ongoing communications and coordination between the IRWMG's member agencies, many of whom are responsible for storm drainage management within the sphere of influence of their own agencies. Since storm drainage management has been ongoing for many decades, most agencies have future projects in various stages of pre-construction readiness, and many have storm drainage management planning documents addressing longer-term plans. As with many water resources projects, many storm drainage management issues do not respect agency boundaries and would be best addressed by cooperation between two or more neighboring agencies.

The Kings Basin Water Authority's IRWMP includes a number of storm water management projects already. These projects have been evaluated and ranked along with all the other regional projects and are planned for inclusion in funding applications whenever the funding program's objectives include funding storm water management improvements. This SWRP builds upon the project list in the IRWMP and includes the additional data required for storm water projects including a framework for metrics-based project rankings.

The Authority will continue to monitor project solicitations for storm water project funding opportunities and will refine its metrics-based ranking system based on the stated goals and outcomes of each individual funding program.

4.2 Stakeholder Agencies Participating in Plan Development

All of the members and interested parties of the KBWA area are concerned with storm water management within their boundaries and/or spheres of influence; however, not all have storm water responsibilities within their purview. Of these, 11 have their own Storm Drain Master Plan or similar document. During the preparation of the Storm Water Resource Plan, the IRWMG contacted each member agency to request information about planned storm water management projects.

Table 4-1. Member Agencies with Storm Drainage Management Responsibilities

Member Agency	Existing Storm Drainage Master Plan in Place
Fresno Metropolitan Flood Control District	Yes
City of Fowler	Yes
City of Selma	Yes
City of Dinuba	Yes
City of Parlier	Yes
City of Reedley	Yes
City of Sanger	Yes
City of Kerman	Yes
County of Fresno	No
County of Tulare	No
County of Kings	Yes (Draft)

In addition to the member Agencies listed, other Interested Parties may have interest in storm water management projects, including the cities of Kingsburg, Orange Cove, and San Joaquin and the County of Kings.

All KBWA members and interested parties, not just those listed above, were asked to contribute information on any needed, planned, or potential projects for the preparation of this plan. The submitted projects are included in the ranked list as **Appendix B** to this Plan. Projects were reviewed for potential overlap and synergistic benefits. Moving forward, the Authority will continue to consult with members and interested parties and look for potential collaborative projects.

4.3 Non-Profit Organizations Participating in Plan Development

The Authority's Interested Parties include non-profit organizations (NGOs); however, none of those have responsibility for storm water management, directly. Self-Help Enterprises (SHE), a community development organization who works with low income families to ensure healthy homes and communities, helped provide and coordinate outreach for the development of the Plan to DACs within the region. They organized and attended the community meetings and helped facilitate the development of storm water project lists.

4.4 DACs Participating in or Affected by Plan Development

The KBWA boundary includes a large number of DACs that often do not have a governance structure to address stormwater concerns in their area. The process for identifying and including DACs in the development of the Plan was based on the criteria defined in California Water Code (CWC) §79505.5(a). The CWC identifies "a community with an annual median household income (MHI) that is less than 80 percent of the statewide annual MHI" as disadvantaged. The IRWMP used American Community Survey (ACS) Estimates from years 2012-2016 data and 80 percent of the statewide annual MHI ($63,783) to reach a DAC MHI threshold of $51,026.

Severely disadvantaged communities (SDACs) are defined elsewhere in the CWC as those communities with an MHI less than 60% of the statewide MHI (CWC §13476(j)). Based upon the census numbers noted above, the SDAC threshold is $38,270. Table 4-2 in the 2018 KBWA IRWMP lists the unincorporated areas that fall under the category of disadvantaged community or severely disadvantaged community within the region. The table includes population and income data.

4.5 Public Engagement, Communication Plan and Matrix

Public Engagement and Communication has been a fundamental principle of the KBWA, and specific efforts are discussed in Section 15 of the Authority's IRWMP. The discussion in this section is adapted from that work.

The Authority has been working since its earliest efforts in 2005 to accomplish its four primary public outreach goals:

- *Brand the Authority as a regional entity addressing water reliability and quality, and agricultural, urban and natural resource needs*
- *Educate the public about the region's water resource issues*
- *Promote an IRWMG to gain support for water management strategies being considered by the Authority*
- *Mobilize the electorate to vote on projects that improve regional water reliability and quality*

With the adoption of this SWRP, those goals are broadened to include not only water resources and water reliability but also to include storm water management. The Authority maintains a website (www.kingsbasinauthority.org) that posts a variety of information on regional water management efforts including: Board of Director meeting schedules, agendas, and minutes; Advisory Committee meeting schedules, agendas, and minutes; list of members and interested parties; recent news; and documents (governing documents, reports, technical papers, applications and proposals). The website includes all of the major documents developed by the Authority. This website is updated regularly and also serves as an archive for important documents developed by the Authority. The website will be updated to include a section on storm water management efforts and the final version of this SWRP.

As well, the Authority will make efforts to publicize its storm water management efforts via local and regional newspapers and other publications, as it has with its other water resources projects, and will include storm water management news in the KRCD newsletter.

Stakeholders have opportunities to participate in the Authority through the Advisory Committee, Work Groups, and the Board of Directors. These groups are explained in Section 2 of the IRWMP Governance. Information is made available to stakeholders through newsletters, newspaper articles, the Authority website, Advisory Committee Meetings, Board of Directors meetings, e-mails, and other public outreach efforts. **Figure 4-1** shows how stakeholders can be contacted and how they can communicate with other members and interested parties.

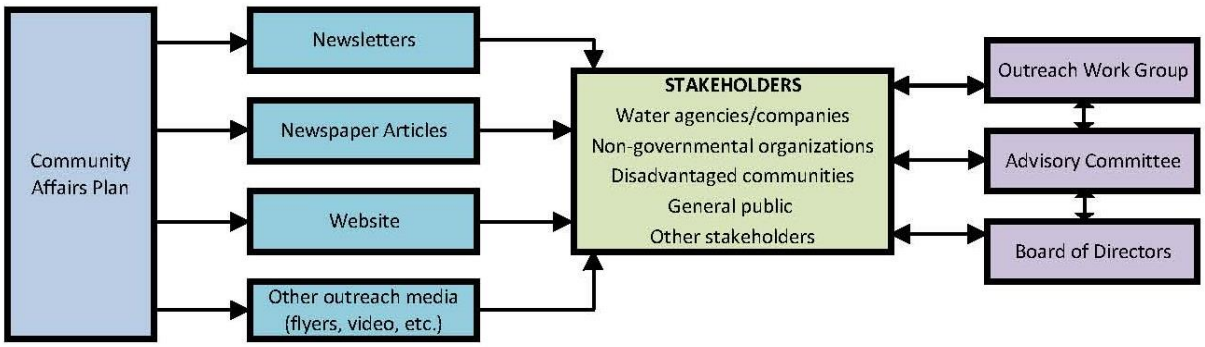

Figure 4-1. Public Outreach and Stakeholder Involvement

4.6 Laws, Codes, or Legislation Needed for Plan Implementation

The Authority believes it can implement this SWRP with the commitment of the Members at the local level. There is nothing in State or Federal law that would prohibit the cooperation and collaboration between the agencies needed to accomplish the goals of the plan. However, where water and wastewater funding are regularly available, particularly through the State Revolving Funds, no similar opportunity exists for Storm Water Management. Making the situation more challenging for local agencies, water and wastewater are always revenue-producing utilities with regular capital improvement budgets, as well as the ability to raise additional money through various finance mechanisms including municipal improvement bonds. Since storm water drainage is not typically a rate-based utility, those mechanisms are not available, making it difficult for local agencies to fund large storm drainage management capital programs.

4.7 Planning and Coordination Among Local Agencies for Plan Implementation

One of the Member Agencies, the FMFCD, has prepared a “functional equivalent” Storm Water Resource Plan separate from the Authority’s plan. FMFCD is a large district and provides storm water protection services for the entire Fresno-Clovis metropolitan area plus an extensive portion of the developable area surrounding the two cities. Created by voters in 1956, FMFCD is the established authority in local storm water management planning and operates an extensive network of storm water management facilities.

FMFCD has indicated a willingness to collaborate with other Member Agencies where there are shared borders or watersheds, if both agencies will benefit from the collaboration.

4.8 Relationship of Plan with Other Existing Planning Documents

This SWRP borrows text from the KBWA IRWMP and references said document for consistency. Otherwise, it does not borrow from the text of any of the Members’ storm water management or land use planning documents. That said, this plan does incorporate many of the projects identified in those local agency plans. The Authority has begun discussions regarding how projects could be combined or broadened to create collaborative or synergistic benefits.

As additional or modified projects are agreed to by two or more Member Agencies, they will be added to the overall project list and will be rated according to their joint and overall benefits.

The Authority anticipates that this Plan will supplement, but not replace, local storm water management planning. Detailed analysis of local areas and identification of projects will be deferred to the local agencies, who will be encouraged to add new projects to the overall project list and to explore ways to create collaborative projects that meet local needs.

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5 Identification and Prioritization of Projects

5.1 Introduction

One of the primary purposes of the Storm Water Resource Plan is to begin the process of developing storm water and dry weather runoff capture projects and enable these projects to receive grant money from State bond funds. Senate Bill 985, which amended Water Code section 10560, subdivision (c)(1), requires that for the purpose of obtaining grant funds from any State proposition, projects must be included in a Storm Water Resource Plan. This requirement was passed into law and became effective in January 2014.

The Storm Water Resource Plan Guidelines require the inclusion of a prioritized list of projects, ratified by the IRWM group. The projects must be ranked based on their ability to deliver Main and Additional Benefits to the Plan area. The Guidelines do not delineate a methodology to be used for ranking the projects but state that a system of quantitative, scorable metrics must be used to evaluate the proposed projects. This allows projects to be evaluated against objective metrics, develop a prioritized list of projects based on the ranking, and associate the list with the Plan. The Plan has been reviewed and approved by the Authority which is the Integrated Regional Water Management group for the area. This Section explains the methodology used to solicit, score, rank, and prioritize the projects. The prioritized project list will be periodically reviewed and updated to add new projects and reflect changes in existing project status and information.

5.2 Project Characteristics

5.2.1 Project Goals and Quantitative Objective

The Guidelines name five benefit categories that are to be considered in grouping projects, herein after referred to as "Goals." These are Improve Water Quality, Augment Water Supply, Flood Management, Environmental and Habitat Enhancement and Community Stewardship. Each project is to be assigned to a single Goal, and the projects in each category are to be ranked against each other by considering the projects' quantitative objectives. The Guidelines specify the type of quantitative objectives as Main Benefits and Additional Benefits to be considered within each benefit category. **Table 5.1** is taken directly from the Guidelines and provides a list of the Main and Additional Benefits for each project category. To be included in the Plan's ranked list, each project or program must, at a minimum, address two or more Main Benefits and as many Additional Benefits as is feasible.

The Guidelines specify that project prioritization must also include the following additional factors:

- *Projects or programs supported by entities that have created permanent, local, or regional funding (i.e., entities who have established a new, multi- year local or regional source of funding dedicated to storm water and/or dry weather runoff capture projects, and who provide funds for both capital and operations and maintenance)*
- *Projects or programs that use a metrics-driven approach and an appropriately detailed geospatial analysis of multiple benefits to maximize water supply, water quality, flood management, environmental, and community benefits within the watershed*
- *Projects located on lands in public ownership*

- *Projects and programs that create or restore habitat, open space, parks, recreation, or green open space in disadvantaged communities with a high deficit of tree canopy, parks, and open space*

Table 5-1. Storm Water Management Goals and Quantitative Objectives

SWRP Goals	Main Objective	Additional Objective
Water Quality *while contributing to compliance with applicable permit and/or TMDL requirements*	Increased filtration and/or treatment of runoff	Nonpoint source pollution control
		Reestablished natural water drainage and treatment
Water Supply *through groundwater management and/or runoff capture and use*	Water supply reliability	Water conservation
	Conjunctive use	
Flood Management	Decreased flood risk by reducing runoff rate and/or volume	Reduced sanitary sewer overflows
Environmental	Environmental and habitat protection and improvement, including wetland enhancement/creation, riparian enhancement, and/or instream flow improvement	Reduced energy use or greenhouse gas emissions or provides a carbon sink
		Reestablishment of the natural hydrograph
	Increased urban green space	Water temperature improvements
Community	Employment opportunities provided	Community involvement
	Public education	Enhance and/or create recreational and public use areas

5.2.2 Project Identification Process

The Authority maintains a list of projects for the region, many of which are storm water related or will provide storm water benefits. The entire area included in the Authority's IRWMP, including the area covered by Fresno Metropolitan Flood Control District's Functional Equivalent Storm Water Resources Plan, utilizes the Authority's project solicitation process described in Chapter 7 of the IRWMP. The Region decided to maintain one regional project list process, including storm water related projects.

A supplemental form was created to use in conjunction with the IRWMP project submittal form. This form requests information on how each project achieves the Main and Additional Objectives as identified in the Plan and the status of the additional factors that are required to be considered. Agencies are required to specify which of the five Goals each project achieves, identify at least two Main Objectives provided by each project, and identify as many provided Additional Objectives as may apply. In 2017, this form was distributed for all storm water-related projects already on the IRWMP project list. To facilitate the collection of this specific storm water project information and identify the required project benefits, IRWMP project solicitation requests now

incorporate a version of this form to be used as appropriate. A copy of the template IRWMP project solicitation and supplemental forms are included as **Appendix A**.

The IRWM Project Workgroup receives all the Project Information Forms (including the storm water benefit information) and reviews each submitted form for content and consistency. The Workgroup confirms the accuracy and reasonableness of the submitted project information. If necessary, the Workgroup clarifies project information with the project proponent(s). During this step in the process, the Project Workgroup also considers and recommends possible project integration, regional applications, multiple benefits, and other strategic project efforts that provide Plan benefits. This form may be modified from time to time, especially to be more responsive to specific IRWMP or SWRP project solicitations, so the most current version of the project form is maintained on the Authority's website.

At least annually, prior to preparation of the annual report and in conjunction with any IRWMP or SWRP project solicitation, the Authority releases a Call for Projects to all Members, Interested Parties, and Stakeholders. The Call for Projects is also announced at Advisory Committee and Board Meetings and is posted on the Authority's website. Project proponents are asked to complete a Project Information Form and Supplemental Form (if applicable), which may be submitted to the Authority via email, mail, facsimile, or through the Authority's website tool. In addition to the annual Call for Projects, Members, Interested Parties, and Stakeholders may add projects to the project list at any time throughout the year. Projects may be listed regardless of their current status. The Authority encourages project proponents to add conceptual level projects to the list, as their inclusion is intended to help prevent duplication and foster project integration and development discussion amongst project proponents throughout the region.

Through outreach a variety of projects were submitted from numerous entities.

5.3 Project Prioritization

For the purposes of this Storm Water Resources Plan, the projects with storm water related benefits were identified from the Authority's project list, and these projects were considered for prioritization by the Workgroup. The Workgroup reviewed the information provided to support the benefits claimed. Project proponents provided supporting information to support the quantified benefits claimed, including numerical results of calculations, studies, and other technical information. Unsupported benefits are not considered in the project prioritization. The measurement required for each benefit is consistent with the requirements in the guidelines as shown in **Table 5.2**.

5.3.1 Project Scoring

A scoring methodology has been developed for scoring and ranking projects. The projects are grouped by their primary benefit claimed and prioritized within those categories. Projects within each category receive one point for each verified Major and Additional benefit claimed. Projects also receive one point for every "yes" answer to the following questions:

- *Is the Project ready to implement?*
- *Is the Project located in a DAC?*
- *Is the land currently owned by a public agency?*
- *Is permanent funding available for operation and maintenance?*

The points are tallied to give each project a total score. For similar scoring projects, the quantified amounts of the primary benefit are compared. The project with the greater quantified primary benefit is ranked higher. For example, if two recharge projects each have a score of 9, counting all benefits and additional questions, the project with the greater volume of potential recharge is ranked higher. Lastly, the method of determining the benefits is also taken into consideration with more accurate methods, including models, receiving priority over similar projects that use a less precise method of estimating the benefits.

If a project is in the conceptual phase and has not provided a quantified primary benefit, that project is shown on the list as a storm water project, but not ranked.

Based on the above scores, the projects are ranked to provide a list of prioritized projects, as is required under the Guidelines. A prioritized list of the storm water related projects is included in **Appendix B**. This list is updated periodically when submittals of additional projects or revisions to existing projects warrant a review. The list and scoring criteria may also be updated by the Working Group in response to future funding opportunities.

5.3.2 Project Integration

To facilitate the completion and implementation of projects and ensure they work collectively, the project list is reviewed by the Authority to identify potential interactions. The implementation of multiple projects may increase or decrease the effectiveness of an individual project depending on how projects are interrelated. The Authority provides an avenue for project sponsors to be aware of other proposed projects in the area and facilitate collaboration. Additionally, the Authority will determine the collective benefits of the projects if implemented in conjunction. The resulting benefit analysis may improve the ranking of projects or may group projects together for potential future funding and implementation.

Table 5-2. Metrics (Table 3 from SWRP Guidelines)

SWRP Goals	Objectives	Metric Unit(s)
Water Quality	Increased filtration and/or treatment of runoff	**Pollutant Load Reduction:** lbs/day, kg/day or mg/L
	Nonpoint source pollution control	**Volume Treated*:** MGD or AFY
	Reestablished natural water drainage and treatment	
Water Supply	Water supply reliability	**Volume Captured*:** MGD or AFY
	Conjunctive use	
	Water conservation	**Cost:** $/year
Flood Management	Decreased flood risk by reducing runoff rate and/or volume	**Rate, Volume, and/or Size:** cfs, af, cf, acres, linear feet
	Reduced sanitary sewer overflows	
Environmental	Environmental and habitat protection and improvement	**Size and/or Rate:** Acres, cfs, Carbon sequestration (megagrams of carbon per area)
	Increased urban green space	
	Reduced energy use or greenhouse gas emissions or provides a carbon sink	**Other** Area, Measure of improved hydrology,

SWRP Goals	Objectives	Metric Unit(s)
	Reestablishment of the natural hydrograph	Number of biotic or physical structures, reduced temperature (degrees)
	Water temperature improvements	
Community	Employment opportunities provided	**Size** Size of population served, Number of people, Number of jobs, acres
	Public education	
	Community involvement	
	Enhance and/or create recreational and public use areas	

Notes:
* In terms of augmented or replaced water supply

5.3.3 Water Quality Project Analysis

Each project claiming a benefit of water quality improvement will be evaluated based on the objectives discussed in **Table 5-2** and also on its compliance with any applicable NPDES permits in place or anticipated to be necessary for a new project. To gain full points for the benefits claimed, the project proponent will be expected to provide an analysis of the benefits using modeling, calculations, mass balances, volume balances, and/or another method of analysis substantiating the benefits. The project proponent will also be expected to provide discussion of how the project will contribute to the watershed as a whole. Lack of sufficient detail will result in a lower project prioritization.

5.3.4 Storm Water Capture and Use Project Analysis

Each project claiming a benefit of storm water capture and use will be evaluated based on the objectives discussed in **Table 5-2** and also on its analysis of how the project(s) will capture and use storm water. To gain full points for the benefits claimed, the project proponent will be expected to provide an analysis of the amount of storm water to be captured and how the quantity was calculated. Lack of sufficient detail will result in a lower project prioritization.

5.3.5 Water Supply and Flood Management Project Analysis

Each project claiming a benefit of water supply and flood management will be evaluated based on the objectives discussed in **Table 5-2**. To gain full points for the benefits claimed, the project proponent will be expected to provide an analysis of how much the water supply is being augmented or flooding is being mitigated and how the benefits were calculated using modeling, calculations, and/or another method of analysis substantiating the benefits. Lack of sufficient detail will result in a lower project prioritization.

5.3.6 Environmental and Community Benefit Project Analysis

Each project claiming a benefit of environmental and/or community benefit will be evaluated based on the objectives discussed in **Table 5-2**. To gain points for this benefit, the project proponent will be expected to provide a quantitative evaluation of the benefit(s) being claimed and how the quantification is appropriate. Lack of sufficient detail will result in a lower project prioritization.

5.4 Monitoring Plan Requirements

5.4.1 Data Collection

Data collection can help to quickly identify data gaps, assess project and program performance, support statewide data needs, and integrate with other regional and statewide programs. Within the plan boundary, there are a several entities collecting and maintaining data on the Region's water and environmental resources.

The monitoring requirements of the Irrigated Lands Regulatory Program (ILRP) were originally performed by the SSJWQC. The SSWQC was subsequently split into multiple coalitions. In 2009, the Kings River Water Quality Coalition (KRWQC) was formed to oversee the monitoring and reporting for the mutual water companies and public agencies within the Kings River service area. ILRP regulates discharges from irrigated agricultural lands and includes a surface water quality monitoring of irrigation and storm water and groundwater quality monitoring components.

KRCD is also the lead agency for groundwater level monitoring for the area. Groundwater levels are measured by various agencies for hundreds of wells. KRCD prepares an annual groundwater report that includes groundwater contours (depth and elevation) and changes in the groundwater storage for the area. KRCD submits groundwater level data for the area to the California State Groundwater Elevation Monitoring (CASGEM) program.

KRWA monitors surface water in the Kings River and its watershed. Measurements include snowpack, reservoir stage, reservoir inflow and outflow, Kings River flows, and Kings River diversions. The Friant Water Authority monitors San Joaquin River water delivered through the Friant-Kern Canal.

The region is coordinating an effort to develop a land subsidence monitoring network as a part of the Groundwater Management Plan they are developing. KRCD and several other agencies are identifying a network of benchmarks to track and evaluate land subsidence. The program is currently still in the developmental stages and is expected to begin within a few years.

The SGMA was effectively placed into law in 2014 to provide framework for California to manage its groundwater resources at a local level through collaborative local agency initiative. It required that local agencies voluntarily form Groundwater Sustainability Agencies by July 1, 2017. Seven Groundwater Sustainability Agencies (GSAs) overlap the IRWM boundary at least partially: North Kings, Kings River East, Central Kings, South Kings, North Fork Kings, McMullin Area, and James. The GSAs are required to prepare Groundwater Sustainability Plans (GSPs) by 2020 that include a coordinated program with ongoing activities to be undertaken to benefit the basin.

The Kings River fisheries program, overseen by the KRWA, monitors habitat conditions, stream flows, water quality, water temperature, hatchery planting programs, fish populations and movements, and macro-invertebrates within the lower Kings River and Pine Flat Reservoir.

The agencies and agency groups collecting data that is important to the Region have methods for data collection that are similar and thus have opportunities for streamlining or maximization of efficiencies for creating region-wide datasets and databanks. Data is vitally important to agencies trying to maximize operating efficiency and to design projects with limited budgets. The types of data available, current relevance and trends, and knowledgeable people that can interpret the data are all important. Monitoring associated with Plan implementation is an opportunity for State agencies to obtain data for their own monitoring needs and to better understand local conditions.

Creation of data management tools that recognize similarities in methodology, the repetitiveness in data harnessing, and inefficiencies in data reporting are additional strategies that can be implemented to streamline efforts on not just a local but a region-wide scale. The ongoing data collection and management efforts for the Plan will establish a means to collect and maintain the data.

5.4.2 Integration into Existing Monitoring Efforts

Data collected as part of this Plan can be used to support existing state programs such as the Surface Water Ambient Monitoring Program (SWAMP), the Groundwater Ambient Monitoring and Assessment (GAMA), and the California Environmental Resources Evaluation System (CERES), as well as water use efficiency and demand reduction data collected by the SWRCB through the California Urban Water Conservation Council and Agricultural Water Management Council. A brief description of each program is listed below:

- *SWAMP: All the surface water data collected as part of the Plan will be consistent with SWAMP database compatibility guidelines and will be exported annually to the state database using the required data submission formats. Where appropriate, IRWMP sampling activities will be performed according to SWAMP quality assurance requirements.*
- *GAMA: Groundwater data collection efforts as part of the Plan will be coordinated with the needs of the GAMA program and will be consistent with database specifications so that the data can be easily submitted, shared, and integrated into the GAMA database. Field sampling efforts will be coordinated with the GAMA program to eliminate duplicative data collection efforts and fill data gaps.*
- *CERES: All data and reports will be sent to CERES so that information will be available and useful to a wide variety of users.*
- *CASGEM: On November 4, 2009, the State legislature enacted SBX7-6, which mandates a permanent statewide, locally-managed groundwater elevation monitoring program for California's groundwater basins and subbasins identified in DWR Bulletin 118. To achieve that goal, the new law directs that groundwater elevations be regularly and systematically monitored, and groundwater elevation data collected under collaboration between local monitoring entities and DWR. The primary objective of the CASGEM monitoring program is to define the seasonal and long-term trends in groundwater elevations in California's groundwater basins. The scale for this evaluation should be the static regional groundwater table or potentiometric surface. A secondary objective is to provide sufficient data to draw representative contour maps of the elevations. These maps could be used to estimate changes in groundwater storage and to evaluate potential areas of overdraft and subsidence*
- *NPDES, MS4: Monitoring programs are specific to each MS4's program; however, the Phase II permittees are bound by prescriptive requirements within WQ Order No. 2003-0005-DWQ. Water quality data are stored at the state level through various reporting program requirements such as CASGEM, Urban Water Management Planning Act, Sustainable Water Use and Demand Reduction requirements, and other monitoring/reporting programs.*

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6 Implementation Strategy and Schedule

6.1 Resources for Plan Implementation

This SWRP aggregates the proposed regional storm water projects that have been submitted to the Authority at the time of Plan preparation into a project list included in **Appendix B**. Future projects will be added to this list as they are proposed and vetted. Implementation of the Plan includes maintaining an overall list of potential projects and employing the scoring system included herein. Future activities will include additional project solicitations, scoring new projects received from those efforts, and incorporating projects into the projects list.

In the future, project requests will be distributed through the IRWM stakeholder list. The IRWM will maintain the project list. They will add projects to the list as projects are submitted and keep the status of each existing project updated. Periodically, the project list will be re-ranked to include new projects and to account for possible changes in project scoring criteria.

As the Authority transitions from this initial plan development stage into Plan implementation, direct project costs will be borne by the Project Sponsors. Potential Project Sponsors will be required to provide the necessary local matching funds. The Authority has identified a variety of potential funding resources, though others may be or become available. Each resource has its own local match requirements. A list of currently available funding sources is shown below.

6.1.1 Project Funding

Securing funding for the projects proposed in the Upper Kings SWRP can be best accomplished with a focused, deliberate strategy. As seen from the descriptions below, there are many State and Federal funding programs that could provide financial opportunities for the Sponsors' projects. As these and other funding opportunities become available, Plan Projects may be integrated to fit the funding criteria. In this manner, a process would be established for integrating packages of projects for future funding programs.

Grant and loan funding sources have been identified based on currently available information. However, due to the uncertainty of both Federal and the State of California budgets, there is no certain availability of grant and loan funding. Federal funding opportunities are always subject to allocation of funds in the annual Federal budget. State grant and loan programs are mostly dependent on the sale of California General Obligation bonds and historically have been, and will very likely will continue to be, limited in the dollar amount of funding offered.

This section includes a discussion of some of the funding sources currently available through various grant programs and sets forth general eligibility requirements. Although some of the programs listed below may not be directly related to storm water projects, the Plan Projects may still have a nexus to these funding programs, making it worthwhile for the Project Sponsor to consider submitting an application to a funding program.

6.1.1.1 Local Funding

6.1.1.1.1 Agency General Funds

While often limited because of other demands for these funds, Agency general funds are a potentially viable and accessible source of some funds for the local share of projects receiving State or Federal grant funding. Subject to availability, using general funds to meet local share requirements can be accomplished by simple vote of the Agency's Board or Council.

6.1.1.1.2 Proposition 218 Funds

Another financing tool available to agencies is local funding generated from assessments created under the authority of Proposition 218. Creating these assessments requires an engineer's report discussing the proposed projects and services, their costs and benefits, identifying the parties benefited and how the benefits are spread amongst the benefitting parties, and identifying the levels of assessment necessary to fund the improvements and services being considered. Once prepared, the Agency Board must approve the report and mail notices to all affected landowners explaining the project and the amount of the proposed assessment. Landowners have 45 days to mail back a ballot. Unless a majority of the landowners (measured by acreage) send in a ballot protesting their imposition, the assessments can be imposed by a majority vote of the Board.

While Proposition 218 funds can be used for a broad variety of purposes, their usefulness in constructing capital projects can be limited by the ability of the District and its landowners to afford both the Proposition 218 assessments and the repayment of any State or Federal loan funds. When applying for loan funds, the District's financial capacity and security will be evaluated. A large component of that analysis is the ratio of debt to total cash reserves and debt service to overall cash flow. If the District is not able to evidence a strong ability to repay the proposed loan, the money will not be granted.

6.1.1.2 State Funding Programs

6.1.1.2.1 Integrated Regional Water Management Implementation Grants (DWR)

The DWR is the state agency responsible for overseeing the IRWM programs statewide, which includes administering the Proposition 1 IRWM Grant Program. This program provides funding for projects that help meet long term water resource needs within IRWM Regions.

Criteria for obtaining Proposition 1 grant funds include: assisting water infrastructure systems to mitigate impacts from climate change; providing incentives throughout each watershed to collaborate in managing a Region's water resources and setting regional priorities for water infrastructure; and improving regional water self-reliance, while reducing reliance on the Sacramento-San Joaquin Delta.

Plan projects must be included in their respective IRWMP and as such may be eligible for potential funding. Additional details can be found at the following link:

6.1.1.2.2 Storm Water Grant Program (SWRCB)

The SWRCB provides grant funds for multi-benefit storm water management projects through the Proposition 1 Storm Water Grant Program (SWGP). Passed by California voters in 2014, Proposition 1 designated $200 million in grant funds for projects that improve regional water self-reliance, security, and provide adaptations to the effects on water supply arising from climate change. Storm water and dry weather runoff remain underutilized sources of water supplies. Left

untreated and uncontrolled, both may cause pollution or impairment of rivers, lakes, streams, and coastal waters. The SWGP will fund projects that have multiple benefits including water supply, flood control, habitat enhancement/restoration, and creating green spaces.

The SWGP has two types of grants available: Planning Grants and Implementation Grants. The Planning Grant had one funding round of $19 million (occurring in Spring 2016) that provided funding for developing SWRPs and for planning specific projects throughout the state. Two rounds of Implementation Grant funding have been designated under Proposition 1. Approximately $80 million of funding was designated for Round 1 in 2016, and $100 million is designated for Round 2 that will occur in 2019. The local funding match is set at 50 percent of the project cost, with lesser matches available to DACs and Economically Distressed Areas (EDAs).

6.1.1.2.3 Federal 319 Program (SWRCB)

This program, administered by the SWRCB, is an NPS pollution control program that is focused on controlling activities which impair beneficial uses and on limiting pollutant effects caused by those activities. The program is federally funded on an annual basis. Project proposals that address TMDL implementation or problems in impaired waters are favored in the selection process. There is also a focus on implementing management activities that reduce or prevent release of pollutants which impair surface and ground waters.

Nonprofit organizations, local government agencies, Native American tribes, and educational institutions can qualify for funding. Additionally, State or federal agencies may qualify if they are collaborating with a local entity and are involved in watershed management or if they are proposing a statewide project.

6.1.1.2.4 Water Recycling Funding Grant and Loan Program (SWRCB)

The Water Recycling Funding Grant and Loan Program (WRFP) is a long-term program operated by the SWRCB that offers grants and low-interest loans for the planning, design, and construction of water recycling facilities. This WRFP can also be used to fund groundwater recharge facilities for indirect potable reuse.

Grants can be provided for facilities planning studies to determine the feasibility of using recycled water to offset the use of fresh/potable water from state and/or local supplies. Pollution control studies, in which water recycling is an alternative, are not eligible. Public agencies and privately-owned utilities regulated by the California Public Utilities Commission are eligible.

The WRFP receives funding from various sources, including Proposition 1 and the Clean Water State Revolving Fund (CWSRF, discussed below). Due to the varying funding sources, preferences for types of projects to be funded can vary.

6.1.1.2.5 Clean Water State Revolving Fund (SWRCB)

The CWA, as amended in 1987, provides for establishment of a Clean Water State Revolving Fund (CWSRF) program. The CWSRF is funded by varying combinations of federal grants, state funds (including Propositions 1, 50, and 84), and revenue bonds. The purpose of the CWSRF program is to implement the CWA and various state laws by providing financial assistance for the construction of facilities and implementation of measures necessary to address water quality problems and to prevent pollution of the Waters of the State and Waters of the US.

The CWSRF Loan Program provides low-interest loan funding for construction of publicly-owned wastewater treatment facilities, local sewers, sewer interceptors, water recycling facilities, as well as for expanded use projects, development and implementation of Comprehensive Conservation and Management Plans for estuaries, and for storm water treatment.

Publicly owned treatment works, local public agencies, non-profit organizations, and private parties are eligible to receive funding. Matching funds are not required. Applications are continuously accepted and a statewide total of $200 to $300 million is available annually.

6.1.1.2.6 Drinking Water State Revolving Fund (SWRCB)

The Federal Safe Drinking Water Act (SDWA) Amendments of 1996 authorized the creation of a revolving fund program for public water system infrastructure needs specific to drinking water. There is similar state legislation and the Drinking Water State Revolving Fund (DWSRF) reflects the intent of federal and state laws to provide grant funding and low-interest loans to correct deficiencies in public water systems based on a prioritized system. The highest priority is given to projects that address public health risks, projects that will assist a public water system with compliance with the SDWA, and projects that assist those public water systems most in need.

Funding is available for construction and enhancement of public water systems but may not be used to expand system capacity to accommodate future community growth. The program is funded by various combinations of federal grants, state funds (including Propositions 50 and 84), and revenue bonds. The program is administered by the SWRCB, Division of Drinking Water (DDW). To be eligible, the benefitting entity must be a public water system, but not necessarily a public agency.

Grant funding preference (as opposed to loan funding) is given to DACs.

6.1.1.2.7 Agricultural Drainage Loan Program (SWRCB)

The Agricultural Drainage Loan Program was created by the Water Conservation and Water Quality Bond Law of 1986 to address treatment, storage, conveyance, or disposal of agricultural drainage water that threaten Waters of the State. As implied by the program name, only loans are available, with terms of up to 20 years.

This program may be of interest for projects which target capture and control of agricultural runoff which would otherwise be discharged into Waters of the State of California.

6.1.1.2.8 Agricultural Water Use Efficiency Program (DWR)

This grant program is designed to fund agricultural water use efficiency projects. This particular water use efficiency Guidelines and Proposal Solicitation Package directly supports California Water Plan - Action Number One: Make Conservation a California Way of Life, as well as supporting several other Actions, either directly or indirectly.

Funding through this program is also directed towards agricultural water management planning and water use efficiency projects and programs developed pursuant to Part 2.8, commencing with Section 10800, of Division 6 of the California Water Code. Additional information can be found at the following link: http://www.water.ca.gov/wuegrants/SolicitationsProp1AG.cfm

6.1.1.2.9 Infrastructure State Revolving Fund- California Infrastructure and Economic Development Bank

Through the California Infrastructure and Economic Development Bank, this program funds public infrastructure projects deemed important to California communities. The financing is available to

cities, counties, special districts, assessment districts, joint powers authorities, and successor agencies.

Eligible projects may include streets and highways, sewage collection and treatment, water treatment and distribution, drainage, flood control, and solid waste collection and disposal. The financing can be paired with other grant and loan programs to complete a funding package for a project, although no local share is required, and program funds may serve as the sole source for the project.

6.1.1.3 Federal Funding Programs

6.1.1.3.1 WaterSMART (US Bureau of Reclamation)

The Sustain and Manage America's Resources for Tomorrow Program (WaterSMART) was established so that the United States Bureau of Reclamation (Reclamation) could work with states, Native American tribes, local governments and NGOs to secure and conserve water supplies for use by current and future generations.

In addition to sustainable water resources goals, the program addresses adaptive measures needed to address climate change and future demands.

Several of the programs described below are part of the WaterSMART program.

6.1.1.3.2 Water and Energy Efficiency Grants (Reclamation)

The Water and Energy Efficiency Grants program offered through Reclamation is an annual grant program which the applicant will need to provide a minimum of a 50 percent match. To establish eligibility, projects must demonstrate both water and energy savings.

6.1.1.3.3 Grants to Develop Climate Analysis Tools (Reclamation)

These grants, offered annually, provide funding to universities, non-profit organizations, and entities with water or energy delivery authority in the Western United States. The purpose of the funding is to further the development of tools to better manage water resources with the caveat that the tool must consider climate change. Seven areas of research are listed as eligible under this program; each area has the ultimate goal of better water resource management.

6.1.1.3.4 Advanced Water Treatment Grants (Reclamation)

The Advanced Water Treatment (ADWT) Grant Program offered by Reclamation funds demonstration and pilot projects which utilize advanced water treatment systems. The purpose of this program is to create new, economically feasible water supplies from brackish groundwater, seawater, and impaired waters.

The ADWT grant program encourages water agencies to accelerate the adoption of advanced water technologies including pretreatment, micro- and ultra-filtration, reverse osmosis, electrodialysis, advanced oxidation, concentrate disposal, and any other process that removes dissolved and suspended matter such as salts, viruses, and bacteria.

Funded projects may not be at production scale, but rather must be pilots designed to demonstrate the viability of the proposed process or treatment train. Operations and maintenance (O&M) costs for the pilot project are not included in the funding, cost sharing is required, and the projects must be completed within the specified timeframe of the grant.

6.1.1.3.5 Cooperative Watershed Management Program (Reclamation)

The Cooperative Watershed Management Program provides funding for Phase II watershed management projects. The Phase II funding opportunity was announced in September 2018 and the opportunity to submit funding applications will close in January 2019. Phase II funding will support local watershed groups in implementing collaborative solutions to water management issues.

6.1.1.3.6 Drought Resiliency Project Grants and Drought Contingency Planning Grants (Reclamation)

The Drought Resiliency Project and Planning Grant Program establishes a framework to provide federal leadership and assistance for using water efficiently, integrating water and energy policies to support the sustainable use of all natural resources, and coordinating the water conservation activities of various U.S. Department of the Interior bureaus and offices. (Reclamation operates as a bureau under the Department of the Interior.) Through the program, Reclamation is working to achieve a sustainable water strategy to meet the nation's water needs.

The objective of this Program is to invite states, tribes, irrigation districts, water districts, and other organizations with water or power delivery authority to leverage their money and resources by cost-sharing Drought Contingency Planning with Reclamation to build resilience to drought in advance of a crisis.

6.1.1.3.7 Title XVI Feasibility Studies Program (Reclamation)

Through the Title XVI program, Reclamation identifies and investigates opportunities to reclaim and reuse wastewaters and naturally impaired ground and surface water in the 17 Western States and Hawaii. The objective of this program is to facilitate development of feasibility studies under the Title XVI. Title XVI provides authority for Reclamation to provide up to 50 percent of the costs of studies to determine the feasibility of water reclamation and reuse projects.

Title XVI also includes funding for the design and construction of water recycling and reuse projects in partnership with local government entities.

Successful applicants must provide 50 percent non-federal cost share for the proposed activity.

6.1.1.3.8 Rural Water Supply Program (Reclamation)

Through this program, Reclamation assists rural communities in the western United States with planning and design of projects to develop and deliver potable water supplies. Public agencies and Native American tribes serving communities of less than 50,000 persons are eligible to receive funding for appraisal investigations and feasibility studies related to water supply.

6.1.1.3.9 Agricultural Water Conservation Grants (Reclamation)

Reclamation and the Natural Resources Conservation Service (NRCS) collaborate to make federal funding available to improve the efficiency of agricultural water use throughout the state of California. The projects funded through this partnership are intended to help communities build resilience to drought, including the modernization of their water infrastructure and efficient use of scarce water resources, while supporting the agricultural economy.

Reclamation has the authority to provide financial assistance to entities with water or power delivery authority, including water districts and irrigation districts, whereas NRCS has the authority to provide on-farm assistance.

6.1.1.3.10 San Joaquin River Restoration Program, Part III of Title X (Reclamation)

The San Joaquin River Restoration Program, operated by Reclamation, provides financial assistance to local agencies within the CVP area of California for the planning, design, environmental compliance, and construction of local facilities to bank water underground or to recharge groundwater to reduce, avoid, or offset the quantity of expected water supply impacts to CVP Friant Division long-term contractors caused by the interim and restoration river flow reductions.

6.1.1.3.11 Watershed Protection and Flood Prevention Grant Program (NRCS)

The purpose of the NRCS Watershed Protection and Flood Prevention grant program is to support activities that promote soil conservation and that promote the preservation of the watersheds of rivers and streams throughout the U.S. This program seeks to preserve and improve land and water resources via the prevention of erosion, floodwater, and sediment damages. The program supports improvement of (1) flood prevention, including structural and land-based treatment measures; (2) conservation, development, utilization and disposal of water; or (3) conservation and proper utilization of land.

Successful applicants under this program receive support for watershed surveys and planning, as well as watershed protection and flood prevention operations. Funding for watershed surveys and planning is intended to assist in the development of watershed plans to identify solutions that implement conservation practices, including nonstructural measures, to ultimately solve problems.

Matching funds are not required by the program; however, successful applicants generally provide matches ranging up to 50 percent either in cash or in-kind resources depending on such factors as project type and the kinds of structural measures proposed.

Eligible entities include states, local governments, and other political subdivisions; soil or water conservation districts; flood prevention or control districts; and tribes. Potential applicants must be able to obtain all necessary land and water rights and permits to successfully implement proposed projects.

6.1.1.3.12 FEMA/California Emergency Management Agency Infrastructure Improvement Grants (CEMA)

The Federal Emergency Management Agency (FEMA), through the California Emergency Management Agency (CEMA), funds grants to improve existing infrastructure to increase protection from hazards such as wildfires, earthquakes, and floods. The goal of the grant program is to improve infrastructure, particularly lifeline infrastructure such as water systems, hospitals, and fire protection, to reduce injuries, loss of life, and damage and destruction of property related to emergency hazards.

Grants are also available for the creation of Local Hazard Mitigation Plans.

6.1.1.3.13 North American Wetlands Conservation Act Grant (USFWS)

The US Fish and Wildlife Service (USFWS) offers these grants, which provide funds for projects that provide long-term protection of wetlands and the fish and wildlife species that depend upon wetlands for survival.

Applicants must be prepared to provide local match equal to the amount requested.

Eligible entities include organizations and individuals who have developed partnerships to carry out wetlands conservation projects in the U.S., Canada, and Mexico. Applications are continuously accepted by the USFWS for this grant.

6.1.1.3.14 Environmental Protection Agency, Pollution Prevention (EPA)

The EPA created the Pollution Prevention (P2) Grant Program (formerly Pollution Prevention Incentives for States) under the authority of the Pollution Prevention Act of 1990. The P2 Grant Program provides matching funds to state and Native American tribal programs to support P2 activities across all environmental media and to develop state-based programs.

The purpose of the P2 Grant Program is to give states and tribes the capability to assist businesses and industries in identifying better environmental strategies and solutions for complying with federal and state environmental regulations. It also aims to improve business competitiveness without increasing environmental impacts.

The majority of P2 Grants fund state-based projects for technical assistance, training, outreach, education, regulatory integration, data collection, research, demonstration projects, and recognition programs.

6.1.1.3.15 Environmental Protection Agency, Source Reduction Assistance (EPA)

The EPA annually awards grants and cooperative agreements under the Source Reduction Assistance (SRA) Grant Program. The purpose of the SRA program is to prevent the generation of pollutants at their source and ultimately provide an overall benefit to the environment. This program seeks projects that support source reduction, pollution prevention, and source conservation practices.

Source reduction activities include modifying equipment or technology; modifying processes or procedures; reformulating or redesigning products; substituting raw materials; and generating improvements in housekeeping, maintenance, training, or inventory control. Pollution prevention activities reduce or eliminate the creation of pollutants via such procedures as using raw materials, energy, water or other resources more efficiently; protecting natural resources through conservation; preventing pollution; promoting the reuse of materials and conservation of energy and materials.

Eligible organizations include units of state, local, and tribal government; independent school districts; private or public colleges and universities; nonprofit organizations; and community-based grassroots organizations.

6.1.1.3.16 Environmental Protection Agency, Wetlands Program Development Grants (EPA)

This program seeks projects that promote the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. The EPA has identified three priority areas: (1) the development of comprehensive monitoring and assessment programs, (2) the improvement of the effectiveness of compensatory mitigation, and (3) the refinement of the protection of vulnerable wetlands and aquatic resources.

Eligible entities include states, tribes, local governments, interstate associations, intertribal consortia, and national non-profit, NGOs.

6.1.1.3.17 Water and Waste Disposal Program (USDA)

The Water and Waste Disposal Program (WWDP) provides financial assistance in the form of grants and loans for the development and rehabilitation of water, wastewater, and storm drain systems within rural communities. Funds may be used for costs associated with planning, design, and construction of new or existing water, wastewater, and storm drain systems.

Eligible projects include storage, distribution systems, and water source development. Projects must benefit cities, towns, public bodies, and census-designated places with a population of less than 10,000 persons.

The intent of the program is to improve rural economic development and improve public health and safety.

6.1.1.3.18 Rural Development Agency (USDA)

The USDA, through its Rural Development Agency, offers grants and financing for construction repair of eligible utilities in communities of less than 10,000 persons. Public agencies and Native American tribes are eligible grantees.

Eligible utilities include electric, telecommunications, water, and environmental utilities providing wastewater, solid waste, and storm drainage protection services.

6.2 Implementation Strategy

The beneficiaries of the Plan are the stakeholders and residents of the region represented by the Plan. Stakeholders include water agencies; local, state, and federal agencies; NGOs, businesses, wildlife organizations, the agricultural and farm industry; landowners, residents, and others within the Region. There are no Native American tribes within the Plan area. The Plan will, through project implementation, ensure multiple regional benefits.

As part of this Plan, the Authority solicited all stakeholders for projects to be submitted for inclusion in the Plan. To the extent detailed information was available, projects were analyzed and ranked within the Plan. Comments on the Plan and the project rankings were solicited from all stakeholders. The projects identified within this Plan will be submitted through the Authority for implementation.

A draft of this document was distributed to interested stakeholders using the Authority's notification list. Comments received from interested parties were incorporated. Once finalized, this Plan will be adopted by the Authority and will work in conjunction with the existing IRWMP.

The project sponsor or responsible agency will be responsible for the implementation of the project including tracking the effectiveness of the project in accordance with the parameters given in the project application as well as any applicable permits, documents, or grant agreements.

6.2.1 Timeline, Action Items and Responsible Parties

The SWRP has been prepared and accepted by the Authority as of the adoption date of this Plan and is hereby incorporated into the IRWMP by reference, simultaneously. Members and Interested Parties of the IRWMG will adopt the updated IRWMP and, by reference, this SWRP, according to their individual schedules.

This Plan does not mandate any action items prior to initiation of projects included herein. Upon receipt of funding to progress these projects forward, the individual projects will include information and details on actions to be undertaken by the project proponent.

The responsible parties for project implementation are the project proponent or sponsor, as indicated for each project on each individual project form. At this time, the Authority is not directly responsible for any project.

6.2.2 Community Participation

Community outreach and public participation is further discussed in Chapter 7.

6.2.3 Project Status and Timelines

The Authority prepares an annual report detailing new projects undertaken within the IRWM area. This report also includes the status and timelines associated with new and ongoing projects. The process for preparing the annual report is further defined in the IRWMP.

6.2.4 SWRP Project Monitoring

Data is vitally important to agencies trying to maximize operating efficiency and design projects with limited budgets. The types of data available, current relevance and trends, together with knowledgeable people able to interpret the data with accuracy and insight are all important. Equally important is the opportunity for federal and state agencies to view local data for their own monitoring needs and to better understand local conditions.

The achievement of objectives and goals outlined in the Plan by implemented projects will be monitored in accordance with the requirements of any applicable grant application or grant funding agreement. It is anticipated that future funding applications and agreements will outline the methods to be used to determine realization of project benefits, including quantitative metrics. This Plan provides concepts that can be incorporated into those monitoring activities.

6.2.5 SWRP Review and Updates

The Authority will evaluate the SWRP on an ongoing basis and provide an update to the Plan on an as-needed basis either according to adaptations needed or in response to updates required by the State. This is the same process through which the IRWMP is updated.

6.2.6 SWRP Project Permitting

The location and type of project will dictate the permits necessary for implementation. The timing of the permits will be dependent upon securing financing and the release of grant funding. Permits will be obtained by the project sponsor or responsible agency. These permits may include the following:

- *Construction Permits through the County or City;*
- *Complying with CEQA and NEPA, as required;*
- *CDFW Streambed Alteration Agreement;*
- *Central Valley Flood Protection Board encroachment permits;*

- *US Army Corps of Engineers, Section 404 permit;*
- *RWQCB Section 401 water quality certificate;*
- *USFWS Incidental Take Permit;*
- *RWQCB Storm Water Pollution Prevention Permit;*
- *San Joaquin Valley Air Pollution Control District dust control permit;*
- *Water Rights filing; and*
- *Any other permits determined necessary.*

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7 Education, Outreach, and Public Participation

7.1 Public Outreach and Participation Opportunities

Through public education and community events offering opportunities for public participation, key stakeholders and community members will have the opportunity to be involved in actions and decisions regarding the implementation and design of watershed-based storm water management projects noted in this Plan. The goal of these efforts will be to engage the public when considering major technical and policy issues related to the development and implementation of the Plan. This section discusses the mechanisms, processes, and milestones that will be used to facilitate public participation and communication of project benefits.

7.1.1 Identifying Key Stakeholders

Keeping all interested stakeholders informed and engaged is a high priority for the Authority. Key stakeholders that have been involved in plan development include members of the Authority, DACs, local industries, ratepayers, developers, and the residents of those communities. These stakeholders have provided information and guidance on the Plan and will be involved in the planning, development, and construction of projects supported by the Plan. The DACs that will be directly affected by the types of projects discussed in Chapter 5 vary with the project but may include all DACs referenced in the 2018 KBWA IRWMP.

While the IRWM members and specific DACs are noted as the main stakeholders in the implementation of the Plan, additional parties that may provide information or comments include developers, locally-regulated commercial and industrial stakeholders, nongovernmental and nonprofit organizations, and the general public. As plan-sponsored projects move from plan development to design to construction, these additional parties will be identified by the Member Agencies and project proponents, and points-of-contact will be researched and included in communication distribution lists.

7.1.2 Public Outreach/Participation Actions

7.1.2.1 Plan Development Communication

During the development phase of the Plan, the Authority identified key stakeholders, who, along with other members and interested parties of the IRWMG, were invited to attend and participate in public meetings, learn about SWRP components, and contribute storm water-related projects to be included in the Plan. The initial public meeting was held in May 2017. The meeting was held in conjunction with the update of the IRWMP. The Authority gave a presentation, setting forth the purpose and needs for a SWRP and explaining the Plan's elements. A total of eight SWRP informational meetings, 5 KBWA Advisory Committee meetings, and 5 KBWA Board of Directors meetings were held during Plan development, concluding in the Fall 2018.

7.1.2.2 Plan Implementation Communication

As the projects listed in the Plan begin their implementation phase (planning, design, and construction), the project sponsors will conduct a communication program to convey information and progress regarding the project to their rate-payers, surrounding landowners, and directly-affected community members. The outreach methods planned to engage these groups and individuals during project implementation may include direct community outreach, printed material distribution, digital communication techniques,

7.1.2.2.1 Direct Community Outreach

- ***Educational Public Meetings –*** *Educational public meetings will be held as often as needed to be beneficial, specifically when the project involves or affects a DAC or directly impacts landowners and ratepayers of the responsible district(s). A majority of the public meetings will be in direct relation a project; the agency responsible for the project will be responsible for conducting public outreach and educational meetings.*

  Attendance at the meetings will be taken to track participants, allow provision of meeting summary information to stakeholders not in attendance, and to follow-up on specific questions or issues that may come up in discussions and cannot be answered on the spot.

- ***Community and Stakeholder Surveys –*** *Community and stakeholder surveys may be utilized to gather additional information, particularly from landowners and DAC community members as a follow-up to the initial public meeting. All surveys should be provided in both English and Spanish versions to maximize potential participation. Again, these efforts, if needed, will be conducted by the project sponsor.*

7.1.2.2.2 Printed and Digital Communication

- ***Printed Materials –*** *Printed materials may include fliers, letter correspondence, presentation materials and/or signage. The project sponsor will be responsible for preparing and distribution necessary materials for any projects undertaken.*

  In the instance the Plan requires revision, a similar process to that which was followed for preparation of this Plan will be utilized, including outreach to affected community members, DACs, ratepayers, developers, NGOs, and the general public.

- ***Signage –*** *If projects are funded by specific grants then they may be required to install specific signage informing the public about the project.*

- ***Websites –*** *The Kings Basin Authority website (www.kingsbasinauthority.org) will be used for Plan updates or revisions, while the project sponsors' website may be used as a location for digital communications.*

- ***Email Distribution –*** *The primary means of communication with members of the Authority regarding the Plan itself will be email. Messages are sent as upcoming public meetings are scheduled.*

7.1.3 Involvement of Disadvantaged and Climate-Vulnerable Communities

The definition of DAC is discussed and provided in Section 4.4, above. The definition of Climate Vulnerable Communities (CVC), established by the Integrated Climate Adaptation and Resiliency Program (ICARP) Technical Advisory Council in April 2018, is:

> *"Climate vulnerability describes the degree to which natural, built, and human systems are at risk of exposure to climate change impacts. Vulnerable communities experience heightened risk and increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts. These disproportionate effects are caused by physical (built and environmental), social, political, and/ or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, sexual orientation and identification, national origin, and income inequality."*

The State of California uses the CalEnviroScreen 3.0 tool to determine the climate vulnerability of communities throughout the State. Utilizing this tool indicates a majority of the area within the SWRP boundary is considered to fall within the highest levels of vulnerability to climate change impacts according to that tool. Therefore, it is appropriate to consider all involved communities of this Plan as being climate-vulnerable and further that all DACs are also CVCs.

DAC and CVC involvement will be integrated as the Plan is implemented and projects within or adjacent to DACs or CVCs who are not Member Agencies begin to come to fruition. A composite listing of DACs within the Plan area is shown in Table 4-2 of the 2018 KBWA IRWMP. A comparable list of CVCs within the Plan area has not been prepared; however, the CalEnviroScreen 3.0 tool can be utilized to identify CVCs. Specific DACs and CVCs that may be affected by storm water projects should be included in the implementation of the Plan if they are at all interested.

7.1.4 Communicating with and Educating DACs

Most unincorporated communities within the Authority service area are DACs, so communication with their representatives is essential to the successful completion of watershed-based storm water management projects. A priority for the Authority will be to engage DACs and open lines of communication to convey important information including project design objectives, construction timelines and the short and long-term benefits created by the project for their communities. These same communication lines will be used to solicit information from community members, such as how project design, function, and environmental factors could impact their quality of life.

Including the DAC members in the Plan development creates a sense of ownership in the project and increases the likelihood that they will participate over the entire implementation time period and will provide feedback that could be crucial to long-term solutions. Participation of community members will be tracked using a sign-in system at public meetings. With permission, the names of responders to community surveys will be recorded so that they may be added to the email list for future communication and for other correspondence with community members regarding the specific project.

In order to facilitate communication and education for the DAC communities, the Authority partnered with Self-Help Enterprises (SHE), a community development agency that works with DAC members in the San Joaquin Valley, to organize and carry out a thorough communications program targeting DACs. Together, the Authority and SHE carried out the following actions:

Task 1, DAC Geography Review

- *The Authority provided a map of the DACs located in the plan area.*
- *SHE developed a DAC outreach list and determined the locations for proposed regional community meetings.*

Task 2, Community Outreach

- *Developed community meeting invitation and project factsheet*
- *Attended key DAC board meetings*
- *Responded to calls from key board members and/or community leaders*

Task 3, Two Planning and Coordination Meetings

- *Development of the meeting materials*
- *Attended meeting with Fresno County staff*
- *Attended meeting with Tulare County staff*

Task 4, Meeting Planning and Development of Materials

- *Development of meeting materials including agendas, presentations, and handouts*
- *Translation of final documents into Spanish*

Task 5, Conduct Regional Meetings

- *Conducted six community meetings with English/Spanish translation services available*
- *Supported and facilitated community discussions*

Task 6, Development of Projects

- *Based on information gathered during Regional Meetings, several projects were developed at a conceptual level to be added to the project list*
- *Submitted new project forms to the Authority*

A total of six DAC public meetings were held during Plan development. Meetings were held in the communities of Riverdale, Orosi, Traver, Raisin City, Armona, and Tranquillity. During the meetings, the locations, frequency, and impacts of storm events and flooding in the area were discussed. Maps of each area had been created in advance and were displayed to inform and document the discussions. Potential solutions for storm water impacts were discussed among meeting participants and a list of recommendations was created.

As a result of these meetings, additional projects were identified and added to the Plan's project list. These projects specifically address the comments and concerns of the DAC members. The documentation of these projects provides a platform where they can either be implemented as standalone projects or incorporated into other projects.

The ongoing involvement of DACs in the Plan will be tracked by the Authority to help ensure their involvement continues after initial Plan development. Ongoing involvement of all stakeholders is crucial for effective implementation of the plan and development and construction of projects.

7.2 Addressing Environmental Injustice Needs and Issues

Project proponents are responsible for identifying and addressing environmental injustice needs and issues in their communities, specifically those that are impacted by the potential project. Many

residents may not be familiar with the regulations, benefits, and potential burdens that a project may have on their communities. Communication, including providing representation and education about the entire process, is paramount to reducing or eliminating environmental injustices.

A majority of the incorporated cities and unincorporated communities within the Authority service area are designated DACs or SDACs. As a result, it is likely that most projects selected for listing will benefit DAC residents in some way and that minority residents will benefit at a level that is at least fair and equitable.

The involvement of these communities early in the planning process helps identify aspects of project construction or outcomes that could negatively affect residents' quality of life, so that short- and long-term solutions can be incorporated into final designs and project implementation. Opportunities to communicate with members of DAC communities and gather their input may be carried out by the project sponsor in a similar manner as was conducted during preparation of this Plan, as described in Section 7.1.4 above

7.3 Public Engagement and Education Schedule

Throughout the development of the Plan, public involvement and engagement were promoted through a series of public information meetings. These meetings provided background information regarding the need for a Plan, the requirements of the Plan, Plan elements, and solicited input on possible storm drain projects. In addition to the six DAC meetings that were discussed in Section 7.1.4, public informational meetings were held in conjunction with IRWM meetings. These meetings provided background on the Plan and included calls for projects. Additionally, potential projects were discussed among the Authority members and stakeholders in attendance and synergies between projects were noted. During Plan implementation, the regular IRWM meetings will be used as an additional tool to keep stakeholders engaged in the projects and informed about funding opportunities. Going forward into implementation, the schedules for public engagement and education efforts will vary by project. The contacts and information provided during Plan development will be used to build upon and create stakeholder understanding and support.

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Appendix A

IRWMP Project Solicitation Form and Supplemental Stormwater Form

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KINGS BASIN
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PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 8/28/2018

- INSTRUCTIONS FOR COMPLETING THIS FORM -

PURPOSE

The Kings Basin Water Authority (KBWA) is a California Joint Powers Authority of local agencies and non-governmental organizations located in the Kings River Basin. This unique organization has been working together for more than a decade to deal with the region's most pressing water resources issues. To help guide planning activities, Kings Basin stakeholders have developed and adopted an Integrated Regional Water Management Plan (IRWMP) which includes a list of plan implementation projects (the IRWMP Project List). Collectively, these projects seek to address regionally adopted Goals and Objectives that are outlined in the IRWMP. The IRWMP Project List contains many project types, including but not limited to, flood control, groundwater recharge, water conservation, river parkways and surface water treatment. Completion of this form is the first step in the process of approving a new project. The full Project Review Process is described in Chapter 7 of the IRWMP. An electronic copy of the IRWMP can be downloaded from the KBWA website at www.kingsbasinauthority.org.

ELIGIBILITY

Only organizations that have been formally approved as Members or Interested Parties of the Kings Basin Water Authority may submit projects for IRWMP Project List consideration.

COMPLETING THE FORM

Each section of this form must be fully completed following the instructions highlighted in **YELLOW**. All highlighted yellow areas should be removed and/or completed prior to submitting the form. Incomplete/errant forms will be returned to the project sponsor with a request for additional information and potentially causing a significant delay in the process of adding a project to the Project List. Several sections include specific requests for minimum and maximum number of words for a description, and minimum and maximum number of boxes that can be checked for each category (i.e. Goals and Measurable Objectives). Project sponsors must adhere to these limits. Regarding the identification of Goals and Measurable Objectives, "more is less". Only select those that are highly relevant to the primary benefits of the project. Project sponsors may attach supporting documents; however, supporting information is not a requirement for this early stage of project development and consideration by the Kings Basin Water Authority.

HOW TO SUBMIT, EVALUATION & APPROVAL

Forms must be submitted to slee@krcd.org at least 10 business days prior to a regularly scheduled Advisory Committee meeting. The Advisory Committee meets on the third Wednesday in March, June, and September. The Board of Directors meets on the third Wednesday in April, July and October. A schedule of quarterly meeting dates is posted to the KBWA website. If determined to be adequately in line with objectives of the IRWMP, the Project Work Group will place the candidate project before the Advisory Committee for consideration, followed by a final consideration for approval by the Board of Directors.

NOTE: Participation information, upcoming meeting dates, and a copy of the IRWMP can be obtained from our website at www.kingsbasinauthority.org

Project Name	**Title of the Project**
Project Proponent(s)	**Name of the Lead Organization (must be Member or Interested Party)**
IRWMP Adoption	**Has the Project Proponent adopted the current IRWMP?** (Yes or No. If Yes, when?)
Project Contact	**Name:** **Email:**
Project Location	If known, Lat/Long coordinates of the project are preferred. If an exact project location has not yet been identified, applicant must provide a description of the area or areas where the project will likely be located.
Project Description	Provide a brief description of the project, including size and expected benefits, i.e. the project will recharge 4,000acre-feet, etc.
Project Status	At what stage of development is the project?

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

Please briefly explain.

Background	(***Minimum 75 words***) What lead to the project's conceptualization? Why is this project important and how urgent is the need? Who are the project sponsors/cooperators? Has any work already been completed or is any currently in progress (e.g. CEQA or other studies)?
Project Workplan	(***Minimum 75 words – Maximum 400 words***) Provide a list of the tasks (and subtasks if known) required to complete the project and a brief description of each task.

Regional Goals

***1)** Insert an **'X'** next to the **ONE** primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
***2)** Insert an **'X'** next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (**Minimum 75 words**)*

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
		RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
		RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

Measurable Objectives

***1)** Insert an **'X'** next to the **ONE** primary Kings Basin IRWMP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective.*
***2)** Insert an **'X'** next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*
***3)** For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (**Minimum 75 words**)*

Put 'X' by one Primary Objective	Put 'X' by Secondary Objectives that apply	No.	Objective
		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand
		MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects

		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

Resource Management Strategies

Identify *by inserting an **'X'*** next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (***Minimum 50 words***).

Category	Strategy	Put X by all that apply
Reduce Water Demand	Agricultural Water Efficiency	
	Urban Water Efficiency	
Improve Operational Efficiency and Transfers	Conveyance - Regional/local	
	System Reoperation	
	Water Transfers	
Increase Water Supply	Conjunctive Management & Groundwater Storage	
	Precipitation Enhancement	
	Recycled Municipal Water	
	Surface Storage - Regional/local	
Improve Water Quality	Drinking Water Treatment & Distribution	
	Groundwater Remediation/ Aquifer Remediation	
	Matching Quality to Use	
	Pollution Prevention	
	Salt and Salinity Management	
	Urban Stormwater Runoff Management	
Improve Flood Management	Flood Risk Management	
Practice Resources Stewardship	Agricultural Lands Stewardship	
	Ecosystem Restoration	
	Forest Management	
	Land Use Planning and Management	
	Recharge Area Protection	
	Watershed Management	
People & Water	Economic Incentives (Loans, Grants, & Water Pricing)	
	Outreach and Engagement	
	Water and Culture	
	Water-Dependent Recreation	
Other Strategies	Crop Idling for Water Transfers	
	Irrigated Land Retirement	
	Rainfed Agriculture	
	Drought Planning	

Project Feasibility	Describe how the project has been determined to be technical feasible. (If the project is still conceptual, you do not have to answer this question.) Describe the economic feasibility of the project. (If the project is still conceptual, you do not have to answer this question.)
DAC Water Needs	Does the project provide specific benefits to critical water supply or water quality needs of a Disadvantaged Community (DAC) as defined by CWC 79505.5(a) and as listed within Tables 4-2 and 4-3 of the Kings Basin IRWMP? If so, how, and are there any Environmental Justice concerns? If non-DAC, mark N/A.
Climate Benefits	Does the project contribute to region adapting to the effects of climate change? If so, how? Does the project contribute to reducing Greenhouse Gas emissions? If so, how?
Project Schedule	Has a schedule for project completion been identified? Yes or No If yes, please provide.
Estimated Cost	The total project cost is estimated at Please specify an estimated project cost in dollars ($) Is permanent funding for the operation and maintenance of the project available? Please specify if a funding source is available and, if so, how the funding will provided.

KINGS BASIN
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STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

Project Name **Title of the Project**

SWRP Goals

*1) Insert an **'X'** next to the **ONE** primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
*2) Insert an **'X'** next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more). **(Minimum 75 words)***

Put 'X' by one Primary SWRP Goal	Put 'X' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
		Augment Surface or Groundwater Supply (WS)
		Floodwater Management (FM)
		Environmental (E)
		Community (C)

SWRP Benefits

*The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. **To be eligible, projects must address at least two Main Benefits.***
*1) Insert an **'X'** next to the **ONE** primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
*2) Insert an **'X'** next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
*3) For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more). **(Minimum 75 words)***

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
			WS	Water supply reliability			
			WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
			FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Project Funding

Is permanent funding for the operation and maintenance of the project available?
Please specify if a funding source is available and, if so, how the funding will be provided.

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

Project Location	Is the project located on publicly owned land? Yes or No
Monitoring	Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project.

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Appendix B

Ranked Project List

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APPENDIX B
Kings Basin Water Authority Stormwater Resources Plan
Prioritization Chart (Updated 4/29/2021)

		Primary SWRP Goals					Main Benefits (P=Primary, S=Any Secondary, must have 2 to be eligible)										Additional Benefits									Additional Factors (Enter Y for yes, leave blank for no)				Score (1 for each Benefit and Additional Factor)	Quantified Primary Benefit				
		SWQ	WS	FM	E	C	SWQ	WS	WS	FM	E	E	E	E	C	C	SWQ	SWQ	WS	FM	E	E	E	C	C										
Proponent	**Project**	Storm Water Quality (SWQ)	Water Supply (WS)	Floodwater Management (FM)	Environmental (E)	Community (C)	Increase infiltration and/or treatment of runoff	Water supply reliability	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)	Decrease flood risk by reducing runoff rate and/or volume	Wetland enhancement/creation	Riparian enhancement	Instream flow improvement	Increased urban green space	Employment opportunities provided	Public education	Source pollution control	Reestablish natural drainage and treatment	Water conservation (Reduction of Demand)	Reduce sanitary sewer overflows	Reduced energy use, greenhouse gas emissions, or provides a carbon sink	Reestablishment of natural hydrograph	Water temperature improvements	Enhanced and/or created recreational and public use areas	Community involvement	Ready to implement?	Located in a DAC?	Land currently owned by a public agency?	Permanent funding available for operation and maintenance?		**Quantity**	**Units**	**Measurement**	**Estimation Method**	**Project Notes**
FMFCD	Basin "SS" Pump Station - Regional Groundwater Recharge Project		P	S	S	S	S	P	P	S							S									N	Y	Y	Y	11	1800	AF/year	volume recharged		
FMFCD	Basin "CE" Pump Station - Regional Groundwater Recharge Project		P	S	S	S	S	P	P	S							S									N	Y	Y	Y	11	1800	AF/year	volume recharged		
FMFCD	Basin "CF" Pump Station - Regional Groundwater Recharge Project		P	S	S	S	S	P	P	S							S									N	Y	Y	Y	11	1400	AF/year	volume recharged		
Fresno Irrigation District	Eastside Stream Improvement Project		S	P	S			P	S	S	S							S								N	N	Y	Y	9	200	AF/day	volume recharged		Benefit gained when water is flowing.
City of Selma	Storm Drain, Storage and Recharge project		P	S			S	S	P	S																Y	Y	Y	Y	10	210	AFY	volume recharged		
City of Reedley	Reedley Retention Basin Project		P	S			S	S	P	S																N	Y	Y	Y	9	49	AF/event	volume captured		
Laguna ID	Mussel Slough Recharge Project		P	S			S	P	S	S							S									Y		N		8	130	AF/day	volume recharged		
Laguna ID	Coelho Farms Recharge Project		P	S			P	S	P	S							S									Y	N	N		8	36	AF/day	volume recharged		
Tranquillity ID	Stormwater Project		S	P				S		P																Y	Y	Y	Y	8	2550	cfs	Increased conveyance capacity		
Laguna ID	Beeler Recharge Project		P	S			P	S	P	S							S									N	N	N		7	50	AF/day	volume recharged		
Laguna ID	Basin 11 Expansion Project		P	S			P	S	P	S							S									N	N	N		7	26	AF/day	volume recharged		
Laguna ID	Pires Recharge Project		P	S			S	P	S	S							S									N		N		7	14	AF/day	volume recharged		
Mid Valley WD	Mid-Valley James Bypass Surface Water Supply and Recharge Project		P	S			S	P	S	S																N	N	N	N	6	500	AF/day	volume recharged		
Raisin City WD	Raisin City WD Stinson North Canal Water Supply and Recharge Project		P	S			S	P	S	S																N	N	N	N	6	1000	AF/day	volume recharged		

APPENDIX B
Kings Basin Water Authority Stormwater Resources Plan
Prioritization Chart (Updated 4/29/2021)

		Primary SWRP Goals					Main Benefits (P=Primary, S=Any Secondary, must have 2 to be eligible)										Additional Benefits									Additional Factors (Enter Y for yes, leave blank for no)				Score (1 for each Benefit and Additional Factor)	Quantified Primary Benefit				
		SWQ	WS	FM	E	C	SWQ	WS	WS	FM	E	E	E	E	C	C	SWQ	SWQ	WS	FM	E	E	E	C	C										
Proponent	**Project**	Storm Water Quality (SWQ)	Water Supply (WS)	Floodwater Management (FM)	Environmental (E)	Community (C)	Increase infiltration and/or treatment of runoff	Water supply reliability	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)	Decrease flood risk by reducing runoff rate and/or volume	Wetland enhancement/creation	Riparian enhancement	Instream flow improvement	Increased urban green space	Employment opportunities provided	Public education	Source pollution control	Reestablish natural drainage and treatment	Water conservation (Reduction of Demand)	Reduce sanitary sewer overflows	Reduced energy use, greenhouse gas emissions, or provides a carbon sink	Reestablishment of natural hydrograph	Water temperature improvements	Enhanced and/or created recreational and public use areas	Community involvement	Ready to implement?	Located in a DAC?	Land currently owned by a public agency?	Permanent funding available for operation and maintenance?		**Quantity**	**Units**	**Measurement**	**Estimation Method**	**Project Notes**
Tulare County	Juvenile Detention Facility -- Cottonwood Creek	S	S	P	S		S	S	P	S	S	S					S					S		S		Y		Y							Benefit not quantified, ranking not assigned.
Fresno Irrigation District	Big Dry Creek Recharge Project		P	S	S			S	P	S		S	S				S									N	Y	Y	Y						Benefit not quantified, ranking not assigned.
Fresno Irrigation District	Fancher Creek Storage Project		P	S	S			S	P																	N	Y	Y	Y						Benefit not quantified, ranking not assigned.
City of San Joaquin	Storm Pump Station Rehab & Basin Upgrades		S	P	S		S	S	S	P											S					N	Y	Y	Y						Benefit not quantified, ranking not assigned.
Terranova Ranch	McMullin On-Farm Flood Capture Project, Phases 2 & 3		P	S			S	P	S	S																Y	Y	N	Y						Benefit not quantified, ranking not assigned.
Raisin City WD	Grantland Recharge Project		P	S			S	P	S	S																		Y	Y						Benefit not quantified, ranking not assigned.
City of Orange Cove	Orange Cove Storm Water Planning Study		S	P					P	P																Y	Y	Y	Y						Benefit not quantified, ranking not assigned.
Liberty WD	Fresno County Elkhorn Property Recharge Project		P	S			S	P	S	S																N	Y	Y							Benefit not quantified, ranking not assigned.
Bakman Water Company	Recharge Basin		P	S			S	P	S	S																N	Y	N	Y						Benefit not quantified, ranking not assigned.
Tulare County	Yettem-Button Ditch Flood Control Project			P		S		S		P											S						Y	N	Y						Benefit not quantified, ranking not assigned.
Fresno County	West Fresno County Flood Mitigation Project		S	P				S		P																N	Y	Y	Y						Benefit not quantified, ranking not assigned.
Tulare County	Sultana Area Stormwater Project		S	P				S		P							S									N	Y	Y	Y						Benefit not quantified, ranking not assigned.
Tulare County	Traver Stormwater Project		S	P				S		P							S									N	Y	Y	Y						Benefit not quantified, ranking not assigned.
City of San Joaquin	Storm Drain Improvements at 9th and 6th Streets			P					S	P																N	Y	Y	Y						Benefit not quantified, ranking not assigned.

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PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 6/26/2018

Project Name	**FMFCD Basin "SS" Pump Station – Regional Groundwater Recharge Project**
Project Proponent(s)	**Fresno Metropolitan Flood Control District**
IRWMP Adoption	**Has the Project Proponent adopted the current IRWMP?** Yes, on December 12, 2018.
Project Contacts	**Name: Jarrod Takemoto, Engineer, FMFCD** **Email:** jarrodt@fresnofloodcontrol.org **Name: Brandy Swisher, Grants Administration, FMFCD** **Email:** brandys@fresnofloodcontrol.org
Project Location	The project is located northeast of the intersection of Walnut Avenue and Annadale Avenue, in the southwest corner of the City of Fresno, at 119.8058 degrees west longitude / 36.7014 degrees north latitude.
Project Description	The project consists of the construction of a groundwater recharge intertie between a Fresno Irrigation District canal and Fresno Metropolitan Flood Control District Drainage Basin "SS", to facilitate the diversion of City of Fresno surface water entitlements into the basin under current agreements. This improvement is consistent with the goals and objectives of the Upper Kings Basin Integrated Regional Water Management Plan and the objectives of the Fresno Area Regional Groundwater Management Plan. This project also includes the construction of the basin pump station. The basin pump station is necessary to provide localized flood protection during the winter months. It is expected that this project will recharge approximately 1,800 acre-feet annually. Project benefits include enhancing groundwater recharge, increasing localized flood protection capabilities, enhancing wildlife habitat, reducing energy use, improving groundwater quality, increasing water supply, and maximizing beneficial uses of public property. Urban stormwater basins can provide groundwater recharge in multiple ways. As stormwater retention basins, such sites are designed to retain stormwater captured by the local pipeline collection system draining to the basin. By capturing and retaining urban stormwater, it is allowed to percolate through the basin floor and sideslopes into the groundwater aquifer. During the spring and summer months, when little to no rainfall is expected, urban stormwater basins require very little rainfall storage capacity. Therefore, these basins are able to accept a large amount of surface water without compromising the level of service of the urban storm drainage system. The diversion of surface water to stormwater basins typically coincides with FID's canal delivery season, which generally beings in mid-April and ends in mid-October. The amount of surface water that can be diverted to a stormwater basin varies from basin to basin and depend on a several variables (permeability of underlying soil, surface water conveyance capacity to the basin, annual rainfall pattern, construction or maintenance schedules in basin, availability of permanent and/or portable

pumps, etc.).

In order to divert surface water to an urban stormwater basin, a recharge intertie must be constructed. A recharge intertie is an interconnection between a surface water delivery line (canal) and a storm drain and/or urban stormwater basin. Such interties typically consist of a canal turnout structure, a meter and metering structure, and a connecting pipeline.

The estimated amount of recharge for the Basin "SS" site was calculated based on several factors including current available excavation, surface water conveyance capacity, projected maintenance, and some knowledge of underlying soils.

This project feature has benefits specific to the goals and objectives of the IRWMP as follows:

1. Imported surface water delivered to the basin and captured stormwater runoff will add to the total groundwater recharge program of the City of Fresno, City of Clovis, Fresno Irrigation District and the Fresno Metropolitan Flood Control District. It is estimated that the total additional annual amount of water recharged will be approximately 1,800 acre-feet.

2. The project will reduce the risk of flooding and flood damages for the local watershed. It will increase public health and safety protection, improve stormwater management and flood routing flexibility, and improve flood control system reliability.

3. This Project feature meets the needs of the Regional Goals of the Plan specifically to (i) establish system interties, (ii) halt and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater, (iii) enhance the operational flexibility and reduce constraints of the flood control system, (iv) improve and protect water quality, (v) provide safe flood protection, (vi) capture stormwater currently lost in the region by holding water that otherwise would be conveyed to through the Fresno Irrigation canal system, and (vii) enhance the open space and wildlife habitat.

4. This Project feature is consistent with the objectives of the Fresno Area Regional Groundwater Management Plan.

Project Status

At what stage of development is the project?

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	X
Ready for Construction	

Please briefly explain
The basin design has been completed and is an integral piece in determining the project's design parameters. The preliminary storm drain alignment has been determined and hydraulic calculations have been performed to determine storm drain pipeline sizes. The project is ready to move into the final design phase, which includes designing the construction plans and specifications.

Background

The Fresno Metropolitan Flood Control District is the Project sponsor. The District involvement in local water resources including groundwater recharge, flood and stormwater control and environmental enhancement has been significant over the years. This Project is part of our ongoing program for local water resource management and is essential to the region. The project elements are urgently needed to (i) help correct the current overdraft of the groundwater, (ii) lessen the consumption of potable water, (iii) improve water quality, (iv) reduce energy consumption, and (v) lessen long term public expense and enhance the joint agencies' use of water rights. Enhancing water storage facilities and flood routing capability in the region always improves water resource management.

Project Workplan

1. Further refine project work in meetings with participating agencies to establish project details.
2. Amend agreements with FID and Cities on the delivery of the Cities water entitlements to these basins.
3. Complete the design and construction plans and specifications for the Project.
4. Solicit bids for the work.
5. Construct project.
6. Follow through with all post-project grant implementation requirements.

Regional Goals

Put 'X' by <u>one</u> Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
X		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	X	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	X	RG3	Improve and protect water quality
X		RG4	Provide additional flood protection
	X	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1: When the basin is not being used for stormwater management and flood control

purposes, it can be utilized for groundwater recharge. It is anticipated that the Project will add an additional 1,800 acre-feet of recharge water annually to the local groundwater aquifer.

RG2: By increasing groundwater recharge and interconnecting FID and FMFCD systems, water supply reliability and operational flexibility are enhanced.

RG3: By recharging high quality surface water to the groundwater, water quality in the aquifer will be improved.

RG4: One of the strategies of the IRWMP Regional Goals is for improving flood protection by supplying both flood control and water supply benefits such as recharge basins, off channel reservoirs, and flood control basins. This Project achieves each of these goals. The Project will provide additional off channel flood control basins that will be used to enhance the ability to route flood flows through the FID system.

RG5: Additional surface water in the basin will provide additional wildlife habitat. Basins that receive recharge water provide a well-protected area for many species of wildlife. Typically the basins are havens for foxes, coyotes, geese, ducks, egrets, frogs, birds, and many other species of wildlife.

Measurable Objectives

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Objective
X		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	X	MO4	Increase average annual supply and reduce demand
	X	MO5	Increase dry year supply
	X	MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
	X	MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1: The primary goal of the Project will be to increase the amount of groundwater

recharge. It is estimated that the Project will provide 1,800 acre-feet of groundwater recharge annually. Recharge records will be kept and reported to the IRWMA annually.

MO4: The increase in annual groundwater recharge produced by the Project creates an available water supply for the future. Water recharged to the groundwater also helps increase the average annual supply.

MO5: Similarly to MO4, increasing the groundwater supply with recharge translates to more groundwater available in dry years.

MO6: While the Project doesn't make improvements in the capacity in channels and canals, it does reduce the overall demand on such facilities by providing additional storage for both groundwater recharge and floodwater routing.

MO9: The Project will provide water quality improvements by recharging the aquifer with surface water. The recharge water will help improve the water quality through the process of dilution.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	X
	Water transfers	
	Conjunctive management and groundwater storage	X
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	X
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	X
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	X

	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Conveyance-regional/local: This Project will improve operational efficiencies in the system by providing additional groundwater recharge and stormwater storage facilities providing additional flexibility for FID to manage conveyance in their system.

Conjunctive management and groundwater storage: This Project will provide conjunctive management by providing multi-purpose facilities. The facilities can be used for groundwater recharge, stormwater detention, and groundwater quality remediation. The Project will benefit FID, the City of Fresno, as well as the District.

Groundwater remediation/Aquifer remediation: It is anticipated the Project will provide an additional 1,800 acre-feet of good quality groundwater recharge to the local area.

Flood risk management: With the additional basins and pump stations, FMFCD will be able to better manage flood flows in FID's system.

Watershed management: Being able to capture additional stormwater runoff, improve transportation of such flows, and provide additional wildlife habitat improves management of the watershed.

Project Feasibility	The construction of interties between FMFCD and FID facilities and basin pump stations are well understood types of projects; the technology, methods, materials, costs and processes are familiar to all participants.
DAC Water Needs	The City of Fresno is identified as a DAC. The Project provides benefits to the area through enhancing groundwater recharge. There are not any Environmental Justice concerns as the Project provides benefit to all people in the Region regardless of race, color, national origin, or income.
Climate Benefits	The project enhances the region's climate resiliency by increasing groundwater recharge capability; enabling the region to take advantage of opportunities to capture and store surface flows during wet periods for later use during droughts. The project may contribute to the reduction of Greenhouse Gas emissions by raising the local water table and thereby reducing the amount of energy required to extract stored groundwater.
Project Schedule	Has a schedule for project completion been identified? No If yes, please provide.
Estimated Cost	The total project cost is estimated at $780,000. Details are provided on Attachment A – Map & Preliminary Estimate of Cost.

KINGS BASIN Water Authority
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STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

Project Name **FMFCD Basin "SS" Pump Station – Regional Groundwater Recharge Project**

SWRP Goals

Put 'X' by one Primary SWRP Goal	Put 'X' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
X		Augment Surface or Groundwater Supply (WS)
X		Floodwater Management (FM)
	X	Environmental (E)
	X	Community (C)

SWRP Goal 2: The primary goal of the Project will be to increase the amount of groundwater recharged by 1,800 acre-feet annually by allowing surplus and wet-weather surface flows to be stored underground for later extraction.

SWRP Goal 3: The project will provide additional storage of flood flows being conveyed by the FID canal system.

SWRP Goal 4: The project will increase local surface water available for wildlife and vegetation.

SWRP Goal 5: The project will improve local groundwater supply conditions, increasing water security and quality for local groundwater users. Construction of such projects typically employs local labor, engineering and fabrication services contributing to the local economy.

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits		X	SWQ	Increase infiltration and/or treatment of runoff	1,800 ac ft/year	acre-feet	Estimated from flow rate and duration at diversion from canal to basin.
	X		WS	Water supply reliability	1,800 ac ft/year	acre-feet	Estimated from flow rate and duration at diversion from canal to basin.
	X		WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)	1,800 ac ft/year	acre-feet	Estimated from flow rate and duration at diversion from canal to basin.
		X	FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Ancillary		X	SWQ	Source pollution control			

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

SWRP Primary Benefit 1 (water supply reliability): A primary benefit of the Project will be to increase the amount of groundwater recharged by 1,800 acre-feet annually by allowing surplus and wet-weather surface flows to be stored underground for later extraction.

SWRP Primary Benefit 2 (conjunctive use): A primary benefit of the Project will be to divert surplus wet-year and flood-event surface water to groundwater that can later be extracted for beneficial use.

SWRP Secondary Benefit 1 (treatment of runoff): A benefit of the Project will be to divert surface water into a ponding basin where physical, chemical and biological action reduces the pollutant loading of the water infiltrating to groundwater.

SWRP Secondary Benefit 2 (decreased flood risk): A benefit of the Project will be to divert urban and rural runoff from an FID canal into a ponding basin, generating additional flood-relief capacity in the canal downstream from the basin.

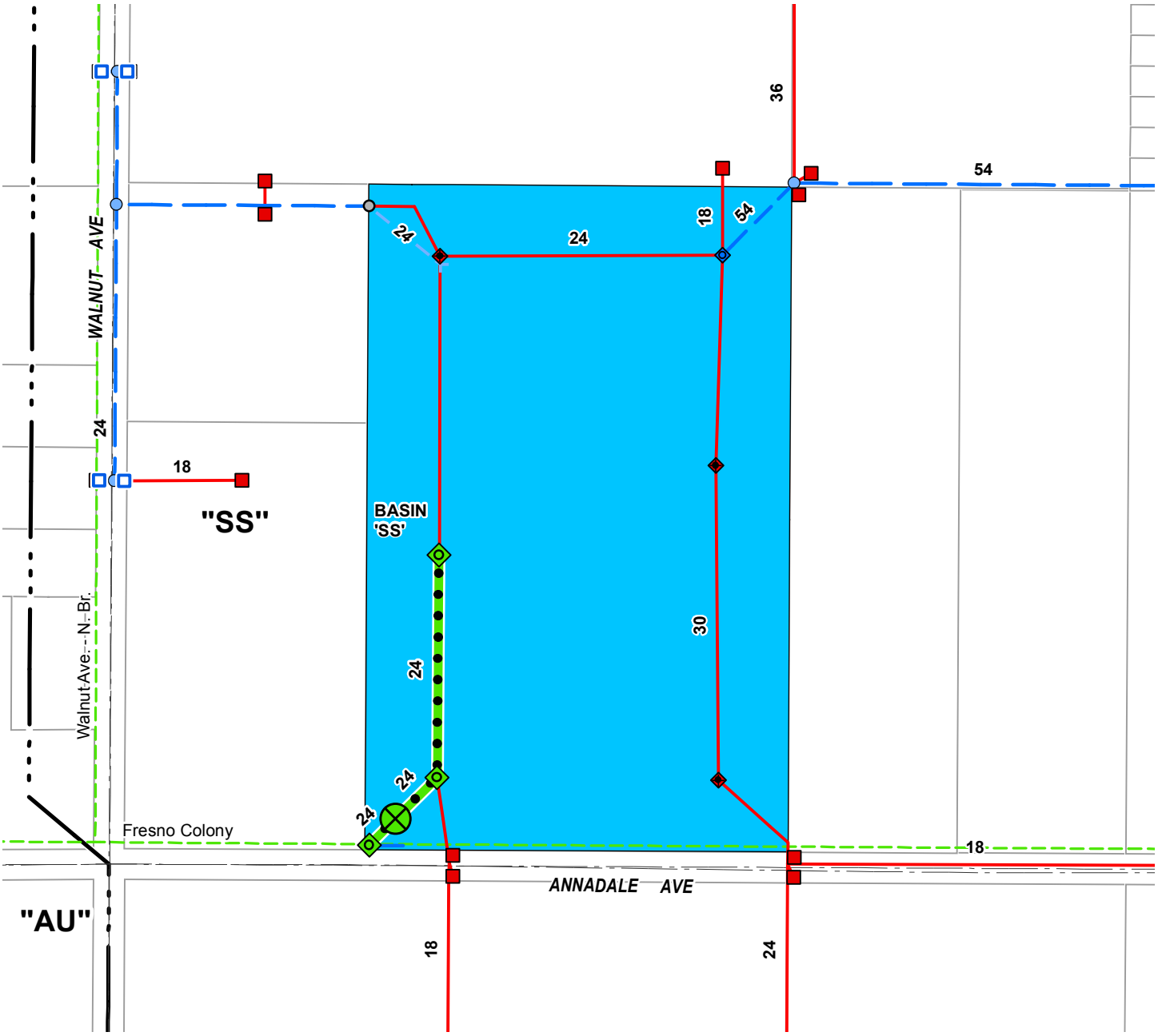
SWRP Secondary Benefit 3 (Source pollution control): A benefit of the project is to utilize physical, chemical and biological action through the process of intentional recharge and maintaining the infiltration soils to provide pollution control of the stormwater supplies.

Project Funding	Fresno Metropolitan Flood Control District receives compensation for accepting and recharging surface water entitlements. This revenue stream plus general fund monies together will cover costs relating to the long-term operation and maintenance of the basin intertie.
Project Location	Is the project located on publicly owned land? Yes, the basin is owned by FMFCD
Monitoring	FMFCD will monitor the basin to measure incoming water, infiltration rate and estimated total annual amount of water recharged to groundwater.

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

Attachment A

NOTE: THIS MAP IS SCHEMATIC. DISTANCES, AMOUNT OF CREDITABLE FACILITIES, AND LOCATION OF INLET BOUNDARIES ARE APPROXIMATE.



LEGEND

- Pump Station To Be Constructed
- Facilities To Be Constructed
- Existing Facilities
- Future Facilities
- FID Facilities
- Drainage Area Boundary

N

1 " = 300 '

PUMP STATION & CANAL INTERTIE

DRAINAGE AREA "SS"

$780,000

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

Prepared by: keithr
Date: 11/29/2018
Path: K:\Autocad\DWGS\0EXHIBIT\GRANTS\UPPER KINGS IRWM\SS Pump Station & Intertie.mxd

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

PRELIMINARY ESTIMATE OF COST

Sheet 1 of 1
Date: November 27, 2018
Project Description: Basin Pump Station

Drainage Area "SS"

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1		18" Concrete Pipe	L.F.	8	$80.00	$640.00
2		24" Concrete Pipe	L.F.	490	$110.00	$53,900.00
3		24" Concrete Pipe (Pump Station to Outfall)	L.F.	140	$125.00	$17,500.00
4		Type "D" Outfall Structure	EA.	2	$13,000.00	$26,000.00
5		Pump Station Facilities	L.S.	1	$450,000.00	$450,000.00
6		Canal Turnout Structure	L.S.	1	$25,000.00	$25,000.00
7		Concrete Canal Lining	L.S.	1	$20,000.00	$20,000.00
8		Canal Rip Rap	L.S.	1	$5,000.00	$5,000.00
9		Dust Control	L.S.	1	$2,000.00	$2,000.00
10		Worker Protection	L.S.	1	$5,000.00	$5,000.00
11		Miscellaneous Facilities and Operations	L.S.	1	$34,050.00	$34,050.00
12						
13		Rule 16 Fee	L.S.	1	$35,000.00	$35,000.00
14		Rule 16 Facilities	L.S.	1	$35,000.00	$35,000.00
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
					SUBTOTAL	$709,090.00
					10%	$70,910.00
					TOTAL	$780,000.00

MADE BY: Jarrod Takemoto

APPROVED:

CHECKED BY: _____

DISTRICT ENGINEER

KINGS BASIN
Water Authority
www.kingsbasinauthority.org

PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 6/26/2018

Project Name	**FMFCD Basin "CE" Pump Station – Regional Groundwater Recharge Project**
Project Proponent(s)	**Fresno Metropolitan Flood Control District**
IRWMP Adoption	**Has the Project Proponent adopted the current IRWMP?** Yes, on December 12, 2018.
Project Contacts	**Name: Jarrod Takemoto, Engineer, FMFCD** **Email:** jarrodt@fresnofloodcontrol.org **Name: Brandy Swisher, Grants Administration, FMFCD** **Email:** brandys@fresnofloodcontrol.org
Project Location	The project is located northwest of the intersection of American Avenue and Maple Avenue, at the southern end of the City of Fresno, at 119.7478 degrees west longitude / 36.6650 degrees north latitude.
Project Description	The project consists of the construction of a groundwater recharge intertie between a Fresno Irrigation District canal and Fresno Metropolitan Flood Control District Drainage Basin "CE", to facilitate the diversion of City of Fresno surface water entitlements into the basin under current agreements. This project also includes the construction of the basin pump station. The basin pump station is necessary to provide localized flood protection during the winter months. This improvement is consistent with the goals and objectives of the Upper Kings Basin Integrated Regional Water Management Plan and the objectives of the Fresno Area Regional Groundwater Management Plan. It is expected that this project will recharge approximately 1,800 acre-feet annually. Project benefits include enhancing groundwater recharge, increasing localized flood protection capabilities, enhancing wildlife habitat, reducing energy use, improving groundwater quality, increasing water supply, and maximizing beneficial uses of public property. Urban stormwater basins can provide groundwater recharge in multiple ways. As stormwater retention basins, such sites are designed to retain stormwater captured by the local pipeline collection system draining to the basin. By capturing and retaining urban stormwater, it is allowed to percolate through the basin floor and sideslopes into the groundwater aquifer. During the spring and summer months, when little to no rainfall is expected, urban stormwater basins require very little rainfall storage capacity. Therefore, these basins are able to accept a large amount of surface water without compromising the level of service of the urban storm drainage system. The diversion of surface water to stormwater basins typically coincides with FID's canal delivery season, which generally beings in mid-April and ends in mid-October. The amount of surface water that can be diverted to a stormwater basin varies from basin to basin and depend on several variables (permeability of underlying soil, surface water conveyance capacity to the basin, annual rainfall pattern, construction or maintenance schedules in basin, availability of permanent and/or portable pumps, etc.).

In order to divert surface water to an urban stormwater basin, a recharge intertie must be constructed. A recharge intertie is an interconnection between a surface water delivery line (canal) and a storm drain and/or urban stormwater basin. Such interties typically consist of a canal turnout structure, a meter and metering structure, and a connecting pipeline.

The estimated amount of recharge for the Basin "CE" site was calculated based on several factors including current available excavation, surface water conveyance capacity, projected maintenance, and some knowledge of underlying soils.

This project feature has benefits specific to the goals and objectives of the IRWMP as follows:

1. Imported surface water delivered to the basin and captured stormwater runoff will add to the total groundwater recharge program of the City of Fresno, City of Clovis, Fresno Irrigation District and the Fresno Metropolitan Flood Control District. It is estimated that the total additional annual amount of water recharged will be approximately 1,800 acre-feet.

2. The project will reduce the risk of flooding and flood damages for the local watershed. It will increase public health and safety protection, improve stormwater management and flood routing flexibility, and improve flood control system reliability.

3. This Project feature meets the needs of the Regional Goals of the Plan specifically to (i) establish system interties, (ii) halt and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater, (iii) enhance the operational flexibility and reduce constraints of the flood control system, (iv) improve and protect water quality, (v) provide safe flood protection, (vi) capture stormwater currently lost in the region by holding water that otherwise would be conveyed to through the Fresno Irrigation canal system, and (vii) enhance the open space and wildlife habitat.

4. This Project feature is consistent with the objectives of the Fresno Area Regional Groundwater Management Plan.

Project Status

At what stage of development is the project?

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	X
Ready for Construction	

Please briefly explain
The basin design has been completed and is an integral piece in determining the project's

design parameters. The preliminary storm drain alignment has been determined and hydraulic calculations have been performed to determine storm drain pipeline sizes. The project is ready to move into the final design phase, which includes designing the construction plans and specifications.

Background

The Fresno Metropolitan Flood Control District is the Project sponsor. The District involvement in local water resources including groundwater recharge, flood and stormwater control and environmental enhancement has been significant over the years. This Project is part of our ongoing program for local water resource management and is essential to the region. The project elements are urgently needed to (i) help correct the current overdraft of the groundwater, (ii) lessen the consumption of potable water, (iii) improve water quality, (iv) reduce energy consumption, and (v) lessen long term public expense and enhance the joint agencies' use of water rights. Enhancing water storage facilities and flood routing capability in the region always improves water resource management.

Project Workplan

1. Further refine project work in meetings with participating agencies to establish project details.
2. Amend agreements with FID and Cities on the delivery of the Cities water entitlements to these basins.
3. Complete the design and construction plans and specifications for the Project.
4. Solicit bids for the work.
5. Construct project.
6. Follow through with all post-project grant implementation requirements.

Regional Goals

Put 'X' by <u>one</u> Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
X		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	X	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	X	RG3	Improve and protect water quality
X		RG4	Provide additional flood protection
	X	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1: When the basin is not being used for stormwater management and flood control purposes, it can be utilized for groundwater recharge. It is anticipated that the Project will add an additional 1,800 acre-feet of recharge water annually to the local groundwater aquifer.

RG2: By increasing groundwater recharge and interconnecting FID and FMFCD systems,

water supply reliability and operational flexibility are enhanced.

RG3: By recharging high quality surface water to the groundwater, water quality in the aquifer will be improved.

RG4: One of the strategies of the IRWMP Regional Goals is for improving flood protection by supplying both flood control and water supply benefits such as recharge basins, off channel reservoirs, and flood control basins. This Project achieves each of these goals. The Project will provide additional off channel flood control basins that will be used to enhance the ability to route flood flows through the FID system.

RG5: Additional surface water in the basin will provide additional wildlife habitat. Basins that receive recharge water provide a well-protected area for many species of wildlife. Typically the basins are havens for foxes, coyotes, geese, ducks, egrets, frogs, birds, and many other species of wildlife.

Measurable Objectives

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Objective
X		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	X	MO4	Increase average annual supply and reduce demand
	X	MO5	Increase dry year supply
	X	MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
	X	MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1: The primary goal of the Project will be to increase the amount of groundwater recharge. It is estimated that the Project will provide 1,800 acre-feet of groundwater recharge annually. Recharge records will be kept and reported to the IRWMA annually.

MO4: The increase in annual groundwater recharge produced by the Project creates an

available water supply for the future. Water recharged to the groundwater also helps increase the average annual supply.

MO5: Similarly to MO4, increasing the groundwater supply with recharge translates to more groundwater available in dry years.

MO6: While the Project doesn't make improvements in the capacity in channels and canals, it does reduce the overall demand on such facilities by providing additional storage for both groundwater recharge and floodwater routing.

MO9: The Project will provide water quality improvements by recharging the aquifer with surface water. The recharge water will help improve the water quality through the process of dilution.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	X
	Water transfers	
	Conjunctive management and groundwater storage	X
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	X
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	X
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	X
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Conveyance-regional/local: This Project will improve operational efficiencies in the system by providing additional groundwater recharge and stormwater storage facilities providing additional flexibility for FID to manage conveyance in their system.

Conjunctive management and groundwater storage: This Project will provide conjunctive management by providing multi-purpose facilities. The facilities can be used for groundwater recharge, stormwater detention, and groundwater quality remediation. The Project will benefit FID, the City of Fresno, as well as the District.

Groundwater remediation/Aquifer remediation: It is anticipated the Project will provide an additional 1,800 acre-feet of good quality groundwater recharge to the local area.

Flood risk management: With the additional basin and pump station, FMFCD will be able to better manage flood flows in FID's system.

Watershed management: Being able to capture additional stormwater runoff, improve transportation of such flows, and provide additional wildlife habitat improves management of the watershed.

Project Feasibility	The construction of interties between FMFCD and FID facilities and basin pump stations are well understood types of projects; the technology, methods, materials, costs and processes are familiar to all participants.
DAC Water Needs	The City of Fresno is identified as a DAC. The Project provides benefits to the area through enhancing groundwater recharge. There are not any Environmental Justice concerns as the Project provides benefit to all people in the Region regardless of race, color, national origin, or income.
Climate Benefits	The project enhances the region's climate resiliency by increasing groundwater recharge capability; enabling the region to take advantage of opportunities to capture and store surface flows during wet periods for later use during droughts. The project may contribute to the reduction of Greenhouse Gas emissions by raising the local water table and thereby reducing the amount of energy required to extract stored groundwater.
Project Schedule	Has a schedule for project completion been identified? No If yes, please provide.
Estimated Cost	The total project cost is estimated at $990,000. Details are provided on Attachment A – Map & Preliminary Estimate of Cost.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

Project Name **FMFCD Basin "CE" Pump Station – Regional Groundwater Recharge Project**

SWRP Goals

Put 'X' by one Primary SWRP Goal	Put 'X' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
X		Augment Surface or Groundwater Supply (WS)
X		Floodwater Management (FM)
	X	Environmental (E)
	X	Community (C)

SWRP Goal 2: The primary goal of the Project will be to increase the amount of groundwater recharged by 1,800 acre-feet annually by allowing surplus and wet-weather surface flows to be stored underground for later extraction.

SWRP Goal 3: The project will provide additional storage of flood flows being conveyed by the FID canal system.

SWRP Goal 4: The project will increase local surface water available for wildlife and vegetation.

SWRP Goal 5: The project will improve local groundwater supply conditions, increasing water security and quality for local groundwater users. Construction of such projects typically employs local labor, engineering and fabrication services contributing to the local economy.

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits		X	SWQ	Increase infiltration and/or treatment of runoff	1,800 ac ft/year	acre-feet	Estimated from flow rate and duration at diversion from canal to basin.
	X		WS	Water supply reliability	1,800 ac ft/year	acre-feet	Estimated from flow rate and duration at diversion from canal to basin.
	X		WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)	1,800 ac ft/year	acre-feet	Estimated from flow rate and duration at diversion from canal to basin.
		X	FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Ancillary		X	SWQ	Source pollution control			

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

SWRP Primary Benefit 1 (water supply reliability): A primary benefit of the Project will be to increase the amount of groundwater recharged by 1,800 acre-feet annually by allowing surplus and wet-weather surface flows to be stored underground for later extraction.

SWRP Primary Benefit 2 (conjunctive use): A primary benefit of the Project will be to divert surplus wet-year and flood-event surface water to groundwater that can later be extracted for beneficial use.

SWRP Secondary Benefit 1 (treatment of runoff): A benefit of the Project will be to divert surface water into a ponding basin where physical, chemical and biological action reduces the pollutant loading of the water infiltrating to groundwater.

SWRP Secondary Benefit 2 (decreased flood risk): A benefit of the Project will be to divert urban and rural runoff from an FID canal into a ponding basin, generating additional flood-relief capacity in the canal downstream from the basin.

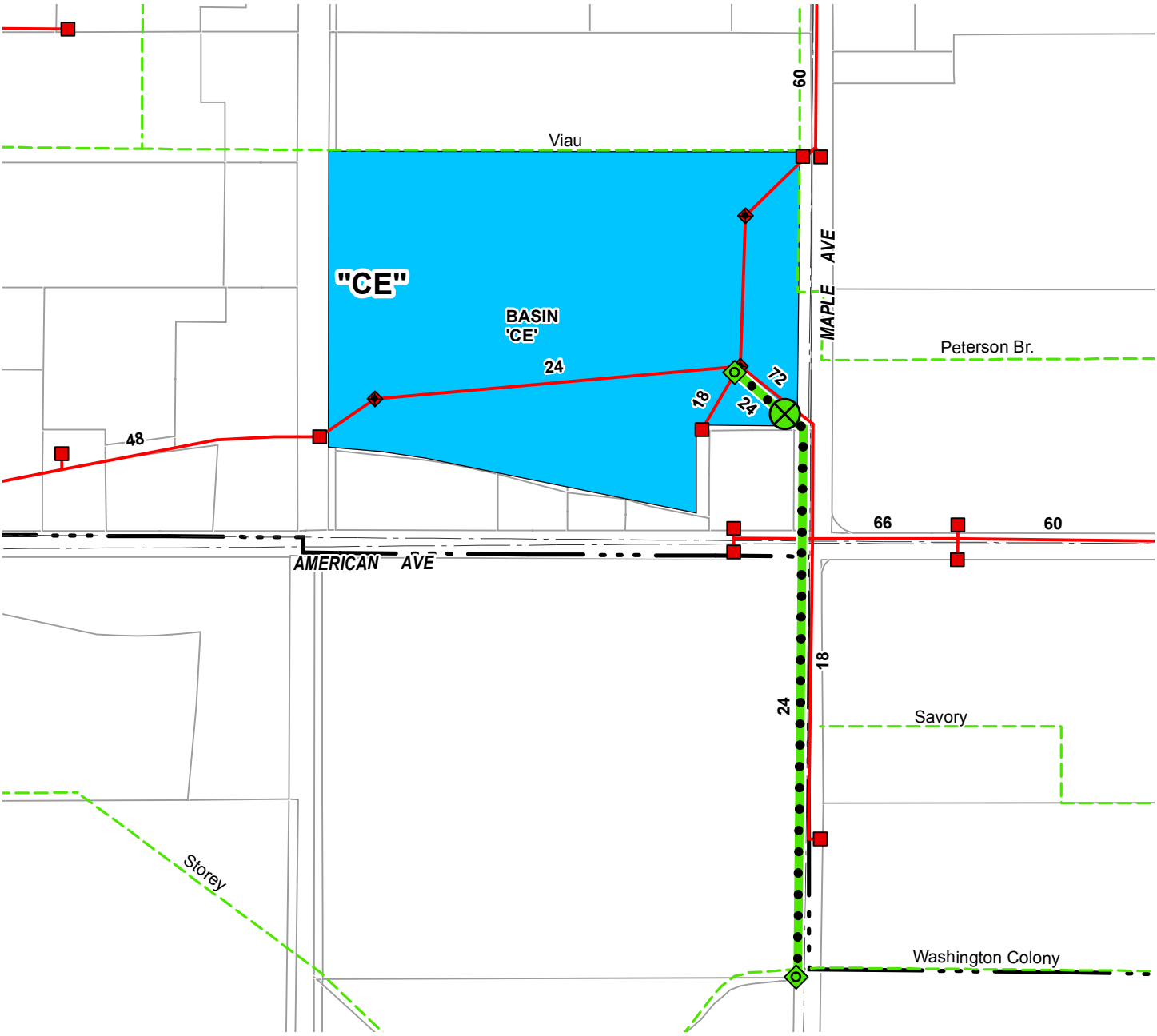
SWRP Secondary Benefit 3 (Source pollution control): A benefit of the project is to utilize physical, chemical and biological action through the process of intentional recharge and maintaining the infiltration soils to provide pollution control of the stormwater supplies.

Project Funding	Fresno Metropolitan Flood Control District receives compensation for accepting and recharging surface water entitlements. This revenue stream plus general fund monies together will cover costs relating to the long-term operation and maintenance of the basin intertie.
Project Location	Is the project located on publicly owned land? Yes, the basin is owned by FMFCD
Monitoring	FMFCD will monitor the basin to measure incoming water, infiltration rate and estimated total annual amount of water recharged to groundwater.

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

Attachment A

NOTE: THIS MAP IS SCHEMATIC. DISTANCES, AMOUNT OF CREDITABLE FACILITIES, AND LOCATION OF INLET BOUNDARIES ARE APPROXIMATE.



LEGEND

- Pump Station To Be Constructed
- Facilities To Be Constructed
- Existing Facilities
- Future Facilities
- FID Facilities
- Drainage Area Boundary

1 " = 400 '

PUMP STATION & CANAL INTERTIE

DRAINAGE AREA "CE"

$990,000

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

Prepared by: keithr
Date: 11/29/2018
Path: K:\Autocad\DWGS\0EXHIBIT\GRANTS\UPPER KINGS IRWM\CE Pump Station & Intertie.mxd

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

PRELIMINARY ESTIMATE OF COST

Sheet 1 of 1
Date: November 27, 2018
Project Description: Basin Pump Station

Drainage Area "CE"

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1		18" Concrete Pipe	L.F.	8	$80.00	$640.00
2		24" Concrete Pipe	L.F.	1523	$95.00	$144,685.00
3		24" Concrete Pipe (Pump Station to Outfall)	L.F.	166	$125.00	$20,750.00
4		Type "A" Case I Manhole	EA.	4	$4,500.00	$18,000.00
5		Type "D" Outfall Structure	EA.	1	$13,000.00	$13,000.00
6		Pump Station Facilities	L.S.	1	$450,000.00	$450,000.00
7		Canal Turnout Structure	L.S.	1	$25,000.00	$25,000.00
8		Concrete Canal Lining	L.S.	1	$20,000.00	$20,000.00
9		Canal Rip Rap	L.S.	1	$5,000.00	$5,000.00
10		Temporary Trench Resurfacing	L.F.	100	$10.00	$1,000.00
11		Permanent Trench Resurfacing	L.F.	1436	$50.00	$71,800.00
12		Traffic Control	L.S.	1	$7,000.00	$7,000.00
13		Dust Control	L.S.	1	$3,000.00	$3,000.00
14		Worker Protection	L.S.	1	$7,000.00	$7,000.00
15		Miscellaneous Facilities and Operations	L.S.	1	$43,100.00	$43,100.00
16						
17		Rule 16 Fee	L.S.	1	$35,000.00	$35,000.00
18		Rule 16 Facilities	L.S.	1	$35,000.00	$35,000.00
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
					SUBTOTAL	$899,975.00
					10%	$90,025.00
					TOTAL	$990,000.00

MADE BY: Jarrod Takemoto

APPROVED:

CHECKED BY: _____

DISTRICT ENGINEER

KINGS BASIN
Water Authority
www.kingsbasinauthority.org

PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 6/26/2018

Project Name	**FMFCD Basin "CF" Pump Station – Regional Groundwater Recharge Project**
Project Proponent(s)	**Fresno Metropolitan Flood Control District**
IRWMP Adoption	**Has the Project Proponent adopted the current IRWMP?** Yes, on December 12, 2018.
Project Contacts	**Name: Jarrod Takemoto, Engineer, FMFCD** **Email:** jarrodt@fresnofloodcontrol.org **Name: Brandy Swisher, Grants Administration, FMFCD** **Email:** brandys@fresnofloodcontrol.org
Project Location	The project is located southeast of the intersection of Central Avenue and Peach Avenue, at the southern end of the City of Fresno, at 119.7150 degrees west longitude / 36.6750 degrees north latitude.
Project Description	The project consists of the construction of a groundwater recharge intertie between a Fresno Irrigation District canal and Fresno Metropolitan Flood Control District Drainage Basin "CF", to facilitate the diversion of City of Fresno surface water entitlements into the basin under current agreements. This project also includes the construction of the basin pump station. The basin pump station is necessary to provide localized flood protection during the winter months. This improvement is consistent with the goals and objectives of the Upper Kings Basin Integrated Regional Water Management Plan and the objectives of the Fresno Area Regional Groundwater Management Plan. It is expected that this project will recharge approximately 1,400 acre-feet annually. Project benefits include enhancing groundwater recharge, increasing localized flood protection capabilities, enhancing wildlife habitat, reducing energy use, improving groundwater quality, increasing water supply, and maximizing beneficial uses of public property. Urban stormwater basins can provide groundwater recharge in multiple ways. As stormwater retention basins, such sites are designed to retain stormwater captured by the local pipeline collection system draining to the basin. By capturing and retaining urban stormwater, it is allowed to percolate through the basin floor and sideslopes into the groundwater aquifer. During the spring and summer months, when little to no rainfall is expected, urban stormwater basins require very little rainfall storage capacity. Therefore, these basins are able to accept a large amount of surface water without compromising the level of service of the urban storm drainage system. The diversion of surface water to stormwater basins typically coincides with FID's canal delivery season, which generally beings in mid-April and ends in mid-October. The amount of surface water that can be diverted to a stormwater basin varies from basin to basin and depend on a several variables (permeability of underlying soil, surface water conveyance capacity to the basin, annual rainfall pattern, construction or maintenance schedules in basin, availability of permanent and/or portable

pumps, etc.).

In order to divert surface water to an urban stormwater basin, a recharge intertie must be constructed. A recharge intertie is an interconnection between a surface water delivery line (canal) and a storm drain and/or urban stormwater basin. Such interties typically consist of a canal turnout structure, a meter and metering structure, and a connecting pipeline.

The estimated amount of recharge for the Basin "CF" site was calculated based on several factors including current available excavation, surface water conveyance capacity, projected maintenance, and some knowledge of underlying soils.

This project feature has benefits specific to the goals and objectives of the IRWMP as follows:

1. Imported surface water delivered to the basin and captured stormwater runoff will add to the total groundwater recharge program of the City of Fresno, City of Clovis, Fresno Irrigation District and the Fresno Metropolitan Flood Control District. It is estimated that the total additional annual amount of water recharged will be approximately 1,400 acre-feet.

2. The project will reduce the risk of flooding and flood damages for the local watershed. It will increase public health and safety protection, improve stormwater management and flood routing flexibility, and improve flood control system reliability.

3. This Project feature meets the needs of the Regional Goals of the Plan specifically to (i) establish system interties, (ii) halt and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater, (iii) enhance the operational flexibility and reduce constraints of the flood control system, (iv) improve and protect water quality, (v) provide safe flood protection, (vi) capture stormwater currently lost in the region by holding water that otherwise would be conveyed to through the Fresno Irrigation canal system, and (vii) enhance the open space and wildlife habitat.

4. This Project feature is consistent with the objectives of the Fresno Area Regional Groundwater Management Plan.

Project Status

At what stage of development is the project?

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	X
Ready for Construction	

Please briefly explain
The basin design has been completed and is an integral piece in determining the project's design parameters. The preliminary storm drain alignment has been determined and hydraulic calculations have been performed to determine storm drain pipeline sizes. The project is ready to move into the final design phase, which includes designing the construction plans and specifications.

Background

The Fresno Metropolitan Flood Control District is the Project sponsor. The District involvement in local water resources including groundwater recharge, flood and stormwater control and environmental enhancement has been significant over the years. This Project is part of our ongoing program for local water resource management and is essential to the region. The project elements are urgently needed to (i) help correct the current overdraft of the groundwater, (ii) lessen the consumption of potable water, (iii) improve water quality, (iv) reduce energy consumption, and (v) lessen long term public expense and enhance the joint agencies' use of water rights. Enhancing water storage facilities and flood routing capability in the region always improves water resource management.

Project Workplan

1. Further refine project work in meetings with participating agencies to establish project details.
2. Amend agreements with FID and Cities on the delivery of the Cities water entitlements to these basins.
3. Complete the design and construction plans and specifications for the Project.
4. Solicit bids for the work.
5. Construct project.
6. Follow through with all post-project grant implementation requirements.

Regional Goals

Put 'X' by <u>one</u> Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
X		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	X	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	X	RG3	Improve and protect water quality
X		RG4	Provide additional flood protection
	X	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1: When the basin is not being used for stormwater management and flood control purposes, it can be utilized for groundwater recharge. It is anticipated that the Project will add

an additional 1,400 acre-feet of recharge water annually to the local groundwater aquifer.

RG2: By increasing groundwater recharge and interconnecting FID and FMFCD systems, water supply reliability and operational flexibility are enhanced.

RG3: By recharging high quality surface water to the groundwater, water quality in the aquifer will be improved.

RG4: One of the strategies of the IRWMP Regional Goals is for improving flood protection by supplying both flood control and water supply benefits such as recharge basins, off channel reservoirs, and flood control basins. This Project achieves each of these goals. The Project will provide additional off channel flood control basins that will be used to enhance the ability to route flood flows through the FID system.

RG5: Additional surface water in the basin will provide additional wildlife habitat. Basins that receive recharge water provide a well-protected area for many species of wildlife. Typically the basins are havens for foxes, coyotes, geese, ducks, egrets, frogs, birds, and many other species of wildlife.

Measurable Objectives

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Objective
X		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	X	MO4	Increase average annual supply and reduce demand
	X	MO5	Increase dry year supply
	X	MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
	X	MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1: The primary goal of the Project will be to increase the amount of groundwater recharge. It is estimated that the Project will provide 1,400 acre-feet of groundwater recharge

annually. Recharge records will be kept and reported to the IRWMA annually.

MO4: The increase in annual groundwater recharge produced by the Project creates an available water supply for the future. Water recharged to the groundwater also helps increase the average annual supply.

MO5: Similarly to MO4, increasing the groundwater supply with recharge translates to more groundwater available in dry years.

MO6: While the Project doesn't make improvements in the capacity in channels and canals, it does reduce the overall demand on such facilities by providing additional storage for both groundwater recharge and floodwater routing.

MO9: The Project will provide water quality improvements by recharging the aquifer with surface water. The recharge water will help improve the water quality through the process of dilution.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	X
	Water transfers	
	Conjunctive management and groundwater storage	X
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	X
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	X
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	X
	Crop idling for water transfers	

Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Conveyance-regional/local: This Project will improve operational efficiencies in the system by providing additional groundwater recharge and stormwater storage facilities providing additional flexibility for FID to manage conveyance in their system.

Conjunctive management and groundwater storage: This Project will provide conjunctive management by providing multi-purpose facilities. The facilities can be used for groundwater recharge, stormwater detention, and groundwater quality remediation. The Project will benefit FID, the City of Fresno, as well as the District.

Groundwater remediation/Aquifer remediation: It is anticipated the Project will provide an additional 1,400 acre-feet of good quality groundwater recharge to the local area.

Flood risk management: With the additional basins, FMFCD will be able to better manage flood flows in FID's system.

Watershed management: Being able to capture additional stormwater runoff, improve transportation of such flows, and provide additional wildlife habitat improves management of the watershed.

Project Feasibility	The construction of interties between FMFCD and FID facilities and basin pump stations well understood types of projects; the technology, methods, materials, costs and processes are familiar to all participants.
DAC Water Needs	The City of Fresno is identified as a DAC. The Project provides benefits to the area through enhancing groundwater recharge. There are not any Environmental Justice concerns as the Project provides benefit to all people in the Region regardless of race, color, national origin, or income.
Climate Benefits	The project enhances the region's climate resiliency by increasing groundwater recharge capability; enabling the region to take advantage of opportunities to capture and store surface flows during wet periods for later use during droughts. The project may contribute to the reduction of Greenhouse Gas emissions by raising the local water table and thereby reducing the amount of energy required to extract stored groundwater.
Project Schedule	Has a schedule for project completion been identified? No If yes, please provide.
Estimated Cost	The total project cost is estimated at $805,000. Details are provided on Attachment A – Map & Preliminary Estimate of Cost.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

Project Name **FMFCD Basin "CF" Pump Station – Regional Groundwater Recharge Project**

SWRP Goals

Put 'X' by one Primary SWRP Goal	Put 'X' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
X		Augment Surface or Groundwater Supply (WS)
X		Floodwater Management (FM)
	X	Environmental (E)
	X	Community (C)

SWRP Goal 2: The primary goal of the Project will be to increase the amount of groundwater recharged by 1,400 acre-feet annually by allowing surplus and wet-weather surface flows to be stored underground for later extraction.

SWRP Goal 3: The project will provide additional storage of flood flows being conveyed by the FID canal system.

SWRP Goal 4: The project will increase local surface water available for wildlife and vegetation.

SWRP Goal 5: The project will improve local groundwater supply conditions, increasing water security and quality for local groundwater users. Construction of such projects typically employs local labor, engineering and fabrication services contributing to the local economy.

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits		X	SWQ	Increase infiltration and/or treatment of runoff	1,400 ac,ft/year	acre-feet	Estimated from flow rate and duration at diversion from canal to basin.
	X		WS	Water supply reliability	1,400 ac,ft/year	acre-feet	Estimated from flow rate and duration at diversion from canal to basin.
	X		WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)	1,400 ac,ft/year	acre-feet	Estimated from flow rate and duration at diversion from canal to basin.
		X	FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Ancillary		X	SWQ	Source pollution control			

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

SWRP Primary Benefit 1 (water supply reliability): A primary benefit of the Project will be to increase the amount of groundwater recharged by 1,400 acre-feet annually by allowing surplus and wet-weather surface flows to be stored underground for later extraction.

SWRP Primary Benefit 2 (conjunctive use): A primary benefit of the Project will be to divert surplus wet-year and flood-event surface water to groundwater that can later be extracted for beneficial use.

SWRP Secondary Benefit 1 (treatment of runoff): A benefit of the Project will be to divert surface water into a ponding basin where physical, chemical and biological action reduces the pollutant loading of the water infiltrating to groundwater.

SWRP Secondary Benefit 2 (decreased flood risk): A benefit of the Project will be to divert urban and rural runoff from an FID canal into a ponding basin, generating additional flood-relief capacity in the canal downstream from the basin.

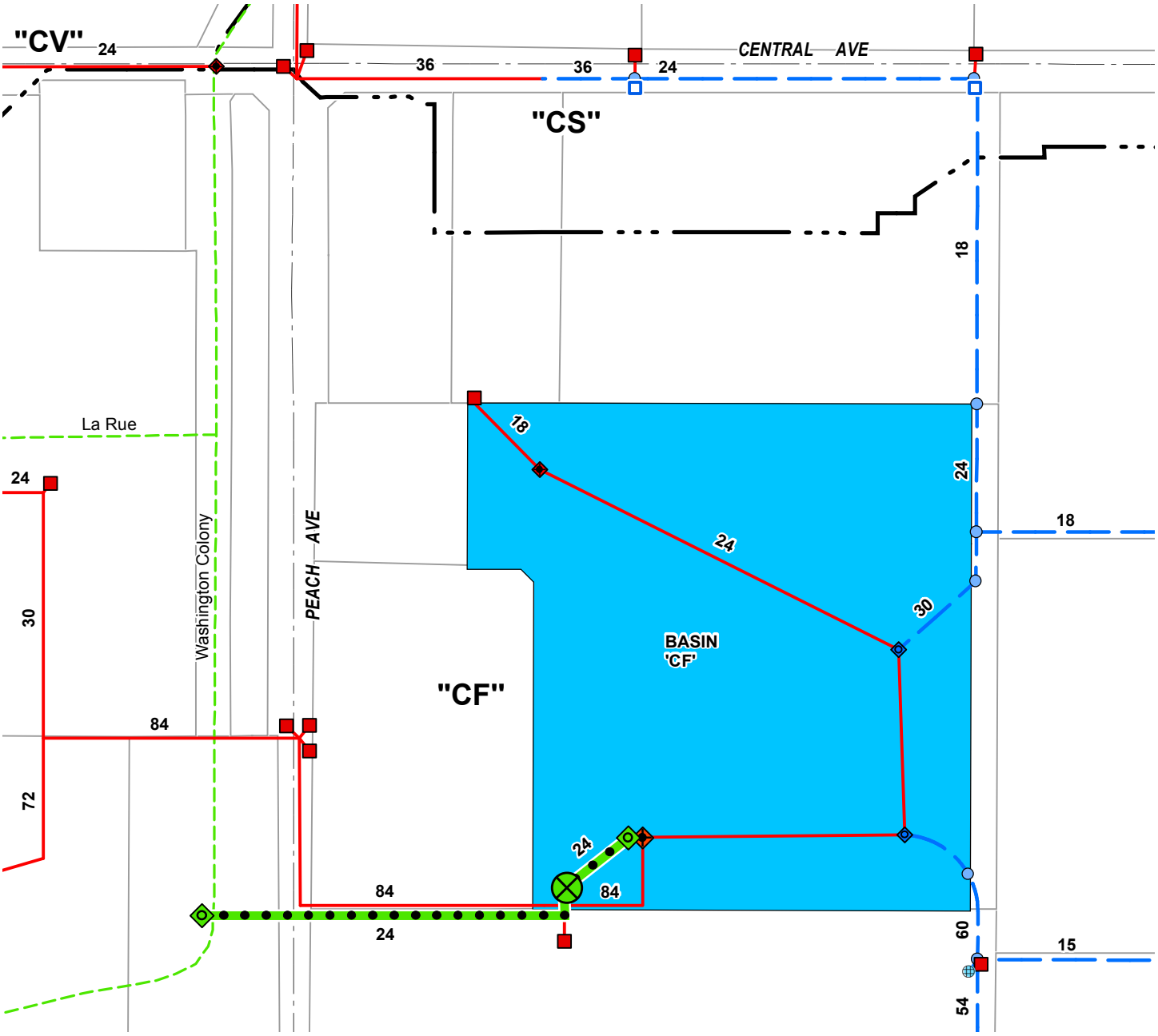
SWRP Secondary Benefit 3 (Source pollution control): A benefit of the project is to utilize physical, chemical and biological action through the process of intentional recharge and maintaining the infiltration soils to provide pollution control of the stormwater supplies.

Project Funding	Fresno Metropolitan Flood Control District receives compensation for accepting and recharging surface water entitlements. This revenue stream plus general fund monies together will cover costs relating to the long-term operation and maintenance of the basin intertie.
Project Location	Is the project located on publicly owned land? Yes, the basin is owned by FMFCD
Monitoring	FMFCD will monitor the basin to measure incoming water, infiltration rate and estimated total annual amount of water recharged to groundwater.

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

Attachment A

NOTE: THIS MAP IS SCHEMATIC. DISTANCES, AMOUNT OF CREDITABLE FACILITIES, AND LOCATION OF INLET BOUNDARIES ARE APPROXIMATE.



LEGEND

- Pump Station To Be Constructed
- Facilities To Be Constructed
- Existing Facilities
- Future Facilities
- FID Facilities
- Drainage Area Boundary

1 " = 300 '

PUMP STATION & CANAL INTERTIE

DRAINAGE AREA "CF"

$805,000

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

Prepared by: keithr
Date: 11/29/2018
Path: K:\Autocad\DWGS\0EXHIBIT\GRANTS\UPPER KINGS IRWM\CF Pump Station & Intertie_ALT.mxd

FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

PRELIMINARY ESTIMATE OF COST

Sheet 1 of 1
Date: November 27, 2018
Project Description: Basin Pump Station

Drainage Area "CF"

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1		24" Concrete Pipe	L.F.	734	$95.00	$69,730.00
2		24" Concrete Pipe (Pump Station to Outfall)	L.F.	160	$125.00	$20,000.00
3		Type "A" Case I Manhole	EA.	2	$4,500.00	$9,000.00
4		Type "D" Outfall Structure	EA.	1	$13,000.00	$13,000.00
5		Pump Station Facilities	L.S.	1	$450,000.00	$450,000.00
6		Canal Turnout Structure	L.S.	1	$25,000.00	$25,000.00
7		Concrete Canal Lining	L.S.	1	$20,000.00	$20,000.00
8		Canal Rip Rap	L.S.	1	$5,000.00	$5,000.00
9		Temporary Trench Resurfacing	L.F.	20	$10.00	$200.00
10		Permanent Trench Resurfacing	L.F.	20	$50.00	$1,000.00
11		Traffic Control	L.S.	1	$2,000.00	$2,000.00
12		Dust Control	L.S.	1	$2,000.00	$2,000.00
13		Worker Protection	L.S.	1	$5,000.00	$5,000.00
14		Miscellaneous Facilities and Operations	L.S.	1	$37,900.00	$37,900.00
15						
16		Rule 16 Fee	L.S.	1	$35,000.00	$35,000.00
17		Rule 16 Facilities	L.S.	1	$35,000.00	$35,000.00
18						
19		Easement (0.07 Acres)	L.S.	1	$2,000.00	$2,000.00
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
					SUBTOTAL	$731,830.00
					10%	$73,170.00
					TOTAL	$805,000.00

MADE BY: Jarrod Takemoto

APPROVED:

CHECKED BY: _____

DISTRICT ENGINEER

KINGS BASIN
Water Authority

PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the IRWMP
Form Revised 8-16-12

Project Name	**Eastside Streams Improvement Project**
Project Proponent(s)	**Fresno Irrigation District**
Project Location	Big Dry Creek, Pup Creek, Dog Creek, Fancher Creek and Mud Creek north and east of Fresno Irrigation District
Project Description	The project includes modifications to the interconnections and crossings of creek channels where they spill into FID's system to control, measure and best utilize the water the spills into FID's system from a group of ephemeral creeks referred to as the eastside streams. The project will likely include structures, automated control gates, and flow measurement devices that are tied to existing SCADA systems. The project is being considered by the members of the Eastside Stream Group: FID, FMFCD, the City of Fresno and the City of Clovis.

Project Status

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	X
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

Background

Several streams located north and east of the Fresno Irrigation District have direct connections that spill into FID's system. Some of these creeks and their watersheds sheet flow into FID's Enterprise, Gould or Fresno Canals, while others have constructed diversion points. Many of these diversions remain unmodified since the development of the FID canals in the 1800s. The Eastside Stream Group is made up of the Fresno Irrigation District, the Fresno Metropolitan Flood Control District, the City of Fresno and the City of Clovis. These entities have jointly filed a water rights application for the utilization of the water that comes from these watersheds into FID's system and plan to utilize the water within the region. Water from these eastside streams historically terminated at the Sinks of Dry Creek, and area nearest what is now downtown Fresno. The application has been under consideration by the State Board for many years.

As part of the consideration to quantify the amount of water, some improvements are needed to measure, control and operate the water as it enters FID's system so that the water can be beneficially utilized within the region. Since the watersheds have little to no storage or detention upstream, flowrates can fluctuate significantly and can reach uncontrollable discharges into FID's system. And because the water occurs during wet periods when demand is low and many basins are already at capacity, the utilization of the water is limited. Improved measurement to document water received from these streams and put to beneficial use will help to secure the water supply for the region. Improved measurement and control

of this water supply will help to document and secure the water supply for the region.

Project Workplan

No formal workplan has been developed for this project at this time. Some preliminary investigation of measurement location and possible alternatives has been initiated. The Eastside Stream Group members have met for many years to discuss cost sharing requirements. To further the project, a consideration of measurement requirements and alternatives will need to be prepared including a cost comparison. Once measurement and control structure decisions have been made, funding for the project will need to be developed, plans prepared and construction initiated.

Regional Goals

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
X		RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
	X	RG4	Provide additional flood protection
	X	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

Primary:

- RG2 – Improving the control of the water, and measuring the water as it enters FID's system will provide needed operational flow understanding. Control structures, gates and measurement devices will provide needed operational flexibility and control.

Secondary:

- RG4 – The project will consider channel improvements along the creeks that are needed to manage storm water routings, providing additional flood protection for these areas. In reaches of these creeks, the creek channel is not fully defined, or has been modified and is not suitable for conveyance of the master planned storm flows.
- RG5 – Improvements along the creeks would require protection and possible enhancement of ecosystems and riparian habitat along the creek.

Measurable Objectives

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Objective
	X	MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand

		MO5	Increase dry year supply
X		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

Primary:

- MO6 – The project may increase conveyance capacity along the creeks or within FID's system. The increased conveyance capacity will be designed to meet the master planned flow requirements for the creeks and FID's system, which would be measured during storm events.

Secondary:

- MO1 – The project may provide additional recharge along the creek. The amount of water conveyed into FID's system would be metered and recorded. This water has been historically routed through and out of the region because of the when it is available, but the considered improvements may allow for more control and diversion of water to places within the region where the water can be utilized that it has not been historically.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	X
	Water transfers	
	Conjunctive management and groundwater storage	X
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	

	Flood risk management	
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning	

- Reduce Water Demand – Agricultural Water Use Efficiency: One of the Efficient Water Management Practices of the 2009 California Water Plan Update is "conjunctive use of surface and groundwater". This project will provide for improved utilization of flood waters that enter the region.
- Improve Operational Efficiency and Transfers – Conveyance – Regional/Local: The project may increase the capacity of the creeks or FID's channels.
- Improve Operational Efficiency and Transfers – Conjunctive Management and Groundwater Storage: The project will consider how to increase the use and control of the water supply for the area, while maintaining needed flood protection for the area.

DAC Water Needs	N/A
Project Schedule	Has a schedule for project completion been identified? **No**
Estimated Cost	The total project cost is estimated at $5,000,000.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Eastside Streams Improvement Project

SWRP Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary SWRP Goal	Put '✓' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
	✔	Augment Surface or Groundwater Supply (WS)
✔		Floodwater Management (FM)
	✔	Environmental (E)
		Community (C)

Floodwater Management (Primary). The project will provide measurement and control of eastside stream waters that enter into the system, improving floodwater management. Improved measurement will provide needed information for operational control and floodwater routing during and after storm events.

Environment (Secondary). Improvements along portions of the creek channels would require protection and possible enhancement of ecosystems and riparian habitat.

Augment Surface or Groundwater Supply (Secondary). The improved measurement will provide improved management, allowing the District to better manage and control water that enters into the system and may otherwise be lost to the region. Water better managed and retained in the region will augment surface and groundwater supplies for the area.

SWRP Benefits

The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. ***To be eligible, projects must address at least two Main Benefits.***
1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
2) *Insert an '✓' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
	✔		WS	Water supply reliability	100	AF/day	volume managed
		✔	WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
		✔	FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
		✔	E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
		✔	SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Water Supply Reliability - The project will provide needed measurement during and following storm flows, allowing for increase and use of the water supply while maintaining needed flood protection. Flows in the eastside streams are ephemeral and can vary significantly, but a conservative estimate of the combined flows of the streams is 100cfs or 200af/day when water is flowing.

Conjunctive Use - The project will provide improved use of storm/flood water through improved management, capture and recharge of water within the channels and area recharge basins.

Decrease Flood Risk - Improved flood water flowrates and information will allow improved flood water management decisions, reducing the flood risk in and along the creeks and downstream conveyance systems.

Riparian Enhancement - Improvements along portions of the creek channels would require protection and possible enhancement of ecosystems and riparian habitat.

Reestablish natural drainage and treatment - Improvements along portions of the creek channels would allow previous drainage to be reestablished and increased flows provide natural treatment of stormwater.

Project Funding	Is permanent funding for the operation and maintenance of the project available? Please specify if a funding source is available and, if so, how the funding will be provided. Yes. Operation and maintenance of the stream flows received and routed from the eastside streams has been part of operations for decades, and is subject to the Eastside Stream Group agreement for shared responsibility of eastside stream water operations and maintenance.
Project Location	Is the project located on publicly owned land? ☑ Yes or ☐ No
Monitoring	Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. The purpose of the project is to provide improved water measurement. Measurement data will be collected at existing and new locations, and included as part of FID and/or FMFCD's telemetry system for measurement and management of water in the conveyance systems. This data is recorded and provides valuable real-time information to water managers during and after storm events which will assist in making water routing decisions.

Project Name	Storm Drain, Storage & Recharge Project
Project Proponent(s)	City of Selma
Project Contact	Daniel Bond, City Engineer engineering@cityofselma.com
Project Location	The project is a basin construction and storm water piping project. The basin is located on the south side of Valley View Street, west of McCall Avenue, more specifically bound by Valley View to the north, the Selma Branch Canal to the east and south, and a residential subdivision to the west. The pipelines will extend in two directions. A small branch will extend up Sheridan Street to Knowles Street. The primary branch will extend from the basin east to McCall, north on McCall to Todd Street, and extend northeasterly in Todd Street to West Front Street. From that location, storm drain pipes will be installed northwesterly in West Front Street and will include crossings of the railroad and canal.
Project Description	The project consists of completion of the recharge and storm water basin and construction of storm drain pipelines to intercept storm water from six existing lift stations that currently pump storm water into CID canals. A nearly 9 acre piece of land was purchased by the City of Selma and is to be excavated as a recharge and storm water basin. Storm drain pipelines will extend in two directions. A small branch will extend up Sheridan Street to capture water from the lift station in Salazar Park and the lift station at Knowles Street. The primary branch will extend from the basin east to McCall, north on McCall to intercept storm water from the lift station north of Todd Street, and extend northeasterly in Todd Street to West Front Street. From that location, storm drain pipes will be installed northwesterly in West Front Street and will include crossings of the railroad and canal to intercept storm water from three lift stations. The basin will have a capacity of approximately 95 acre-feet and will recharge approximately 210 acre-feet in an average year from storm water alone. The pond has the potential to recharge an additional 1200 acre-feet if water is available for recharge.

Project Status

At what stage of development is the project?

Project Status	Put ✓ next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	✔
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

The City of Selma has purchased the land for the recharge / storm water basin and has awarded a project to construct an intertie to the Selma-Branch Canal, fence the basin site, and perform initial excavation to establish basin grades that allow for construction of outfall structures and pipe into the basin for both the intertie and storm drain pipelines. Plans for construction of the storm drain pipelines described above are in progress.

Background

Adding recharge facilities in the City of Selma has been identified as an urgent need as several years of drought has led to a further depletion of the ground water table. Consolidated Irrigation District and the City of Selma have a cooperative agreement that includes not only a focus on groundwater recharge, but also separating storm water discharges from CID canals and decreasing flood risk. The objectives of this project include all of these items. Separating storm water discharges from the canal system will positively impact water quality in the canal systems and eliminate the storm water pumps as a limitation on storm water transmission. Additionally, construction of the storm water and recharge facilities provides substantial opportunity for groundwater recharge in the City of Selma. The recharge facilities will be constructed in the summer and fall of 2017, and design of the storm drain improvements is in progress and anticipated to be completed in the spring of 2018.

Project Workplan

• Complete grant documents
-Process grant award documents
-Finalize contract with State of California.
• Finalize Construction Documents
-Prepare Categorical Exemption (Public Works) for CEQA and file documents.
-Put bid approval on City Council agenda; receive approval.
• Project Bid and Award
-Advertise for solicitation of bids
-Answer Contractor questions
-Conduct bid opening.
-Have Selma City Council award bid for lowest responsible bidder.
-Finalize construction agreement with successful contractor.
-Have pre-construction meeting with contractor.
• Project Construction
-Engineer to monitor construction process.
-Prepare payments on a monthly basis as well as project reports to State of California.
• Project Close Out

Regional Goals

***1)** Insert a '✓' next to the **ONE** primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2)** Insert a '✓' next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more). **(Minimum 75 words)

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	No.	Goal
		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
✔		RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
		RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

The City of Selma, in cooperation with the Consolidated Irrigation District, is looking for opportunities to provide for much needed groundwater recharge. This project has the potential to recharge between 200 and 1400 acre-feet of water annually within the City limits. Separating the storm water system from discharge to the CID canal system has the added benefit of enhancing water quality in the canal system and therefore to the water delivered to farmers and downstream aquifers. Separation from lift stations also has the added benefit of eliminating the flow constraints of lift stations, greatly enhancing the hydraulics of the storm drain systems and minimizing localized flooding potential.

Measurable Objectives

1) *Insert a '✓' next to the* ***ONE*** *primary Kings Basin IRWMP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective.*
2) *Insert a '✓' next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*

Put '✓' by one Primary Objective	Put '✓' by Secondary Objectives that apply	No.	Objective
	✔	MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
✔		MO2	Identify opportunities and Projects
		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand
		MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
	✔	MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

The soils in the City of Selma are known for their high percolation rates, providing excellent opportunity for groundwater recharge and overdraft reduction. Construction of the proposed improvements will provide up to 1400 acre-feet of ground water recharge annually from a combination of storm water and water supplied by Consolidated Irrigation District. The intertie construction will include a meter to measure water supplied from the CID canal.

Additional space for measurable objectives narrative.

Resource Management Strategies

Identify *by inserting a '✓'* next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (***Minimum 50 words***).

Category	Strategy	Put ✓ by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	
	Water transfers	
	Conjunctive management and groundwater storage	✔
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	✔
	Flood risk management	✔
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	✔
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Resource Management Strategies	Construction of the basin and storm drain system will shift storm water from the canal system to a recharge basin, providing several benefits. First, water quality n the canal system will be improved with elimination of urban runoff. This separation of the storm drain and canal system eliminates dependence on pump stations for the discharge of storm water from multiple drainage areas, significantly reducing the potential for localized flooding. With the potential to recharge up to 1400 acre feet of water annually and the cooperative efforts of the City of Selma and CID, this project provides significant opportunity for groundwater storage and management of the watershed.

DAC Water Needs	N/A

Project Schedule

Project Schedule

Month 1 - Complete grant documents
- Process grant award documents
- Finalize contract with State of California.

Month 4 - Finalize Construction Documents
- Prepare Categorical Exemption (Public Works) for CEQA and file documents.
- Put bid approval on City Council agenda; receive approval.

Month 6 - Advertise for solicitation of bids
- Answer Contractor questions
- Conduct bid opening.

Month 7 -Have Selma City Council award bid for lowest responsible bidder.
- Finalize construction agreement with successful contractor.
- Have pre-construction meeting with contractor.

Month 9 -Project Construction
- Engineer to monitor construction process.
- Prepare payments on a monthly basis as well as project reports to State of California.

Month 14 - Project Close Out
- Engineer develop punch list of items to be completed before retention will be released.
- Release retention to contractor.
- Have Selma City Council issue a notice of completion.
- Submit final reports to State of California.

Estimated Cost

The total project cost is estimated at $3,000,000.

If your project includes a storm water connection or benefit, please complete this form as well.

Project Name	Storm Drain, Storage & Recharge Project

SWRP Goals

1) *Insert a '✓' next to the* ***ONE*** *primary Kings Basin SWRP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert a '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	Goal
		Improve storm water quality
✓		Augment surface or groundwater supply
	✓	Flood management
		Environmental benefits
		Community benefits

Construction of the basin and storm drain system will shift storm water from the canal system to a recharge basin, providing several benefits. First, water quality n the canal system will be improved with elimination of urban runoff. This separation of the storm drain and canal system eliminates dependence on pump stations for the discharge of storm water from multiple drainage areas, significantly reducing the potential for localized flooding. With the potential to recharge up to 1400 acre feet of water annually and the cooperative efforts of the City of Selma and CID, this project provides significant opportunity for groundwater storage and management of the watershed.

Quantitative Measures

1) *Insert a '✓' next to the* ***ONE*** *primary Kings Basin SWRP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective and the associated measurement and units.*
2) *Insert a '✓' next to secondary Kings Basin SWRP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Objective	Put '✓' by Secondary Objectives that apply	Objective
	✔	Increase infiltration and/or treatment of runoff
		Nonpoint source pollution control
		Reestablish natural drainage and treatment
		Water supply reliability
		Water conservation (Reduction of Demand)
✔		Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)
	✔	Decrease flood risk by reducing runoff rate and/or volume
		Reduce sanitary sewer overflows
		Wetland enhancement/creation
		Riparian enhancement
		Instream flow improvement
		Increased urban green space
		Reduced energy use, greenhouse gas emissions, or provides a carbon sink
		Reestablishment of natural hydrograph
		Water temperature improvements
		Enhanced and/or created recreational and public use areas
		Community involvement
		Employment opportunities provided
		Public education

Adding recharge facilities in the City of Selma has been identified as an urgent need as several years of drought has led to a further depletion of the ground water table. Consolidated Irrigation District and the City of Selma have a cooperative agreement that includes not only a focus on groundwater recharge, but also separating storm water discharges from CID canals and decreasing flood risk. The objectives of this project include all of these items. Separating storm water discharges from the canal system will positively impact water quality in the canal systems and eliminate the storm water pumps as a limitation on storm water transmission. Additionally, construction of the storm water and recharge facilities provides substantial opportunity for groundwater recharge in the City of Selma. The recharge facilities will be constructed in the summer and fall of 2017, and design of the storm drain improvements is in progress and anticipated to be completed in the spring of 2018.

Additional space for quantitative measures narrative.

Project Funding	Is permanent funding for the operation and maintenance of the project available? ☑ Yes ☐ No Operation and maintenance is budgeted for maintenance of storm drain facilities by the City's Public Works Department.
Project Location	Is the project located on publicly owned land? ☑ Yes ☐ No
Monitoring	Recharge water supplied through the CID canal will be metered.

Project Name	Reedley Retention Basin Project
Project Proponent(s)	City of Reedley
Project Contact	John Robertson john.robertson@reedley.ca.gov
Project Location	This project will be located on the corner of Reed and Floral in Reedley. The latitude and longitude are 36.576183 and -119.457371.
Project Description	This storm water basin on the corner of Reed and Floral will allow the City to collect storm water that would otherwise go into the Kings River. This basin will retain stormwater runoff from Drainage Basin N, as defined in the City's Integrated Mater Plan, for the primary intent of increasing groundwater recharge to the underlining aquifer.

Project Status

At what stage of development is the project?

Project Status	Put ✓ next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	✔
Ready for Construction	

60% of the design plans have been completed. Analysis of the soil has been completed. A report has been completed and is available upon request. Once a funding source has been identified the City will work to finalize the design and prepare construction documents.

Background

The City of Reedley is pursuing the design and construction of a retention basin located at the northeast corner of the intersection of South Reed Avenue and East Floral Avenue. This basin will retain stormwater runoff from Drainage Basin N, as defined in the City's Integrated Mater Plan, for the primary intent of increasing groundwater recharge to the underlining aquifer. Drainage Basin N currently discharges west into the Kings River via an underground storm drain pipe system. Construction of this retention basin will allow for the removal of this outfall structure as part of a separate project. The project site is approximately 14.5 acres owned and maintained by the City. The site bound by developable open fields and South Reed Avenue to the west, East Floral Avenue to the south, an existing concrete lined Alta Irrigation District (AID) canal to the east, and residential development to the north. The site is currently an open field with little to no vegetation. An irrigation line belonging to AID runs along the east side.

Project Workplan

Project has been identified.
60% of design work has been completed.
Budget has been established.
Funding identified - End of 2018
Finalize plans and specs - End of 2018
Construction document completed - July 2019
Project completed - Fall 2019

Regional Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	No.	Goal
✔		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	✔	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
	✔	RG4	Provide additional flood protection
	✔	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

This project will collect essential rainwater that currently flows into the Kings River and store it in the basin that is being proposed. This water will then be available to replenish groundwater basins and provide surface water. By creating a method to protectively replenish groundwater basins and an area to store surface water, the City is increasing the water supply reliability, enhancing operational flexibility and reducing system constraints. As a result of the basin, it will help with flood protection by collecting water that could impact the Kings River in high rainfall years.

Measurable Objectives

1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin IRWMP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective.*
2) *Insert an '✔' next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✔' by one Primary Objective	Put '✔' by Secondary Objectives that apply	No.	Objective
✔		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand
	✔	MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
	✔	MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

This project will increase the amount of groundwater in storage by constructing a basin that will serve as storage for the storm water that will be collected and used to replenish the aquifer and preventing overdraft.

This project will increase water supply in dry years. In addition to replenishing the groundwater basin, surface water will be available to meet demands. The construction of the storm basin will increase the City's amount of surface storage.

Additional space for Measurable Objectives narrative.

Resource Management Strategies

*Identify by inserting an '✓' next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (**Minimum 50 words**).*

Category	Strategy	Check all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	
	Water transfers	
	Conjunctive management and groundwater storage	
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	✔
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	✔
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	✔
	Flood risk management	✔
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	✔
	Water-dependent recreation	
	Watershed management	✔
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	✔

Resource Management Strategies

The City prepared a report titled Reedley Retention Basin Preliminary Design Criteria Considerations Report. Pipe capacity was evaluated using the 10-year, 24-hour storm. The purpose of this evaluation was to estimate the volume of flow reaching the new retention pond and to estimate pipe size for new pipelines. New pipes are to be sized to convey the peak flow generated by the 10-year, 24-hour storm at 70% full. Model analysis shows that for this storm event approximately 6.5 MG, or 19.9 acre-feet, of total runoff is generated. Of that 5.9 MG (18.1 acre-feet) reaches the retention pond. Using the same modeling surface flooding was directed to the new retention basin through the modeled street drainage network. Stormwater was able to re-enter the underground pipe network at junctions where the two networks intersected. The benefits to groundwater and surface water has been identified previously.

DAC Water Needs

The City of Reedley is listed as a community of interest in table 4-3 of the Kings River IRWMP. There are no environmental justice concerns associated with this project. To keep the site secure, a 6 ft chain link fence will be constructed along the perimeter of the entire basin. A roller gate with a minimum 20 ft wide opening will be installed to allow for access to the interior of the basin site.

Project Schedule	This project has been 60% designed. Once funding for the project has been identified the City will be able to finalize plans and specs and have construction documents ready within 6-8 months.

Estimated Cost	A preliminary construction cost estimate was conducted and the total cost for the project is expected to be $2,828,721.00.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

If your project includes a storm water connection or benefit, please complete this form as well.

Project Name Reedley Retention Basin

SWRP Goals

1) *Insert an '✓' next to the **ONE** primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary SWRP Goal	Put '✓' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
✔		Augment Surface or Groundwater Supply (WS)
	✔	Floodwater Management (FM)
		Environmental (E)
		Community (C)

The retention basin volume estimates were based on the results from evaluating the impacts of a100-year, 10-day storm event on the Basin N area. Minor surface flooding was indicated in the model at a few locations during this storm event. Surface flooding was directed to the new retention basin through the modeled street drainage network. Stormwater was able to re-enter the underground pipe network at junctions where the two networks intersected. Streets running eastwest to the east of Church Ave tended to slope away from Basin N and into Basin P. Hence any flooding that occurred along those streets directed flow out of Basin N. The analysis showed that the total surface runoff from the area totaled about 16.7 million gallons (MG), or 51.3 acre-feet. However, this total does not take into consideration pipe storage or runoff lost due to street drainage out of the Basin N area. When accounting for in-system pipe storage and any losses to adjacent basins, the minimum retention basin volume needed was estimated to be 16.1 MG, or 49.4 acrefeet.

SWRP Benefits

The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. ***To be eligible, projects must address at least two Main Benefits.***
1) *Insert an '✓' next to the **ONE** primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
2) *Insert an '✓' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
		✔	WS	Water supply reliability			
	✔		WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
			FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Although the quantity and measured units are unknown at this time, the City prepared an Integrated Master Plan for Potable Water, Sanitary Sewer, and Storm Drainage Systems that identified goals and objectives that would enhance the City's reliability and sustainability. In light of the significant drought that the State has had in recent years, the proposed retention basin is a priority to manage the groundwater basins in the area that have over-drafted as a result of the drought. By managing the groundwater supply and creating an additional surface water basin the City is increasing their water supply reliability.

Project Funding	Funding has yet to be committed. The City has identified the Hazard Mitigation Grant Program under the Governor's Office of Emergency Services as a possible funding source. A requirement of the program is for the project to be included in a local, regional plan.
Project Location	Is the project located on publicly owned land? ☑ Yes or ☐ No
Monitoring	Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project.

Project Name	Mussel Slough Ranch Recharge Project
Project Proponent(s)	Laguna Irrigation District
Project Contact	Name: Scott Sills Email: scott@lagunaid.com
Project Location	The property is located in Fresno County, west of Clovis Avenue and south of Blanchard Avenue within Laguna Irrigation District. The project site is comprised of ten parcels: APN 056-060-08, 056-060-12, 056-060-23, 056-060-24, 056-060-25, 056-110-04, 056-110-18, 056-110-25, 056-110-26 and 056-110-27 with a gross acreage of 288.67 acres. Coordinates of the approximate center of the proposed recharge project site are Lat: 36.453295 and Long : -119.716877. The project is located within the North Fork Kings Groundwater Sustainability Agency (NFKGSA) area.
Project Description	The property is proposed for a groundwater recharge basin, primarily utilizing Kings River floodwater to help address sustainability issues within the NFKGSA. The delivery and/or purchase of other Kings River water supplies could also be possible when available from Laguna Irrigation District or other Kings River Water Association member units. Total acreage of the proposed project site is 288.67 acres, with an anticipated net recharge acreage of approximately 260 acres. The main conveyance system to deliver water to the property would be the Liberty Canal. The recharge rate of the proposed project will be influenced by the on-site soils and the depth of excavation in the basin, but the recharge rate is expected to be approximately 0.5 ft/day and the site would be able to recharge approximately 130 acre-feet per day.

Project Status

At what stage of development is the project?

Project Status	Put ✓ next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	✔
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

The project is still in the conceptual development stage, no feasibility or study work has been initiated.

Background

In an average year, surface water deliveries within the NFKGSA from the Kings River are insufficient to meet the total water demand of irrigated agriculture. Landowners are forced to pump groundwater to supplement the surface water deliveries to meet crop water demands. Above average water years means less groundwater pumping, but surface water availability often does not meet agronomic needs.

Flood release events on the Kings River occur on average once every 3 to 4 years. Millions of acre-feet of floodwater have been lost over the years from the Kings River service area because insufficient infrastructure exists to capture the flood flows and retain them within the Kings groundwater basin. Numerous areas have been identified as conducive for groundwater recharge, but they frequently have high value permanent crops or other structures that prevent their use as a groundwater recharge facility or have not been evaluated to date.

The proposed project site is located within Laguna Irrigation District, which has access to water needed for recharge. The NFKGSA is in a critical state of groundwater overdraft and to achieve sustainability under the Sustainable Groundwater Management Act (SGMA), additional surface water must be captured and used for groundwater recharge, or demand must be reduced. This project is one of several that are being planned or are currently underway to utilize Kings River flood flows for groundwater recharge within the NFKGSA.

Project Workplan

1. Feasibility Analysis. This would include soils and hydrogeologic investigation as well as a hydraulic analysis of the Liberty Canal and conceptual project design.
2. Environmental Documentation. This would include the CEQA and NEPA analysis (if NEPA is required) to support the Project. Included in this task would be the biological and cultural resources reviews and identification of regulatory and permitting requirements.
3. Land Acquisition. Under this task the land, right-of-way, and easements required for the Project would be acquired or negotiated if the project site is retained by the landowner.
4. Engineering Design. This would include the necessary hydraulic, geotechnical and structural design to develop plans and specifications for the construction of the Project.
5. Construction. Included in this task is the land clearing and earthwork to build the recharge basin(s) and canal improvements. Included is the construction of the necessary diversion structures, pump station(s), control structures and monitoring wells for the Project.
6. Monitoring Plan. Prior to operation of the facility a Groundwater Monitoring Plan would be developed to establish baseline groundwater levels and quality for the Project and develop the protocols for on-going monitoring of the Project.

Regional Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	No.	Goal
✔		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	✔	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	✔	RG3	Improve and protect water quality
	✔	RG4	Provide additional flood protection
	✔	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1 – Through construction of the Project, it is expected that approximately 130 AF/day of surface water could be captured in a wet year and recharged in the aquifer. This would directly contribute to the efforts to reverse groundwater overdraft and achieve NFKGSA sustainability.
RG2 – Groundwater is a necessary supplemental water supply for the area, and the project will increase the reliability of the groundwater supply helping lead to sustainability.
RG3 – Groundwater quality within the Project area should benefit by recharging high quality Kings River surface water.
RG4 – By diverting flood water in wet years, the Project will lessen the burden on the downstream flood control facilities and provide an additional factor of safety to protect the communities and land that depends on those flood control facilities for protection.

Measurable Objectives

1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin IRWMP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective.*
2) *Insert an '✔' next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✔' by one Primary Objective	Put '✔' by Secondary Objectives that apply	No.	Objective
✔		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
	✔	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	✔	MO4	Increase average annual supply and reduce demand
	✔	MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
	✔	MO7	Compile baseline water quality data for ground & surface water
	✔	MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
	✔	MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
	✔	MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1 – Capturing additional Kings River floodwater when it is available and recharging the groundwater aquifer will contribute to reducing overdraft and increasing the amount of groundwater in storage. The project will measure the amount of surface water diverted, as well as the infiltrated area and the time period of infiltration.
MO3 - This project will benefit DAC's in the NFKGSA area by increasing the amount of groundwater in storage and improving water quality. The project will also benefit downstream DAC communities by reducing the flood flows before it can reach any downstream DAC.
MO4 - The project will enhance groundwater supply for the area by capturing approximately 50 AF per day of flood water that might otherwise be lost from the Kings basin.
MO5 - The project will capture and divert water for recharge during wet years, allowing that water to be pumped from the groundwater aquifer in drier years.
MO7 - Monitoring of groundwater levels and water quality will occur as part of the project.
MO8 - BMP's will be developed as part of the project.
MO12 - Opportunities for incorporating habitat benefits will be investigated.
MO14 - The LID and the NFKGSA are partnering together to ensure available water supplies.

Additional space for Measurable Objectives narrative.

Resource Management Strategies

*Identify by inserting an '✓' next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (**Minimum 50 words**).*

Category	Strategy	Check all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	✔
	Water transfers	
	Conjunctive management and groundwater storage	✔
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	✔
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	✔
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Resource Management Strategies

Local Conveyance - Improve the Liberty Canal conveyance system to increase the canal capacity to deliver water to the project and allow future expansion or service to additional projects.

Conjunctive Management and Groundwater Storage - The project increases groundwater storage in wet years so groundwater can be used during drier years.

Local Surface Storage - The project will provide a small amount of local surface storage when flooded.

Flood Risk Management - The project will divert and store water during periods of high flows or floodwater periods, decreasing the risk of flooding downstream of the point of diversion and helping reduce the flood risk for the cities of Tranquillity, Mendota and Firebaugh.

DAC Water Needs

The proposed project will indirectly benefit the DACs within the NFKGSA by increasing groundwater levels and improving water quality in the area. The project will also reduce the risk of potential flooding of any DACs that are located downstream of the diversion.

Project Schedule	A project schedule has not been completed at this time, but some initial discussions have occurred. If the project proves feasible and funding is obtained, it is expected that the project would be constructed in the near future in order to help satisfy SGMA compliance requirements for the NFKGSA area.

Estimated Cost	A detailed cost estimate has not been prepared, but a preliminary estimated project cost is approximately $10,000,000. The estimated cost above assumes that the land is purchased, levees less than 6 feet tall are constructed and that limited excavation occurs. Factors that can significantly increase cost that have not been fully addressed yet include: 1) land acquisition - whether the land is purchased or if the landowner retains ownership for potential future groundwater credits; 2) topography of the site; and 3) the amount of excavation that must occur to obtain good recharge rates and whether the needed excavation is part of the project cost or if the basin can be excavated by others for another project or use.

KINGS BASIN Water Authority
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STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Title of the Project

SWRP Goals

1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✔' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✔' by one Primary SWRP Goal	Put '✔' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
✔		Augment Surface or Groundwater Supply (WS)
	✔	Floodwater Management (FM)
		Environmental (E)
		Community (C)

Augment surface or groundwater supply - The NFKGSA area is highly dependent on groundwater and is in a state of critical overdraft. The project is within Laguna Irrigation District, but the area near the project only has groundwater supplies available for irrigation use by landowners. The project would capture Kings River surface water for irrigation and groundwater recharge. High flows or floodwaters are envisioned for recharge, though the purchase of other supplies could also be possible from any water supply source that was available from Laguna ID or other Kings River Water Association member units.

Flood management - The project provides an additional area for possible diversions of floodwater, providing the KRCD/KRWA additional flexibility in flood management.

SWRP Benefits

The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. ***To be eligible, projects must address at least two Main Benefits.***
1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
2) *Insert an '✔' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits		✔	SWQ	Increase infiltration and/or treatment of runoff			
	✔		WS	Water supply reliability			
		✔	WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
		✔	FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
		✔	WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Water supply reliability - The project will recharge surface water supplies in an area near a "groundwater only" area, which will greatly increase the water supply reliability for the area within the NFKGSA. Water delivered to the project will be measured by a flowmeter and be reported in volume of water diverted to recharge in acre-feet.

Increase infiltration - The dedicated basin will accept water for recharge of surface water flows. The area (in acres) and duration of infiltration will be determined for the area accepting water each year.

Conjunctive Use - Floodwater flows will be captured for recharge when available and used to recharge the groundwater aquifer. Measurement will be by flow meter by volume of water taken in acre-feet.

Decrease flood risk - When diversion occurs during periods of high flows or floodwater periods, diversions at any point will decrease the risk of flooding downstream of the point of diversion. Diversions will be quantified in cubic feet per second (CFS) by the existing method of measurement at the point of diversion.

Water Conservation (Reduction of Demand) - the land that is used for groundwater recharge will be taken out of agricultural production, thereby reducing water demand.

Project Funding	The NFKGSA is in the process of conducting a Proposition 218 election to establish a land based assessment structure for the next five years to fund administration of the GSA, fund preparation of a Groundwater Sustainability Plan, and start an enterprise fund for future project development. Subsequent land based assessments or groundwater extraction fees will be used for further project development and administration. This project will be considered along with other proposed projects in the NFKGSA and prioritized to construct the most cost-effective projects first. At this time it is not known if the land will be purchased by Laguna ID or by the NFKGSA, or if the landowner would retain ownership in exchange for groundwater credits or something similar.
Project Location	Is the project located on publicly owned land? ☐ Yes or ☑ No
Monitoring	All surface water flows that are delivered to the project site will be measured with a flowmeter. The water level of existing groundwater wells in the area will be measured and monitored and samples will be collected for water quality periodically. This data will be used to establish the background groundwater quality for baseline comparison, in order to determine if there are changes to quality that are occurring from project operation.

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PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 1/3/2018

Project Name	Coelho Farms Recharge Project
Project Proponent(s)	Laguna Irrigation District
Project Contact	Name: Scott Sills Email: scott@lagunaid.com
Project Location	The property is located in Fresno County, east of Fruit Avenue and south of the Coleman Avenue alignment. The project site is located on APN 055-021-26 with a gross acreage of 80.0 acres. Coordinates of the approximate center of the proposed recharge project site are Lat: 36.463862 and Long : -119.818806. The project is located within the North Fork Kings Groundwater Sustainability Agency (NFKGSA) area.
Project Description	The property is proposed for a groundwater recharge basin, primarily utilizing Kings River floodwater to help address sustainability issues within the NFKGSA. The delivery and/or purchase of other Kings River water supplies could also be possible when available from the mutual water company (Liberty Canal Company or Liberty Mill Race) or other Kings River Water Association member units. Total acreage of the proposed project site is 80.0 acres, with an anticipated net recharge acreage of approximately 72 acres. The main conveyance system to deliver water to the property would be the Liberty Mill Race Canal. The recharge rate of the proposed project will be influenced by the on-site soils and the depth of excavation in the basin, but the recharge rate is expected to be approximately 0.5 ft/day and the site would be able to recharge approximately 36 acre-feet per day.

Project Status

At what stage of development is the project?

Project Status	Put ✓ next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	✔
Preliminary Design (feasibility study completed)	
Ready for Construction	

The project is in the early stages of planning, with initiation of a geotechnical investigation.

Background

In an average year, surface water deliveries within the NFKGSA from the Kings River are insufficient to meet the total water demand of irrigated agriculture. Landowners are forced to pump groundwater to supplement the surface water deliveries to meet crop water demands. Above average water years means less groundwater pumping, but surface water availability often does not meet agronomic needs.

Flood release events on the Kings River occur on average once every 3 to 4 years. Millions of acre-feet of floodwater have been lost over the years from the Kings River service area because insufficient infrastructure exists to capture the flood flows and retain them within the Kings groundwater basin. Numerous areas have been identified as conducive for groundwater recharge, but they frequently have high value permanent crops or other structures that prevent their use as a groundwater recharge facility or have not been evaluated to date.

The proposed project site has access to water needed for recharge. The NFKGSA is in a critical state of groundwater overdraft and to achieve sustainability under the Sustainable Groundwater Management Act (SGMA), additional surface water must be captured and used for groundwater recharge, or demand must be reduced. This project is one of several that are being planned or are currently underway to utilize Kings River flood flows for groundwater recharge within the NFKGSA.

Project Workplan

1. Feasibility Analysis. This would include soils and hydrogeologic investigation as well as a hydraulic analysis of the Liberty Mill Race Canal and conceptual project design.
2. Environmental Documentation. This would include the CEQA and NEPA analysis (if NEPA is required) to support the Project. Included in this task would be the biological and cultural resources reviews and identification of regulatory and permitting requirements.
3. Land Acquisition. Under this task the land, right-of-way, and easements required for the Project would be acquired or negotiated if the project site is retained by the landowner.
4. Engineering Design. This would include the necessary hydraulic, geotechnical and structural design to develop plans and specifications for the construction of the Project.
5. Construction. Included in this task is the land clearing and earthwork to build the recharge basin(s) and canal improvements. Included is the construction of the necessary diversion structures, pump station(s), control structures and monitoring wells for the Project.
6. Monitoring Plan. Prior to operation of the facility a Groundwater Monitoring Plan would be developed to establish baseline groundwater levels and quality for the Project and develop the protocols for on-going monitoring of the Project.

Regional Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	No.	Goal
✔		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	✔	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	✔	RG3	Improve and protect water quality
	✔	RG4	Provide additional flood protection
	✔	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1 – Through construction of the Project, it is expected that approximately 36 AF/day of surface water could be captured in a wet year and recharged in the aquifer. This would directly contribute to the efforts to reverse groundwater overdraft and achieve NFKGSA sustainability.
RG2 – Groundwater is a necessary supplemental water supply for the area, and the project will increase the reliability of the groundwater supply helping lead to sustainability.
RG3 – Groundwater quality within the Project area should benefit by recharging high quality Kings River surface water.
RG4 – By diverting flood water in wet years, the Project will lessen the burden on the downstream flood control facilities and provide an additional factor of safety to protect the communities and land that depends on those flood control facilities for protection.

Measurable Objectives

1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin IRWMP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective.*
2) *Insert an '✔' next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✔' by one Primary Objective	Put '✔' by Secondary Objectives that apply	No.	Objective
✔		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
	✔	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	✔	MO4	Increase average annual supply and reduce demand
	✔	MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
	✔	MO7	Compile baseline water quality data for ground & surface water
	✔	MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
	✔	MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
	✔	MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1 – Capturing additional Kings River floodwater when it is available and recharging the groundwater aquifer will contribute to reducing overdraft and increasing the amount of groundwater in storage. The project will measure the amount of surface water diverted, as well as the infiltrated area and the time period of infiltration.
MO3 - This project will benefit DAC's in the NFKGSA area by increasing the amount of groundwater in storage and improving water quality. The project will also benefit downstream DAC communities by reducing the flood flows before it can reach any downstream DAC.
MO4 - The project will enhance groundwater supply for the area by capturing approximately 50 AF per day of flood water that might otherwise be lost from the Kings basin.
MO5 - The project will capture and divert water for recharge during wet years, allowing that water to be pumped from the groundwater aquifer in drier years.
MO7 - Monitoring of groundwater levels and water quality will occur as part of the project.
MO8 - BMP's will be developed as part of the project.
MO12 - Opportunities for incorporating habitat benefits will be investigated.
MO14 - The LID and the NFKGSA are partnering together to ensure available water supplies.

Additional space for Measurable Objectives narrative.

Resource Management Strategies

*Identify by inserting an '✓' next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (**Minimum 50 words**).*

Category	Strategy	Check all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	✔
	Water transfers	
	Conjunctive management and groundwater storage	✔
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	✔
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	✔
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Resource Management Strategies

Local Conveyance - Improve the Liberty Mill Race Canal conveyance system to increase the canal capacity to deliver water to the project and allow future expansion or service to additional projects.

Conjunctive Management and Groundwater Storage - The project increases groundwater storage in wet years so groundwater can be used during drier years.

Local Surface Storage - The project will provide a small amount of local surface storage when flooded.

Flood Risk Management - The project will divert and store water during periods of high flows or floodwater periods, decreasing the risk of flooding downstream of the point of diversion and helping reduce the flood risk for the cities of Tranquillity, Mendota and Firebaugh.

DAC Water Needs

The proposed project will indirectly benefit the DACs within the NFKGSA by increasing groundwater levels and improving water quality in the area. The project will also reduce the risk of potential flooding of any DACs that are located downstream of the diversion.

Project Schedule

A project schedule has not been completed at this time, but some initial discussions have occurred. If the project proves feasible and funding is obtained, it is expected that the project would be constructed in the near future in order to help satisfy SGMA compliance requirements for the NFKGSA area.

Estimated Cost

A detailed cost estimate has not been prepared, but a preliminary estimated project cost is approximately $3,000,000.

The estimated cost above assumes that the land is purchased, levees less than 6 feet tall are constructed and that limited excavation occurs. Factors that can significantly increase cost that have not been fully addressed yet include: 1) land acquisition - whether the land is purchased or if the landowner retains ownership for potential future groundwater credits; 2) topography of the site; and 3) the amount of excavation that must occur to obtain good recharge rates and whether the needed excavation is part of the project cost or if the basin can be excavated by others for another project or use

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STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Title of the Project

SWRP Goals

1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✔' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✔' by one Primary SWRP Goal	Put '✔' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
✔		Augment Surface or Groundwater Supply (WS)
	✔	Floodwater Management (FM)
		Environmental (E)
		Community (C)

Augment surface or groundwater supply - The NFKGSA area is highly dependent on groundwater and is in a state of critical overdraft. The project is within Laguna Irrigation District, but the area near the project only has groundwater supplies available for irrigation use by landowners. The project would capture Kings River surface water for irrigation and groundwater recharge. High flows or floodwaters are envisioned for recharge, though the purchase of other supplies could also be possible from any water supply source that was available from Laguna ID or other Kings River Water Association member units.

Flood management - The project provides an additional area for possible diversions of floodwater, providing the KRCD/KRWA additional flexibility in flood management.

SWRP Benefits

The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. ***To be eligible, projects must address at least two Main Benefits.***
1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
2) *Insert an '✔' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits		✔	SWQ	Increase infiltration and/or treatment of runoff			
	✔		WS	Water supply reliability			
		✔	WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
		✔	FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
		✔	WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Water supply reliability - The project will recharge surface water supplies in an area with insufficient surface water supplies, which will greatly increase the water supply reliability for the area within the NFKGSA. Water delivered to the project will be measured by a flowmeter and be reported in volume of water diverted to recharge in acre-feet.

Increase infiltration - The dedicated basin will accept water for recharge of surface water flows. The area (in acres) and duration of infiltration will be determined for the area accepting water each year.

Conjunctive Use - Floodwater flows will be captured for recharge when available and used to recharge the groundwater aquifer. Measurement will be by flow meter by volume of water taken in acre-feet.

Decrease flood risk - When diversion occurs during periods of high flows or floodwater periods, diversions at any point will decrease the risk of flooding downstream of the point of diversion. Diversions will be quantified in cubic feet per second (CFS) by the existing method of measurement at the point of diversion.

Water Conservation (Reduction of Demand) - the land that is used for groundwater recharge will be taken out of agricultural production, thereby reducing water demand.

Project Funding	The NFKGSA is in the process of conducting a Proposition 218 election to establish a land based assessment structure for the next five years to fund administration of the GSA, fund preparation of a Groundwater Sustainability Plan, and start an enterprise fund for future project development. Subsequent land based assessments or groundwater extraction fees will be used for further project development and administration. This project will be considered along with other proposed projects in the NFKGSA and prioritized to construct the most cost-effective projects first. At this time it is not known if the land will be purchased by Laguna ID or by the NFKGSA, or if the landowner would retain ownership in exchange for groundwater credits or something similar.
Project Location	Is the project located on publicly owned land? ☐ Yes or ☑ No
Monitoring	All surface water flows that are delivered to the project site will be measured with a flowmeter. The water level of existing groundwater wells in the area will be measured and monitored and samples will be collected for water quality periodically. This data will be used to establish the background groundwater quality for baseline comparison, in order to determine if there are changes to quality that are occurring from project operation.

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PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 8/28/2018

Project Name	Tranquillity Irrigation District Stormwater Project
Project Proponent(s)	Tranquillity Irrigation District
IRWMP Adoption	Yes, TBD
Project Contact	Name: Rodney Wade Email: Rod@TrqID.com
Project Location	Located in T14S R15E S25, northwest of Tranquility, CA where the San Joaquin Valley Railroad crosses the Fresno Slough and for about 1.6 miles downstream Lat: 36.680879 Long: -120.284124
Project Description	The project will eliminate or greatly reduce the risk of severe stormwater flooding across 6,300+ acres of farmland and homes in and around the community of Tranquillity. The project will include replacement of a temporary barrier in the Fresno Slough and adjacent levee with a new engineered levee and barrier.
Project Status	At what stage of development is the project?

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	X
Ready for Construction	

A temporary levee is already in place, but a new engineered levee is needed to replace the temporary levee to prevent flooding.

Background

In February 2017, the south levee along the Fresno Slough, from the crossing with the San Joaquin Valley Railroad to about 1.6 miles downstream, was experiencing seepage, erosion, and freeboard encroachment. Temporary repairs were made between flood releases due to imminent failure. Tranquillity Irrigation District was fixing leaks daily and was on a 24-hour watch of the levee with the increased releases from Pine Flat reservoir.

The levee failed during the 2006 Kings River Flood event and again during the 2017 event despite the efforts of the District to prevent failure. A temporary barrier was constructed to limit the flood flows on about 5,000 feet of levee.

The project sponsor is Tranquillity Irrigation District.

A feasibility study has been completed and the project could be made shovel ready in a reasonably short period of time.

Project Workplan

1. Removal of temporary check structure
    a. Coordination with Fish and Wildlife
2. Feasibility analysis, including soils testing
    a. Geotechnical investigation for engineering design
3. Topographic and boundary survey of current levee conditions
4. Environmental documentation, including regulatory permits
    a. Coordination with Fish and Wildlife
    b. Coordination with Mendota Wildlife Area
5. Engineering design including hydraulic and geotechnical design, plan development and construction specifications
    a. Levee replacement
    b. Check structure
6. Public Bid Process
    a. Advertising
    b. Bid Opening
    c. Award
7. Construction, namely earthwork

Regional Goals

Put 'X' by <u>one</u> Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	X	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
X		RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG4: The levee appears to be insufficient and lacking in integrity to withstand the design flows of the North Fork of the Kings River identified by the Corps of Engineers. A new engineered levee will provide additional flood protection for 6,300 acres of farmland and rural homes, the Disadvantaged Community of Tranquility, and possible additional flooding as far as Mendota due to the location of the San Luis Drain.

RG1: Added capacity in the stream will enable greater volumes of water to infiltrate as groundwater recharge through the stream bed as well as into any groundwater recharge basins connected to the Kings River.

RG2: Added capacity in the stream will increase water supply reliability. A more reliable conveyance system will allow surface flows to be better utilized and supplement groundwater pumping.

Measurable Objectives

Put 'X' by <u>one</u> Primary Objective	Put 'X' by Secondary Objectives that apply	No.	Objective
	X	MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
	X	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand
		MO5	Increase dry year supply
X		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
	X	MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO6: Fresno Slough/N. Fork Kings River flows needs to be increased to handle greater flow from Pine Flat Reservoir, increasing from 2,200 cfs (where there was only 1 foot of freeboard in some places) to 4,750 cfs as well as increased runoff in wet years. The risk of flooding extends into the summer with continued snow melt. Subsidence of the levee has reduced the regional conveyance capacity of the Kings River without causing flooding. A new engineered levee would safely increase the regional conveyance capacity. By assuring the flood capacity in this section of the channel, the project will allow Pine Flat reservoir more operational flexibility, which will in turn allow for more surface water availability to the region.

MO1: Increased regional conveyance capacity will in turn increase the opportunity for groundwater recharge and storage, as discussed. A more reliable conveyance system will allow surface flows to be better utilized and supplement groundwater pumping. Current levees compromise ability to take surface water.

MO3: It will increase surface water storage opportunities along the Kings River. More reliable surface water to the DAC of Tranquillity.

MO10: The Project will allow more water to be stored in the channel by allowing backwater from Mendota Pool and create opportunities for more surface storage projects.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce Water Demand	Agricultural Water Efficiency	
	Urban Water Efficiency	
Improve Operational Efficiency and Transfers	Conveyance - Regional/local	X
	System Reoperation	
	Water Transfers	X
Increase Water Supply	Conjunctive Management & Groundwater Storage	X
	Precipitation Enhancement	
	Recycled Municipal Water	
	Surface Storage - Regional/local	
Improve Water Quality	Drinking Water Treatment & Distribution	
	Groundwater Remediation/ Aquifer Remediation	
	Matching Quality to Use	
	Pollution Prevention	
	Salt and Salinity Management	
	Urban Stormwater Runoff Management	
Improve Flood Management	Flood Risk Management	X
Practice Resources Stewardship	Agricultural Lands Stewardship	X
	Ecosystem Restoration	
	Forest Management	
	Land Use Planning and Management	
	Recharge Area Protection	
	Watershed Management	
People & Water	Economic Incentives (Loans, Grants, & Water Pricing)	
	Outreach and Engagement	
	Water and Culture	
	Water-Dependent Recreation	
Other Strategies	Crop Idling for Water Transfers	
	Irrigated Land Retirement	
	Rainfed Agriculture	
	Drought Planning	

Conveyance – Regional/local: This project will ensure conveyance structures are reliable.

Water Transfers: The reliability of surface water flow through this reach of the stream will in turn improve operational efficiency of water transfers.

Conjunctive Management & Groundwater Storage: This project will facilitate conjunctive management and groundwater storage by ensuring that downstream recharge facilities have a reliable water source. This reliability will encourage recharge basin development.

Flood Risk Management: This project will help the District avoid potential flooding (disaster preparedness).

Agricultural Land Stewardship: This project will protect against flooding 6,300 acres of agricultural land, extending as far as Mendota by the San Luis Drain.

Project Feasibility	Describe how the project has been determined to be technical feasible. (If the project is still conceptual, you do not have to answer this question.) In 2017 an Engineer's Levee Threat Assessment (ELTA) was completed to identify and collect information about the levee conditions and specific threats. This assessment, done by geotechnical and civil engineers, also evaluated the viability of various immediate and long-term actions. This process determined that it would likely be technically feasible but recommended further testing to confirm this assessment. Describe the economic feasibility of the project. (If the project is still conceptual, you do not have to answer this question.) The initial engineer's cost estimate of total construction cost for the recommended long-term repair is $5,850,000. This is feasible when accounting for devastating economic consequences of flooding 6,300 acres of farmland and rural homes. It would also provide an economic benefit to downstream landowners trying to acquire water for recharge projects.
DAC Water Needs	Does the project provide specific benefits to critical water supply or water quality needs of a Disadvantaged Community (DAC) as defined by CWC 79505.5(a) and as listed within Tables 4-2 and 4-3 of the Kings Basin IRWMP? If so, how, and are there any Environmental Justice concerns? If non-DAC, mark N/A. The project benefits will benefit the community of Tranquillity and the local region. Tranquillity is a Census Designated Place, as determined by the US Census Bureau and has a Median Household Income (MHI) of $32,264, which is 50% of the statewide MHI, according to the 2012-2016 American Community Survey. Tranquillity is listed within the IRWMP as a DAC, also. There are no environmental justice concerns related to this project.
Climate Benefits	Does the project contribute to region adapting to the effects of climate change? If so, how? Yes, the project does contribute to the region adapting to the effects of climate change. The effects of climate change can include increased periods of drought as well as increased intensity of wet seasons. This project would protect against flooding by excess stormwater through the wet seasons and help provide replenishment to groundwater supplies that help guard against droughts. Does the project contribute to reducing Greenhouse Gas emissions? If so, how? The project does not contribute to reducing Greenhouse Gas emissions.
Project Schedule	Has a schedule for project completion been identified? Yes or No If yes, please provide. No

Estimated Cost	The total project cost is estimated at $5,850,000 Is permanent funding for the operation and maintenance of the project available? Yes, maintenance of the facility is already incorporated into Tranquillity Irrigation District's ongoing operation and maintenance program. The existing system currently falls within that program and the new improvements would likely even decrease those costs.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Tranquillity Irrigation District Stormwater Project

SWRP Goals

Put 'X' by one Primary SWRP Goal	Put 'X' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
	X	Augment Surface or Groundwater Supply (WS)
X		Floodwater Management (FM)
		Environmental (E)
		Community (C)

Flood Water Management: This project will enable the District to reduce the risk of flooding by creating a reliable levee along a portion of Fresno Slough.

Augment Water Supply: The project will improve water use in the area by ensuring reliable access to excess runoff for downstream users that want to put it to beneficial use. This provides reduction to the overall extraction of groundwater in the area.

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known)		
					Qty	Unit	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
		X	WS	Water supply reliability			
			WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
	X		FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Decrease Flood Risk: This project will enable the District to reduce the risk of flooding by creating a reliable and permanent levee. The performance of the benefit will be determined through visual inspection (i.e. lack of breaching).

Water Supply Reliability: The project will improve water supply reliability in the area by ensuring reliable access to excess runoff for downstream users that want to put it to beneficial use, which in turn reduces reliance on groundwater or provides recharge to the aquifer. The performance of the benefit will be determined through observation.

Project Funding

Is permanent funding for the operation and maintenance of the project available?

Yes, maintenance of the facility is already incorporated into Tranquillity Irrigation District's ongoing operation and maintenance program. The existing system currently falls within that program and the new improvements would likely even decrease those costs.

Project Location

Is the project located on publicly owned land?

Yes

Monitoring

Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project.

It is not anticipated water quantity or quality monitoring will be included with this project.

Project Name	Beeler Recharge Project
Project Proponent(s)	Laguna Irrigation District
Project Contact	Name: Scott Sills Email: scott@lagunaid.com
Project Location	The property is located in Fresno County, west of Clovis Avenue and north of Blanchard Avenue within Laguna Irrigation District. The project is comprised of two parcels: APN 056-060-21 and 056-060-07 with a gross acreage of 109.61 acres. Coordinates of the approximate center of the proposed recharge project site are Lat: 36.458374 and Long : -119.712425. The project is located within the North Fork Kings Groundwater Sustainability Agency (NFKGSA) area.
Project Description	The property is proposed for a groundwater recharge basin, primarily utilizing Kings River floodwater to help address sustainability issues within the NFKGSA. The delivery and/or purchase of other Kings River water supplies could also be possible when available from Laguna Irrigation District or other Kings River Water Association member units. Total acreage of the proposed project site is 109.64 acres, with an anticipated net recharge acreage of approximately 100 acres. The main conveyance system to deliver water to the property would be the Liberty Canal. The recharge rate of the proposed project will be influenced by the on-site soils and the depth of excavation in the basin, but the recharge rate is expected to be approximately 0.5 ft/day and the site would be able to recharge approximately 50 acre-feet per day.

Project Status

At what stage of development is the project?

Project Status	Put ✓ next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	✔
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

The project is still in the conceptual development stage, no feasibility or study work has been initiated.

Background

In an average year, surface water deliveries within the NFKGSA from the Kings River are insufficient to meet the total water demand of irrigated agriculture. Landowners are forced to pump groundwater to supplement the surface water deliveries to meet crop water demands. Above average water years means less groundwater pumping, but surface water availability often does not meet agronomic needs.

Flood release events on the Kings River occur on average once every 3 to 4 years. Millions of acre-feet of floodwater have been lost over the years from the Kings River service area because insufficient infrastructure exists to capture the flood flows and retain them within the Kings groundwater basin. Numerous areas have been identified as conducive for groundwater recharge, but they frequently have high value permanent crops or other structures that prevent their use as a groundwater recharge facility or have not been evaluated to date.

The proposed project site is located within Laguna Irrigation District, which has access to water needed for recharge. The NFKGSA is in a critical state of groundwater overdraft and to achieve sustainability under the Sustainable Groundwater Management Act (SGMA), additional surface water must be captured and used for groundwater recharge, or demand must be reduced. This project is one of several that are being planned or are currently underway to utilize Kings River flood flows for groundwater recharge within the NFKGSA.

Project Workplan

1. Feasibility Analysis. This would include soils and hydrogeologic investigation as well as a hydraulic analysis of the Liberty Canal and conceptual project design.
2. Environmental Documentation. This would include the CEQA and NEPA analysis (if NEPA is required) to support the Project. Included in this task would be the biological and cultural resources reviews and identification of regulatory and permitting requirements.
3. Land Acquisition. Under this task the land, right-of-way, and easements required for the Project would be acquired or negotiated if the project site is retained by the landowner.
4. Engineering Design. This would include the necessary hydraulic, geotechnical and structural design to develop plans and specifications for the construction of the Project.
5. Construction. Included in this task is the land clearing and earthwork to build the recharge basin(s) and canal improvements. Included is the construction of the necessary diversion structures, pump station(s), control structures and monitoring wells for the Project.
6. Monitoring Plan. Prior to operation of the facility a Groundwater Monitoring Plan would be developed to establish baseline groundwater levels and quality for the Project and develop the protocols for on-going monitoring of the Project.

Regional Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	No.	Goal
✔		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	✔	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	✔	RG3	Improve and protect water quality
	✔	RG4	Provide additional flood protection
	✔	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1 – Through construction of the Project, it is expected that approximately 50 AF/day of surface water could be captured in a wet year and recharged in the aquifer. This would directly contribute to the efforts to reverse groundwater overdraft and achieve NFKGSA sustainability.
RG2 – Groundwater is a necessary supplemental water supply for the area, and the project will increase the reliability of the groundwater supply helping lead to sustainability.
RG3 – Groundwater quality within the Project area should benefit by recharging high quality Kings River surface water.
RG4 – By diverting flood water in wet years, the Project will lessen the burden on the downstream flood control facilities and provide an additional factor of safety to protect the communities and land that depends on those flood control facilities for protection.

No justification for RG5

Measurable Objectives

1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin IRWMP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective.*
2) *Insert an '✔' next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✔' by one Primary Objective	Put '✔' by Secondary Objectives that apply	No.	Objective
✔		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
	✔	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	✔	MO4	Increase average annual supply and reduce demand
	✔	MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
	✔	MO7	Compile baseline water quality data for ground & surface water
	✔	MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
	✔	MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
	✔	MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1 – Capturing additional Kings River floodwater when it is available and recharging the groundwater aquifer will contribute to reducing overdraft and increasing the amount of groundwater in storage. The project will measure the amount of surface water diverted, as well as the infiltrated area and the time period of infiltration.
MO3 - This project will benefit DAC's in the NFKGSA area by increasing the amount of groundwater in storage and improving water quality. The project will also benefit downstream DAC communities by reducing the flood flows before it can reach any downstream DAC.
MO4 - The project will enhance groundwater supply for the area by capturing approximately 50 AF per day of flood water that might otherwise be lost from the Kings basin.
MO5 - The project will capture and divert water for recharge during wet years, allowing that water to be pumped from the groundwater aquifer in drier years.
MO7 - Monitoring of groundwater levels and water quality will occur as part of the project.
MO8 - BMP's will be developed as part of the project.
MO12 - Opportunities for incorporating habitat benefits will be investigated.
MO14 - The LID and the NFKGSA are partnering together to ensure available water supplies.

Additional space for Measurable Objectives narrative.

Resource Management Strategies

*Identify by inserting an '✓' next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (**Minimum 50 words**).*

Category	Strategy	Check all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	✔
	Water transfers	
	Conjunctive management and groundwater storage	✔
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	✔
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	✔
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Resource Management Strategies

Local Conveyance - Improve the Liberty Canal conveyance system to increase the canal capacity to deliver water to the project and allow future expansion or service to additional projects.

Conjunctive Management and Groundwater Storage - The project increases groundwater storage in wet years so groundwater can be used during drier years.

Local Surface Storage - The project will provide a small amount of local surface storage when flooded.

Flood Risk Management - The project will divert and store water during periods of high flows or floodwater periods, decreasing the risk of flooding downstream of the point of diversion and helping reduce the flood risk for the cities of Tranquillity, Mendota and Firebaugh.

DAC Water Needs

The proposed project will indirectly benefit the DACs within the NFKGSA by increasing groundwater levels and improving water quality in the area. The project will also reduce the risk of potential flooding of any DACs that are located downstream of the diversion.

Project Schedule	A project schedule has not been completed at this time, but some initial discussions have occurred. If the project proves feasible and funding is obtained, it is expected that the project would be constructed in the near future in order to help satisfy SGMA compliance requirements for the NFKGSA area.

Estimated Cost	A detailed cost estimate has not been prepared, but a preliminary estimated project cost is approximately $4,000,000. The estimated cost above assumes that the land is purchased, levees less than 6 feet tall are constructed and that limited excavation occurs. Factors that can significantly increase cost that have not been fully addressed yet include: 1) land acquisition - whether the land is purchased or if the landowner retains ownership for potential future groundwater credits; 2) topography of the site; and 3) the amount of excavation that must occur to obtain good recharge rates and whether the needed excavation is part of the project cost or if the basin can be excavated by others for another project or use.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Title of the Project

SWRP Goals

1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✔' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✔' by one Primary SWRP Goal	Put '✔' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
✔		Augment Surface or Groundwater Supply (WS)
	✔	Floodwater Management (FM)
		Environmental (E)
		Community (C)

Augment surface or groundwater supply - The NFKGSA area is highly dependent on groundwater and is in a state of critical overdraft. The project is within Laguna Irrigation District, but the area near the project only has groundwater supplies available for irrigation use by landowners. The project would capture Kings River surface water for irrigation and groundwater recharge. High flows or floodwaters are envisioned for recharge, though the purchase of other supplies could also be possible from any water supply source that was available from Laguna ID or other Kings River Water Association member units.

Flood management - The project provides an additional area for possible diversions of floodwater, providing the KRCD/KRWA additional flexibility in flood management.

SWRP Benefits

The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. ***To be eligible, projects must address at least two Main Benefits.***
1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
2) *Insert an '✔' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits		✔	SWQ	Increase infiltration and/or treatment of runoff			
	✔		WS	Water supply reliability			
		✔	WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
		✔	FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
		✔	WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Water supply reliability - The project will recharge surface water supplies in an area near a "groundwater only" area, which will greatly increase the water supply reliability for the area within the NFKGSA. Water delivered to the project will be measured by a flowmeter and be reported in volume of water diverted to recharge in acre-feet.

Increase infiltration - The dedicated basin will accept water for recharge of surface water flows. The area (in acres) and duration of infiltration will be determined for the area accepting water each year.

Conjunctive Use - Floodwater flows will be captured for recharge when available and used to recharge the groundwater aquifer. Measurement will be by flow meter by volume of water taken in acre-feet.

Decrease flood risk - When diversion occurs during periods of high flows or floodwater periods, diversions at any point will decrease the risk of flooding downstream of the point of diversion. Diversions will be quantified in cubic feet per second (CFS) by the existing method of measurement at the point of diversion.

Water Conservation (Reduction of Demand) - the land that is used for groundwater recharge will be taken out of agricultural production, thereby reducing water demand.

Project Funding	The NFKGSA is in the process of conducting a Proposition 218 election to establish a land based assessment structure for the next five years to fund administration of the GSA, fund preparation of a Groundwater Sustainability Plan, and start an enterprise fund for future project development. Subsequent land based assessments or groundwater extraction fees will be used for further project development and administration. This project will be considered along with other proposed projects in the NFKGSA and prioritized to construct the most cost-effective projects first. At this time it is not known if the land will be purchased by Laguna ID or by the NFKGSA, or if the landowner would retain ownership in exchange for groundwater credits or something similar.
Project Location	Is the project located on publicly owned land? ☐ Yes or ☑ No
Monitoring	All surface water flows that are delivered to the project site will be measured with a flowmeter. The water level of existing groundwater wells in the area will be measured and monitored and samples will be collected for water quality periodically. This data will be used to establish the background groundwater quality for baseline comparison, in order to determine if there are changes to quality that are occurring from project operation.

Project Name	Basin 11 Expansion Project
Project Proponent(s)	Laguna Irrigation District
Project Contact	Name: Scott Sills Email: scott@lagunaid.com
Project Location	The property is located in Fresno County, west of Chestnut Avenue and south of Coleman Avenue within Laguna Irrigation District. The property is located adjacent to the existing Basin 11 recharge site. The project site is located on APN 055-330-16 with a gross acreage of 38.43 acres. Coordinates of the approximate center of the proposed recharge project site are Lat: 36.466572 and Long : -119.751079. The project is located within the North Fork Kings Groundwater Sustainability Agency (NFKGSA) area.
Project Description	The property is proposed for a groundwater recharge basin as an expansion of the existing Basin 11 basin, and would primarily utilize Kings River floodwater to help address sustainability issues within the NFKGSA. The delivery and/or purchase of other Kings River water supplies could also be possible when available from Laguna Irrigation District or other Kings River Water Association member units. Total acreage of the proposed project site is 38.43 acres, with an anticipated net recharge acreage of approximately 35 acres that would be in addition to the existing Basin 11 site. The main conveyance system to deliver water to the property would be the Liberty Canal. The recharge rate of the proposed project will be influenced by the on-site soils and the depth of excavation in the basin, but the recharge rate is expected to be approximately 0.75 ft/day and the site would be able to recharge approximately 26 acre-feet per day in addition to the recharge that would occur at the existing Basin 11 site.

Project Status

At what stage of development is the project?

Project Status	Put ✓ next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	✔
Ready for Construction	✔

Preliminary design plans have been completed and the project is ready for construction.

Background

In an average year, surface water deliveries within the NFKGSA from the Kings River are insufficient to meet the total water demand of irrigated agriculture. Landowners are forced to pump groundwater to supplement the surface water deliveries to meet crop water demands. Above average water years means less groundwater pumping, but surface water availability often does not meet agronomic needs.

Flood release events on the Kings River occur on average once every 3 to 4 years. Millions of acre-feet of floodwater have been lost over the years from the Kings River service area because insufficient infrastructure exists to capture the flood flows and retain them within the Kings groundwater basin. Numerous areas have been identified as conducive for groundwater recharge, but they frequently have high value permanent crops or other structures that prevent their use as a groundwater recharge facility or have not been evaluated to date.

The proposed project site is located within Laguna Irrigation District, which has access to water needed for recharge. The project would expand the existing recharge capability of Basin 11. The NFKGSA is in a critical state of groundwater overdraft and to achieve sustainability under the Sustainable Groundwater Management Act (SGMA), additional surface water must be captured and used for groundwater recharge, or demand must be reduced. This project is one of several that are being planned or are currently underway to utilize Kings River flood flows for groundwater recharge within the NFKGSA.

Project Workplan

1. Feasibility Analysis. Complete. The site is adjacent to an existing basin.
2. Environmental Documentation. This would include the CEQA and NEPA analysis (if NEPA is required) to support the Project. Included in this task would be the biological and cultural resources reviews and identification of regulatory and permitting requirements.
3. Land Acquisition. Under this task the land required for the Project would be acquired or negotiated if the project site is retained by the landowner.
4. Engineering Design. Preliminary plans are complete. Final plans and specifications for the construction of the Project can be readily finalized.
5. Construction. Included in this task is the land clearing and earthwork to build the recharge basin(s) and canal improvements. Included is the construction of the necessary diversion structures, control structures and monitoring wells for the Project.
6. Monitoring Plan. Prior to operation of the facility a Groundwater Monitoring Plan would be developed to establish baseline groundwater levels and quality for the Project and develop the protocols for on-going monitoring of the Project.

Regional Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	No.	Goal
✔		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	✔	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	✔	RG3	Improve and protect water quality
	✔	RG4	Provide additional flood protection
	✔	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1 – Through construction of the Project, it is expected that approximately 26 AF/day of surface water could be captured in a wet year and recharged in the aquifer. This would directly contribute to the efforts to reverse groundwater overdraft and achieve NFKGSA sustainability.
RG2 – Groundwater is a necessary supplemental water supply for the area, and the project will increase the reliability of the groundwater supply helping lead to sustainability.
RG3 – Groundwater quality within the Project area should benefit by recharging high quality Kings River surface water.
RG4 – By diverting flood water in wet years, the Project will lessen the burden on the downstream flood control facilities and provide an additional factor of safety to protect the communities and land that depends on those flood control facilities for protection.

Measurable Objectives

1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin IRWMP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective.*
2) *Insert an '✔' next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✔' by one Primary Objective	Put '✔' by Secondary Objectives that apply	No.	Objective
✔		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
	✔	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	✔	MO4	Increase average annual supply and reduce demand
	✔	MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
	✔	MO7	Compile baseline water quality data for ground & surface water
	✔	MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
	✔	MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
	✔	MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1 – Capturing additional Kings River floodwater when it is available and recharging the groundwater aquifer will contribute to reducing overdraft and increasing the amount of groundwater in storage. The project will measure the amount of surface water diverted, as well as the infiltrated area and the time period of infiltration.
MO3 - This project will benefit DAC's in the NFKGSA area by increasing the amount of groundwater in storage and improving water quality. The project will also benefit downstream DAC communities by reducing the flood flows before it can reach any downstream DAC.
MO4 - The project will enhance groundwater supply for the area by capturing approximately 50 AF per day of flood water that might otherwise be lost from the Kings basin.
MO5 - The project will capture and divert water for recharge during wet years, allowing that water to be pumped from the groundwater aquifer in drier years.
MO7 - Monitoring of groundwater levels and water quality will occur as part of the project.
MO8 - BMP's will be developed as part of the project.
MO12 - Opportunities for incorporating habitat benefits will be investigated.
MO14 - The LID and the NFKGSA are partnering together to ensure available water supplies.

Additional space for Measurable Objectives narrative.

Resource Management Strategies

*Identify by inserting an '✓' next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (**Minimum 50 words**).*

Category	Strategy	Check all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	✔
	Water transfers	
	Conjunctive management and groundwater storage	✔
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	✔
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	✔
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Resource Management Strategies

Local Conveyance - Additional improvements to the Liberty Canal conveyance system may be required to increase the canal capacity to deliver water to the project and allow future expansion or service to additional projects.

Conjunctive Management and Groundwater Storage - The project increases groundwater storage in wet years so groundwater can be used during drier years.

Local Surface Storage - The project will provide a small amount of local surface storage when flooded.

Flood Risk Management - The project will divert and store water during periods of high flows or floodwater periods, decreasing the risk of flooding downstream of the point of diversion and helping reduce the flood risk for the cities of Tranquillity, Mendota and Firebaugh.

DAC Water Needs

The proposed project will indirectly benefit the DACs within the NFKGSA by increasing groundwater levels and improving water quality in the area. The project will also reduce the risk of potential flooding of any DACs that are located downstream of the diversion.

Project Schedule	A project schedule has not been completed at this time, but some initial discussions have occurred. If funding is obtained, it is expected that the project would be constructed in the near future in order to help satisfy SGMA compliance requirements for the NFKGSA area.

Estimated Cost	A detailed cost estimate has not been prepared, but a preliminary estimated project cost is approximately $1,000,000. The estimated cost above assumes that the land is purchased, levees less than 6 feet tall are constructed and that limited excavation occurs. Factors that can significantly increase cost that have not been fully addressed yet include: 1) land acquisition - whether the land is purchased or if the landowner retains ownership for potential future groundwater credits; 2) topography of the site; and 3) the amount of excavation that must occur to obtain good recharge rates and whether the needed excavation is part of the project cost or if the basin can be excavated by others for another project or use.

KINGS BASIN Water Authority
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STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Title of the Project

SWRP Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary SWRP Goal	Put '✓' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
✔		Augment Surface or Groundwater Supply (WS)
	✔	Floodwater Management (FM)
		Environmental (E)
		Community (C)

Augment surface or groundwater supply - The NFKGSA area is highly dependent on groundwater and is in a state of critical overdraft. The project would capture Kings River surface water for irrigation and groundwater recharge. High flows or floodwaters are envisioned for recharge, though the purchase of other supplies could also be possible from any water supply source that was available from Laguna ID or other Kings River Water Association member units.

Flood management - The project provides an additional area for possible diversions of floodwater, providing the KRCD/KRWA additional flexibility in flood management.

SWRP Benefits

The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. ***To be eligible, projects must address at least two Main Benefits.***
1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
2) *Insert an '✓' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits		✔	SWQ	Increase infiltration and/or treatment of runoff			
	✔		WS	Water supply reliability			
		✔	WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
		✔	FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
		✔	WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Water supply reliability - The project will recharge surface water supplies, thereby increasing the groundwater supply reliability for the area within the NFKGSA. Water delivered to the project will be measured by a flowmeter and be reported in volume of water diverted to recharge in acre-feet.

Increase infiltration - The dedicated basin will accept water for recharge of surface water flows. The area (in acres) and duration of infiltration will be determined for the area accepting water each year.

Conjunctive Use - Floodwater flows will be captured for recharge when available and used to recharge the groundwater aquifer. Measurement will be by flow meter by volume of water taken in acre-feet.

Decrease flood risk - When diversion occurs during periods of high flows or floodwater periods, diversions at any point will decrease the risk of flooding downstream of the point of diversion. Diversions will be quantified in cubic feet per second (CFS) by the existing method of measurement at the point of diversion.

Water Conservation (Reduction of Demand) - the land that is used for groundwater recharge will be taken out of agricultural production, thereby reducing water demand.

Project Funding	The NFKGSA is in the process of conducting a Proposition 218 election to establish a land based assessment structure for the next five years to fund administration of the GSA, fund preparation of a Groundwater Sustainability Plan, and start an enterprise fund for future project development. Subsequent land based assessments or groundwater extraction fees will be used for further project development and administration. This project will be considered along with other proposed projects in the NFKGSA and prioritized to construct the most cost-effective projects first. At this time it is not known if the land will be purchased by Laguna ID or by the NFKGSA, or if the landowner would retain ownership in exchange for groundwater credits or something similar.
Project Location	Is the project located on publicly owned land? ☐ Yes or ☑ No
Monitoring	All surface water flows that are delivered to the project site will be measured with a flowmeter. The water level of existing groundwater wells in the area will be measured and monitored and samples will be collected for water quality periodically. This data will be used to establish the background groundwater quality for baseline comparison, in order to determine if there are changes to quality that are occurring from project operation.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 1/3/2018

Project Name	Pires Recharge Project
Project Proponent(s)	Laguna Irrigation District
Project Contact	Name: Scott Sills Email: scott@lagunaid.com
Project Location	The property is located in Kings County, south of Fremont Avenue at Avenue 21-1/2 within Laguna Irrigation District. The project site is located on APN 004-161-037 with a gross acreage of 30.15 acres. Coordinates of the approximate center of the proposed recharge project site are Lat: 36.363966 and Long : -119.843764. The project is located within the North Fork Kings Groundwater Sustainability Agency (NFKGSA) area.
Project Description	The property is proposed for a groundwater recharge basin, primarily utilizing Kings River floodwater to help address sustainability issues within the NFKGSA. The delivery and/or purchase of other Kings River water supplies could also be possible when available from Laguna Irrigation District or other Kings River Water Association member units. Total acreage of the proposed project site is 30.15 acres, with an anticipated net recharge acreage of approximately 27 acres. The main conveyance system to deliver water to the property would be the Island Canal. The recharge rate of the proposed project will be influenced by the on-site soils and the depth of excavation in the basin, but the recharge rate is expected to be approximately 0.5 ft/day and the site would be able to recharge approximately 14 acre-feet per day.The project site is located over the "A" Clay, so recharge will be to the shallow groundwater aquifer.

Project Status

At what stage of development is the project?

Project Status	Put ✓ next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	✔
Preliminary Design (feasibility study completed)	
Ready for Construction	

Some feasibility study and analysis work has been initiated on the site. Two soil borings have been drilled to determine the depth to the "A" Clay and the potential recharge opportunity.

Background

In an average year, surface water deliveries within the NFKGSA from the Kings River are insufficient to meet the total water demand of irrigated agriculture. Landowners are forced to pump groundwater to supplement the surface water deliveries to meet crop water demands. Above average water years means less groundwater pumping, but surface water availability often does not meet agronomic needs.

Flood release events on the Kings River occur on average once every 3 to 4 years. Millions of acre-feet of floodwater have been lost over the years from the Kings River service area because insufficient infrastructure exists to capture the flood flows and retain them within the Kings groundwater basin. Numerous areas have been identified as conducive for groundwater recharge, but they frequently have high value permanent crops or other structures that prevent their use as a groundwater recharge facility or have not been evaluated to date.

The proposed project site is located within Laguna Irrigation District, which has access to water needed for recharge. A number of wells pump from the shallow groundwater aquifer above the "A" Clay, and this project will recharge the shallow aquifer. The NFKGSA is in a critical state of groundwater overdraft and to achieve sustainability under the Sustainable Groundwater Management Act (SGMA), additional surface water must be captured and used for groundwater recharge, or demand must be reduced. This project is one of several that are being planned or are currently underway to utilize Kings River flood flows for groundwater recharge within the NFKGSA.

Project Workplan

1. Feasibility Analysis. This would include any additional soils and hydrogeologic investigation as well as a hydraulic analysis of the Island Canal and conceptual project design.
2. Environmental Documentation. This would include the CEQA and NEPA analysis (if NEPA is required) to support the Project. Included in this task would be the biological and cultural resources reviews and identification of regulatory and permitting requirements.
3. Land Acquisition. Under this task the land, right-of-way, and easements required for the Project would be acquired or negotiated if the project site is retained by the landowner.
4. Engineering Design. This would include the necessary hydraulic, geotechnical and structural design to develop plans and specifications for the construction of the Project.
5. Construction. Included in this task is the land clearing and earthwork to build the recharge basin(s) and canal improvements. Included is the construction of the necessary diversion structures, pump station(s), control structures and monitoring wells for the Project.
6. Monitoring Plan. Prior to operation of the facility a Groundwater Monitoring Plan would be developed to establish baseline groundwater levels and quality for the Project and develop the protocols for on-going monitoring of the Project.

Regional Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	No.	Goal
✔		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	✔	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	✔	RG3	Improve and protect water quality
	✔	RG4	Provide additional flood protection
	✔	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1 – Through construction of the Project, it is expected that approximately 14 AF/day of surface water could be captured in a wet year and recharged in the aquifer. This would directly contribute to the efforts to reverse groundwater overdraft and achieve NFKGSA sustainability.
RG2 – Groundwater is a necessary supplemental water supply for the area, and the project will increase the reliability of the groundwater supply helping lead to sustainability.
RG3 – Groundwater quality within the Project area should benefit by recharging high quality Kings River surface water.
RG4 – By diverting flood water in wet years, the Project will lessen the burden on the downstream flood control facilities and provide an additional factor of safety to protect the communities and land that depends on those flood control facilities for protection.

Measurable Objectives

1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin IRWMP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective.*
2) *Insert an '✔' next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✔' by one Primary Objective	Put '✔' by Secondary Objectives that apply	No.	Objective
✔		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
	✔	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	✔	MO4	Increase average annual supply and reduce demand
	✔	MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
	✔	MO7	Compile baseline water quality data for ground & surface water
	✔	MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
	✔	MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
	✔	MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1 – Capturing additional Kings River floodwater when it is available and recharging the groundwater aquifer will contribute to reducing overdraft and increasing the amount of groundwater in storage. The project will measure the amount of surface water diverted, as well as the infiltrated area and the time period of infiltration.
MO3 - This project will benefit DAC's in the NFKGSA area by increasing the amount of groundwater in storage and improving water quality. The project will also benefit downstream DAC communities by reducing the flood flows before it can reach any downstream DAC.
MO4 - The project will enhance groundwater supply for the area by capturing approximately 50 AF per day of flood water that might otherwise be lost from the Kings basin.
MO5 - The project will capture and divert water for recharge during wet years, allowing that water to be pumped from the groundwater aquifer in drier years.
MO7 - Monitoring of groundwater levels and water quality will occur as part of the project.
MO8 - BMP's will be developed as part of the project.
MO12 - Opportunities for incorporating habitat benefits will be investigated.
MO14 - The LID and the NFKGSA are partnering together to ensure available water supplies.

Additional space for Measurable Objectives narrative.

Resource Management Strategies

*Identify by inserting an '✓' next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (**Minimum 50 words**).*

Category	Strategy	Check all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	✔
	Water transfers	
	Conjunctive management and groundwater storage	✔
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	✔
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	✔
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Resource Management Strategies

Local Conveyance - Improvements to the Island Canal conveyance system may be needed to increase the canal capacity to deliver water to the project and allow future expansion or service to additional projects.

Conjunctive Management and Groundwater Storage - The project increases groundwater storage in wet years so groundwater can be used during drier years.

Local Surface Storage - The project will provide a small amount of local surface storage when flooded.

Flood Risk Management - The project will divert and store water during periods of high flows or floodwater periods, decreasing the risk of flooding downstream of the point of diversion and helping reduce the flood risk for the cities of Tranquillity, Mendota and Firebaugh.

DAC Water Needs

The proposed project will indirectly benefit the DACs within the NFKGSA by increasing groundwater levels in the shallow aquifer, allowing landowners to use shallow wells and conserve deeper groundwater for other purposes, including DAC use. The project will also reduce the risk of potential flooding of any DACs that are located downstream of the diversion.

Project Schedule

A project schedule has not been completed at this time, but some initial discussions have occurred. If the project proves feasible and funding is obtained, it is expected that the project would be constructed in the near future in order to help satisfy SGMA compliance requirements for the NFKGSA area.

Estimated Cost

A detailed cost estimate has not been prepared, but a preliminary estimated project cost is approximately $1,000,000.

The estimated cost above assumes that the land is purchased, levees less than 6 feet tall are constructed and that limited excavation occurs. Factors that can significantly increase cost that have not been fully addressed yet include: 1) land acquisition - whether the land is purchased or if the landowner retains ownership for potential future groundwater credits; 2) topography of the site; and 3) the amount of excavation that must occur to obtain good recharge rates and whether the needed excavation is part of the project cost or if the basin can be excavated by others for another project or use.

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Title of the Project

SWRP Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary SWRP Goal	Put '✓' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
✔		Augment Surface or Groundwater Supply (WS)
	✔	Floodwater Management (FM)
		Environmental (E)
		Community (C)

Augment surface or groundwater supply - The NFKGSA area is highly dependent on groundwater and is in a state of critical overdraft. The project would capture Kings River surface water for irrigation and groundwater recharge of the shallow aquifer. High flows or floodwaters are envisioned for recharge, though the purchase of other supplies could also be possible from any water supply source that was available from Laguna ID or other Kings River Water Association member units.

Flood management - The project provides an additional area for possible diversions of floodwater, providing the KRCD/KRWA additional flexibility in flood management.

SWRP Benefits

The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. ***To be eligible, projects must address at least two Main Benefits.***
1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
2) *Insert an '✓' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits		✔	SWQ	Increase infiltration and/or treatment of runoff			
	✔		WS	Water supply reliability			
		✔	WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
		✔	FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
		✔	WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Water supply reliability - The project will recharge surface water supplies in an area above the "A" clay where a number of shallow groundwater wells are located, increasing the groundwater supply reliability for the area within the NFKGSA. Water delivered to the project will be measured by a flowmeter and be reported in volume of water diverted to recharge in acre-feet.

Increase infiltration - The dedicated basin will accept water for recharge of surface water flows. The area (in acres) and duration of infiltration will be determined for the area accepting water each year.

Conjunctive Use - Floodwater flows will be captured for recharge when available and used to recharge the groundwater aquifer. Measurement will be by flow meter by volume of water taken in acre-feet.

Decrease flood risk - When diversion occurs during periods of high flows or floodwater periods, diversions at any point will decrease the risk of flooding downstream of the point of diversion. Diversions will be quantified in cubic feet per second (CFS) by the existing method of measurement at the point of diversion.

Water Conservation (Reduction of Demand) - the land that is used for groundwater recharge will be taken out of agricultural production, thereby reducing water demand.

Project Funding	The NFKGSA is in the process of conducting a Proposition 218 election to establish a land based assessment structure for the next five years to fund administration of the GSA, fund preparation of a Groundwater Sustainability Plan, and start an enterprise fund for future project development. Subsequent land based assessments or groundwater extraction fees will be used for further project development and administration. This project will be considered along with other proposed projects in the NFKGSA and prioritized to construct the most cost-effective projects first. At this time it is not known if the land will be purchased by Laguna ID or by the NFKGSA, or if the landowner would retain ownership in exchange for groundwater credits or something similar.
Project Location	Is the project located on publicly owned land? ☐ Yes or ☑ No
Monitoring	All surface water flows that are delivered to the project site will be measured with a flowmeter. The water level of existing groundwater wells in the area will be measured and monitored and samples will be collected for water quality periodically. This data will be used to establish the background groundwater quality for baseline comparison, in order to determine if there are changes to quality that are occurring from project operation.

Project Name	Mid-Valley WD James Bypass Surface Water Supply and Recharge Project
Project Proponent(s)	Mid-Valley Water District in cooperation with Raisin City Water District, Terranova Ranch and McMullin Area GSA
Project Contact	Randy Hopkins, Manager-Engineer rhopkins@ppeng.com
Project Location	The project is located throughout the entire 13,678 acre Mid-Valley Water District, with potential dedicated recharge basins proposed to be located in portions of Sections 5, 6, 7 and 8, Township 15 South, Range 17 East, M.D.B. & M.
Project Description	The project will increase the size of the existing pump station on the James Bypass upstream of James Road from about 20 to 250 cfs, add additional distribution system components through the remainder of the District (focusing on the southerly portion of the District) for in-lieu recharge and on-farm recharge, as well as build a dedicated recharge area over 320 acres +/-. With an estimated recharge rate of 0.5 feet per day over 1,000 acres within the District, the project will recharge up to 500 AF/day or 50,000 AF if operated for 100 days.

Project Status

At what stage of development is the project?

Project Status	Put ✓ next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	✔
Preliminary Design (feasibility study completed)	
Ready for Construction	

Various preliminary studies and engineering designs have been conducted over the years for components of the proposed project, but not for all pieces of the currently envisioned project. A likely favorable recharge area was identified in a previous study and a distribution system expansion to the southeasterly portion of the District was also previously completed. A more thorough plan needs to be developed and greater in-depth studies completed, and then engineering design.

Background

Mid-Valley Water District has an existing pump station with capacity of about 20 cfs and distribution system covering some of the westerly and northerly portions of the District. The pump station is on the James Bypass upstream of James Road in the area fed with backwater from Mendota Pool. The location can therefore obtain water from the following sources when available: Kings River floodwater and purchased supplies, CVP supplies from the Delta Mendota Canal, and water from the San Joaquin River (either re-circulated flows or Friant CVP supplies).

The District was was formed in 1984 for the purpose of obtaining a supply of surface water from the then proposed Mid-Valley Canal Unit of the USBR's Central Valley Project. At that time there was a Mid-Valley Water Authority comprised of about 30 water agencies from Madera to Kern County. The purpose of the Authority was to seek Congressional approval to construct the Mid-Valley Canal. With the Central Valley Project Improvement Act (1992), any flows from the Delta that might have been available for the Authority, now went to environmental needs, and plans for the Mid-Valley Canal were not longer viable.

In the past, the District has delivered water from Mendota Pool, including groundwater purchases, USBR Section 215 water from the Delta, and temporary USBR contracts, as well as water from the Kings River Water Association during Kings River flood releases.

In May 2017, an application to appropriate Kings River floodwater was submitted for many locations on the river, including the Mid-Valley pumping plant diversion, to use any unused Kings River flood flows to mitigate for groundwater overdraft and to comply with the Sustainable Groundwater Management Act.

Project Workplan

1. Prepare an in-depth feasibility study.

2. Conduct Proposition 218 election to develop project funding.

3. Identify options for dedicated recharge sites within previously identified likely favorable recharge area.

4. Complete environmental documentation for CEQA and any special studies, including regulatory and permitting requirements.

5. Obtain land and right-of-way for project facilities.

6. Prepare engineering design for James Bypass pump station upgrade, District wide distribution system and dedicated recharge basins.

7. Prepare water supply agreements.

8. Construct project facilities.

9. Prepare monitoring plan and monitor flows, recharge amounts and areas, and groundwater quality.

Regional Goals

***1)** Insert a '✓' next to the **ONE** primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2)** Insert a '✓' next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more). **(Minimum 75 words)

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	No.	Goal
✔		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	✔	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	✔	RG3	Improve and protect water quality
	✔	RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1 - The project is estimated to capture up to 500 AF/day in direct recharge in wet years when there are Kings River flood releases. Additional surface water supplies could be obtained from the Mendota Pool and used directly, all of which would reduce the area dependence on groundwater.

RG2 - The area is almost exclusively on groundwater, and the increase in pumping size and distribution system improvements will increase the water supply reliability.

RG3 - Recharging the groundwater with high quality King River surface water, will over time increase ground water quality.

RG4 - The increased diversion of flows at the Mid-Valley turnout will will reduce high flow impacts to the system downstream.

Measurable Objectives

1) *Insert a '✓' next to the* ***ONE*** *primary Kings Basin IRWMP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective.*
2) *Insert a '✓' next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*

Put '✓' by one Primary Objective	Put '✓' by Secondary Objectives that apply	No.	Objective
✔		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
	✔	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	✔	MO4	Increase average annual supply and reduce demand
	✔	MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
	✔	MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
	✔	MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
	✔	MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1 - The bringing in of any surface water to Mid-Valley WD will contribute to reducing overdraft. The project will measure surface water diverted, as well as the area where infiltrated and the time period of infiltration.

MO3 - This project will benefit downstream DAC communities by reducing the flood flows in those areas by diverting the water upstream before it can reach any DAC such as Tranquillity/Mendota/Firebaugh.

MO4 - The project will enhance groundwater supply for the area by capturing approximately 500 AF per day of flood water that might otherwise be lost from the basin. Additionally, direct irrigation will occur if flows happen when there is irrigation demand.

MO5 - The project will capture and divert water for recharge during wet years, allowing that water to be pumped from the aquifer in dry years.

MO7 - Monitoring of groundwater levels and quality will occur as part of the project.

MO12 - As part of the feasibility investigation for the project, opportunities for incorporating habitat benefits will be investigated.

MO14 - The landowners, the District and the GSA are all partnering together to ensure water supplies are available to the area so the existing land use can continue.

Resource Management Strategies

Identify *by inserting a '✓'* next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (***Minimum 50 words***).

Category	Strategy	Put ✓ by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	✔
	Water transfers	✔
	Conjunctive management and groundwater storage	✔
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	✔
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Resource Management Strategies

Conveyance - new local conveyance is proposed in the pump station size increase, as well as the infrastructure that is proposed within the District.

Water transfers - the project will allow water transfers to occur to the benefit of Mid-Valley Water District due to the infrastructure being in place to accept high flows from the Kings River. The District or landowners could transfer water from others due to the connection to the Mendota Pool.

Conjunctive management & groundwater storage - the project will recharge the groundwater supply by the infiltration of Kings River flood flows, as well as provided in-lieu recharge (i.e. reduced pumping from wells) by providing water directly for irrigation of crops when flows are available and crops have a need for irrigation.

Flood risk management - this project diverts flows and reduces the downstream flood risk by up to 250 cfs.

DAC Water Needs

The diversion of Kings River floodwater from the James Bypass will reduce the risk due to potential flooding of DAC communities that are located downstream.

Project Schedule	No project schedule has been completed at this time. However, the District is working to obtain water supplies and implement projects in order to comply with the sustainability requirements of SGMA.

Estimated Cost	Estimated project cost is $40 million. Presently, only private funding by landowners currently exists, but public funding will be available at a future date. Mid-Valley WD and/or the McMullin Area GSA will go through the Proposition 218 process in order to increase assessments to pay for the ongoing O&M, and the capital costs not funded from grants. With ongoing assessment, it is possible that the District could obtain bond funds. As an area with only groundwater supplies, bringing in surface water is imperative for the ongoing viability of irrigated agriculture in the area.

If your project includes a storm water connection or benefit, please complete this form as well.

Project Name	Mid-Valley WD James Bypass Surface Water Supply and Recharge Project

SWRP Goals

***1)** Insert a '✓' next to the **ONE** primary Kings Basin SWRP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2)** Insert a '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more). **(Minimum 75 words)

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	Goal
		Improve storm water quality
✔		Augment surface or groundwater supply
	✔	Flood management
		Environmental benefits
		Community benefits

Augment supply - Mid-Valley Water District currently has only groundwater supplies available for irrigation use by its landowners. The project would provide King River surface water from off of the James Bypass for irrigation and groundwater recharge. High flows or floodwaters are envisioned, though the purchase of others supplies could also be possible from any water supply source that could get water to Mendota Pool.

Flood management - The project provides an additional area for possible diversions of Kings River floodwater, it provides KRCD/KRWA additional flexibility in flood management

Quantitative Measures

***1)** Insert a '✓' next to the **ONE** primary Kings Basin SWRP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective and the associated measurement and units.*
***2)** Insert a '✓' next to secondary Kings Basin SWRP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3)** For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more). **(Minimum 75 words)

Put '✓' by <u>one</u> Primary Objective	Put '✓' by Secondary Objectives that apply	Objective
	✔	Increase infiltration and/or treatment of runoff
		Nonpoint source pollution control
		Reestablish natural drainage and treatment
✔		Water supply reliability
		Water conservation (Reduction of Demand)
	✔	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)
	✔	Decrease flood risk by reducing runoff rate and/or volume
		Reduce sanitary sewer overflows
		Wetland enhancement/creation
		Riparian enhancement
		Instream flow improvement
		Increased urban green space
		Reduced energy use, greenhouse gas emissions, or provides a carbon sink
		Reestablishment of natural hydrograph
		Water temperature improvements
		Enhanced and/or created recreational and public use areas
		Community involvement
		Employment opportunities provided
		Public education

Water supply reliability - The project will bring surface water supplies into a "groundwater only" area to a dedicated recharge basin, on-farm in-field recharge or in-lieu recharge, which will greatly increase the water supply reliability for the area. Water measurement will be by metering and be reported in volume of water diverted to recharge in acre-feet.

Increase infiltration - Dedicated basin and farmland areas will accept water for recharge of Kings River flows. The area (in acres) and duration of infiltration will be determined for the areas accepting water each year.

Conjunctive Use - When Kings River high flows occur during times of crop irrigation demand, water will be taken directly to meet crop evapotranspiration by those landowners close enough to the project facilities. Measurement will be by flow meter by volume of water taken in acre-feet.

Decrease flood risk - When the Kings River is at high flows, diversions at any point will decrease the risk of flooding downstream of the point of diversion. Diversions will be quantified in cubic feet per second (CFS) by the current method of measurement at the point of diversion, in this case depth of flow over weir boards, or the head difference between the turnout opening, and the time between measurements.

N/A

Project Funding

Is permanent funding for the operation and maintenance of the project available? ☐ Yes ☒ No

Presently, only private funding by landowners currently exists, but public funding will be available at a future date. Mid-Valley WD and/or the McMullin Area GSA will go through the Proposition 218 process in order to increase assessments to pay for the ongoing O&M, and the capital costs not funded from grants. With ongoing assessment, it is possible that the District could obtain bond funds. As an area with only groundwater supplies, bringing in surface water is imperative for the ongoing viability of irrigated agriculture in the area.

Project Location

Is the project located on publicly owned land? ☐ Yes ☒ No

Monitoring

All surface water flows that come into the area will be measured. Existing groundwater wells in the area will be monitored for quality periodically and to establish the background groundwater quality, as well as to compare for a baseline, in order to determine if there are changes to quality that are occurring.

Project Name	Raisin City WD Stinson North Canal Water Supply and Recharge Project
Project Proponent(s)	Raisin City Water District in cooperation with Terranova Ranch and McMullin Area GSA
Project Contact	Gere Gunlund, Board President gere.gunlund@gmail.com
Project Location	The project would start along the right (northerly) bank of North Fork of the Kings River, just upstream of Stinson Weir with a turnout. A canal would be constructed from this point roughly along the 195 to 200-foot contour into Raisin City Water District, general between the Jameson and Howard Avenue alignments to the Floral Avenue alignment. Dedicated recharge basins are proposed to be located in portions of Section 33, Township 15 South, Range 18 East, M.D.B. & M.
Project Description	The project consists of a new 500 cfs canal about 9 miles in length from above the Stinson Weir on the North Fork of the Kings River into Raisin City Water District, with a 320 acre dedicated recharge area at the terminus of the canal in favorable areas of said Section 33, and a connection to the Phase 2 improvements of the McMullin On-Farm Recharge Project. Turnouts would be included off of the canal for landowners to also take water when it is available.

Project Status

At what stage of development is the project?

Project Status	Put ✓ next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	✔
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

A preliminary feasibility level study is currently being initiated.

With an estimated canal capacity of 500 cfs, a water supply of 1,000 AF/day is possible for recharge or in-lieu recharge, as well as direct irrigation. At an estimated infiltration rate of 0.5 feet per day, a 320 acre dedicated recharge basin would infiltrate about 160 acre-feet per day, or about 6,400 acre-feet on an average annual basis flood duration of 40 days (from historical hydrology). Additional recharge would occur on-farm.

Background

The Raisin City Water District was formed in 1962 for the purpose of providing irrigation water to lands within its boundaries. Since its formation, the District has not been able to secure a source of surface water entitlement. Farmers within the District have had to obtain water for irrigation purposes by pumping groundwater. However, the District is a member of the McMullin Recharge Group (formed in 1999) to address the long-term water supply imbalance in the Raisin City area caused by the lack of surface water available for irrigation. With the passage of the Sustainable Groundwater Management Act (SGMA), the District joined with Mid-Valley Water District and Fresno County to form the McMullin Area GSA for the purposes of complying with SGMA.

With a connection to the Kings River, Raisin City WD and McMullin Area GSA landowners could obtain water in wet years to assist the area in mitigating for groundwater overdraft and to comply with the Sustainable Groundwater Management Act.

Project Workplan

1. Feasibility Analysis. This would include a hydraulic analysis for the Stinson North Canal, a preliminary soils and hydrogeologic investigation and conceptual design.

2. Environmental Documentation. This would include the CEQA to support the Project. Included in this task would be the biological and cultural resources reviews, as well as permitting required.

3. Conduct Proposition 218 election to develop project funding.

4. Land Acquisition. Under this task the land, right-of-way, easements required for the Project would be acquired.

5. Engineering Design. This would include the necessary hydraulic, geotechnical and structural design to develop plans and specifications for the construction of the Project.

6. Construction. Included in this task is the land clearing and earthwork to build the recharge basins and canal. This task would also include the construction of the necessary bridges, diversion structures, pump station(s), control structures and monitoring wells for the Project.

7. Monitoring Plan. Prior to operation of the facility a Groundwater Monitoring Plan would be developed. The intent of the plan would be to develop baseline groundwater levels and quality for the Project and develop the protocols for on-going monitoring of the Project.

Regional Goals

***1)** Insert a '✓' next to the **ONE** primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2)** Insert a '✓' next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more). **(Minimum 75 words)

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	No.	Goal
✔		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	✔	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	✔	RG3	Improve and protect water quality
	✔	RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1 - The project is estimated to capture up to 1,000 AF a day in direct recharge in wet years when there are flood releases available, as well as direct irrigation or on-farm recharge, which would reduce the area dependence on groundwater.

RG2 - The area is almost exclusively on groundwater, and the increase in pumping size and distribution system improvements will increase the water supply reliability.

RG3 - Recharging the groundwater with high quality Kings River surface water, will over time increase ground water quality.

RG4 – By diverting flood water in wet years, the Project will lessen the burden on the downstream flood control facilities and provide an additional factor of safety to protect the communities and land that depends on them for protection.

Measurable Objectives

***1)** Insert a '✓' next to the **ONE** primary Kings Basin IRWMP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective.*
***2)** Insert a '✓' next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*

Put '✓' by one Primary Objective	Put '✓' by Secondary Objectives that apply	No.	Objective
✔		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
	✔	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	✔	MO4	Increase average annual supply and reduce demand
	✔	MO5	Increase dry year supply
	✔	MO6	Increase regional conveyance capacity
	✔	MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
	✔	MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
	✔	MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1 - The bringing in of any surface water to Raisin City WD and the McMullin Area GSA will contribute to reducing overdraft. The project will measure surface water diverted, as well as the area where infiltrated and the time period of infiltration.
MO3 - This project will benefit downstream DAC communities by reducing the flood flows in those areas by diverting the water upstream before it can reach any DAC.
MO4 - The project will enhance groundwater supply for the area by capturing approximately 1,000 AF per day of flood water that might otherwise be lost from the basin. Additionally, direct irrigation will occur if flows happen when there is irrigation demand.
MO5 - The project will capture and divert water for recharge during wet years, allowing that water to be pumped from the aquifer in dry years.
MO6 - The project would provide a canal that would go through the North Fork Kings GSA and then into the McMullin Area GSA, as well as into Raisin City Water District and connect to the Terranova McMullin On-Farm Flood Capture Project.
MO7 - Monitoring of groundwater levels and quality will occur as part of the project.
MO12 - As part of the feasibility investigation for the project, opportunities for incorporating habitat benefits will be investigated.
MO14 - The landowners, the District and the GSA are all partnering together to ensure water supplies are available to the area so the existing land use can continue.

N/A

Resource Management Strategies

Identify *by inserting a '✓'* next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (***Minimum 50 words***).

Category	Strategy	Put ✓ by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	✔
	Water transfers	✔
	Conjunctive management and groundwater storage	✔
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	✔
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Resource Management Strategies

Conveyance - new local conveyance is proposed in the construction of a canal from Stinson Weir to Raisin City WD and the McMullin Area GSA, as well as the infrastructure that is proposed within the District.

Water transfers - the project will allow water transfers to occur to the benefit of Raisin City Water District due to the infrastructure being in place to accept high flows from the Kings River North Fork, whatever the source of those waters. The District or landowners could transfer water from Kings River Water Association member units if it was available.

Conjunctive management & groundwater storage - the project will recharge the groundwater supply by the infiltration of river flood flows, as well as provided in-lieu recharge (i.e. reduced pumping from wells) by providing water directly for irrigation of crops when flows are available and crops have a need for irrigation.

Flood risk management - this project diverts flows and reduces the downstream flood risk by up to 500 cfs from Stinson Weir on the North Fork of the Kings River.

DAC Water Needs

The diversion of floodwater off of the Kings River will reduce the risk due to potential flooding of any DAC communities that are located downstream. The Community of Raisin City will also benefit from having a more reliable groundwater supply in the area.

Project Schedule

No project schedule has been completed at this time. However, the District is working to obtain water supplies and implement projects in order to comply with the sustainability requirements of SGMA.

Estimated Cost

Estimated project cost is $27 million.

Presently, only private funding by landowners currently exists, but public funding will be available at a future date. Raisin City WD and/or the McMullin Area GSA will go through the Proposition 218 process in order to increase assessments to pay for the ongoing O&M, and the capital costs not funded from grants. With ongoing assessment, it is possible that the District could obtain bond funds. As an area with only groundwater supplies, bringing in surface water is imperative for the ongoing viability of irrigated agriculture in the area.

If your project includes a storm water connection or benefit, please complete this form as well.

Project Name	Raisin City WD Stinson North Canal Water Supply and Recharge Project

SWRP Goals

1) *Insert a '✓' next to the* ***ONE*** *primary Kings Basin SWRP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert a '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	Goal
		Improve storm water quality
✔		Augment surface or groundwater supply
	✔	Flood management
		Environmental benefits
		Community benefits

Augment supply - Raisin City Water District currently has only groundwater supplies available for irrigation use by its landowners. The project would provide Kings River surface water for irrigation and groundwater recharge. High flows or floodwaters are envisioned, though the purchase of others supplies could also be possible from any water supply source that was available from Kings River Water Association member units.

Flood management - The project provides an additional area for possible diversions of floodwater, it provides the KRCD/KRWA additional flexibility in flood management

Quantitative Measures

1) *Insert a '✓' next to the* ***ONE*** *primary Kings Basin SWRP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective and the associated measurement and units.*
2) *Insert a '✓' next to secondary Kings Basin SWRP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by <u>one</u> Primary Objective	Put '✓' by Secondary Objectives that apply	Objective
	✔	Increase infiltration and/or treatment of runoff
		Nonpoint source pollution control
		Reestablish natural drainage and treatment
✔		Water supply reliability
		Water conservation (Reduction of Demand)
	✔	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)
	✔	Decrease flood risk by reducing runoff rate and/or volume
		Reduce sanitary sewer overflows
		Wetland enhancement/creation
		Riparian enhancement
		Instream flow improvement
		Increased urban green space
		Reduced energy use, greenhouse gas emissions, or provides a carbon sink
		Reestablishment of natural hydrograph
		Water temperature improvements
		Enhanced and/or created recreational and public use areas
		Community involvement
		Employment opportunities provided
		Public education

Water supply reliability - The project will bring surface water supplies into a "groundwater only" area to a dedicated recharge basin, on-farm in-field recharge or in-lieu recharge, which will greatly increase the water supply reliability for the area. Water measurement will be by metering and be reported in volume of water diverted to recharge in acre-feet.

Increase infiltration - Dedicated basin and farmland areas will accept water for recharge of surface water flows. The area (in acres) and duration of infiltration will be determined for the areas accepting water each year.

Conjunctive Use - When floodwater flows occur during times of crop irrigation demand, water will be taken directly to meet crop evapotranspiration by those landowners close enough to the project facilities. Measurement will be by flow meter by volume of water taken in acre-feet.

Decrease flood risk - When diversion occurs during periods of high flows or floodwater periods, diversions at any point will decrease the risk of flooding downstream of the point of diversion. Diversions will be quantified in cubic feet per second (CFS) by the current method of measurement at the point of diversion, in this case depth of flow over weir boards, or the head difference between the turnout opening, and the time between measurements.

N/A

Project Funding

Is permanent funding for the operation and maintenance of the project available? ☐ Yes ☒ No

Presently, only private funding by landowners currently exists, but public funding will be available at a future date. Raisin City and/or the McMullin Area GSA will go through the Proposition 218 process in order to increase assessments to pay for the ongoing O&M, and the capital costs not funded from grants. With ongoing assessment, it is possible that the District could obtain bond funds. As an area with only groundwater supplies, bringing in surface water is imperative for the ongoing viability of irrigated agriculture in the area.

Project Location

Is the project located on publicly owned land? ☐ Yes ☒ No

Monitoring

All surface water flows that come into the area will be measured. Existing groundwater wells in the area will be monitored for quality periodically and to establish the background groundwater quality, as well as to compare for a baseline, in order to determine if there are changes to quality that are occurring.

KINGS BASIN
Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Jevenile Detention Facility- Cottonwood Creek (JDF Complex)

SWRP Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary SWRP Goal	Put '✓' by Secondary SWRP Goals that apply	Goal
	✔	Improve Storm Water Quality (SWQ)
	✔	Augment Surface or Groundwater Supply (WS)
✔		Floodwater Management (FM)
	✔	Environmental (E)
		Community (C)

Flood Control. Detain flood waters of the immediate facility site and lessen the burden of down creek users during flood conditions-accomplished by the design of a new Creek channel having a substantial berm element and widen the channel bed to contain flood events at or below the 10 year recurrence interval, but allow large flood events to overtop the northerly berm so as to flood the agricultural fields to the north.
Groundwater Recharge. Recharge the depleted and degraded Tulare Basin aquifer accomplished by including a basin that offers excellent infiltration to recharge groundwater and is highly suited for wetlands and habitat uses.
Water Supply. The groundwater recharge element is a measure toward increasing the groundwater supply in a manner that also enhances the reliability of the groundwater supply through the basin element of the project
Water Quality. The project improves water quality for surface waters through design of the channel.
Riparian Enhancements (Environmental). The project will repair and restore Cottonwood Creek to its original course and allow for natural riparian growth along certain stretches and within the detention basins. As the Creek is currently heavily maintained, this project will enhance riparian habitat opportunities. The project will also implement wetland recreation and habitat mitigation easements on County-owned land adjacent to Cottonwood Creek.

SWRP Benefits

The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. ***To be eligible, projects must address at least two Main Benefits.***
1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
2) *Insert an '✓' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits		✔	SWQ	Increase infiltration and/or treatment of runoff			
		✔	WS	Water supply reliability			
	✔		WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
		✔	FM	Decrease flood risk by reducing runoff rate and/or volume			
		✔	E	Wetland enhancement/creation			
		✔	E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
		✔	SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
		✔	E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
		✔	C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

For each Benefit selected, provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. (Minimum 75 words).

Project Funding	Is permanent funding for the operation and maintenance of the project available? Please specify if a funding source is available and, if so, how the funding will be provided. Specify if a funding source is available and, if so, how the funding will be provided.
Project Location	Is the project located on publicly owned land? ☑ Yes or ☐ No
Monitoring	Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project.

KINGS BASIN Water Authority

PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the IRWMP
Form Revised 8-16-12

Project Name	**Big Dry Creek Recharge Project**
Project Proponent(s)	**Fresno Irrigation District**
Project Location	Big Dry Creek south of the Friant Kern Canal.
Project Description	The project being considered is the use of the existing Big Dry Creek reach from the Friant Kern Canal to the Enterprise Canal as a linear recharge facility. This reach of the creek is utilized for flood routing purposes, but is not currently used as a recharge facility. The project being considered would divert water from the Friant Kern Canal to be recharged along the existing few miles of creek channel upstream of the Enterprise Canal.

Project Status

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	X
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

Background

Big Dry Creek crosses the Friant Kern Canal than traverses south and west eventually spilling into FID's canal system. Big Dry Creek is utilized as a linear recharge facility south of the Enterprise Canal, but upstream of the Enterprise does not have a water source other than flood waters retained by the Big Dry Creek Reservoir during wet periods. The location of the several miles of Big Dry Creek downstream of the Friant Kern Canal is an area without a surface water supply, located north of Clovis in a County of Fresno area with some rural development and agricultural lands. This area has limited groundwater and is upgradient of the cone of depression beneath the City of Clovis. The project being considered would divert water from the Friant Kern Canal into Big Dry Creek for recharge along the Creek, providing recharge along an area with limited suitable land for recharge and declining groundwater levels.

This project is being considered as part of the County of Fresno's Local Groundwater Assistance Grant, a joint consideration by the County of Fresno, Fresno Metropolitan Flood Control District, City of Fresno and the City of Clovis. Work on this study is just beginning, but will consider recharge potential along the creek, water supply sources, and possible improvements to the creek.

Project Workplan

The current workplan is limited to the evaluation of the potential for recharge along the creek, consideration of water supply sources, diversion facilities from the canal, and possible improvements to the creek channel. Agreements for transfer of supply are also

being considered. Further development of the project, including consideration of construction improvements, will not be initiated until the feasibility study is completed.

Regional Goals

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
X		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	X	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
	X	RG4	Provide additional flood protection
	X	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

Primary:

- RG1 – If feasible, the project will recharge water in an area of the region with critical overdraft.

Secondary:

- RG2 – By increasing recharge capacity in an area with limited recharge area, water supply reliability for the area impacted by the project.
- RG4 – The project may consider channel improvements along Big Dry Creek that are needed to manage storm water routings downstream of the Big Dry Creek Reservoir, providing additional flood protection for the area downstream of the reservoir. In portions of this area, the channel is not fully defined, or has been modified and is not suitable for conveyance of the master planned storm flows.
- RG5 – Improvements along the creek would require protection and possible enhancement of ecosystems and riparian habitat along the creek.

Measurable Objectives

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Objective
X		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	X	MO4	Increase average annual supply and reduce demand
		MO5	Increase dry year supply
	X	MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage

		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

Primary:

- MO1 – The project would provide additional groundwater recharge along the creek. The amount of water delivered to the creek from the Friant Kern Canal would be metered and recorded.

Secondary:

- MO4 – The project will recharge groundwater in an area that does not currently have recharge area, utilizing an existing creek channel for recharge to increase available water supply to the area and helping to sustain the aquifer in that area. The amount of water delivered to the creek from the Friant Kern Canal would be metered and recorded.
- MO6 – The project may increase conveyance capacity along this reach of the creek. The increased conveyance capacity will be designed to meet the master planned flow requirements for that reach, which would be measured during storm events.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce water demand	Agricultural water use efficiency	X
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	X
	Water transfers	
	Conjunctive management and groundwater storage	X
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	

	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning	X

- Reduce Water Demand – Agricultural Water Use Efficiency: One of the Efficient Water Management Practices of the 2009 California Water Plan Update is "conjunctive use of surface and groundwater". This project will provide for recharge of surface water to help sustain groundwater supplies in the area.
- Improve Operational Efficiency and Transfers – Conveyance – Regional/Local: The project may increase the capacity of the Big Dry Creek channel downstream of the reservoir.
- Improve Operational Efficiency and Transfers – Conjunctive Management and Groundwater Storage: The project will consider the increased use of surface water for groundwater recharge in an area with limited water supply.
- Other Strategies – Drought Planning: Since groundwater is heavily relied upon during periods of drought, this project will help protect groundwater resources during these times.

DAC Water Needs	N/A
Project Schedule	Has a schedule for project completion been identified? **No**
Estimated Cost	The total project cost is estimated at $2,000,000.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Big Dry Creek Recharge Project

SWRP Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary SWRP Goal	Put '✓' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
✔		Augment Surface or Groundwater Supply (WS)
	✔	Floodwater Management (FM)
	✔	Environmental (E)
		Community (C)

Augment Surface or Groundwater Supply. The project will provide recharge to area with limited recharge potential.

Floodwater Management. The project may consider channel improvements along Big Dry Creek that are needed to manage storm water routings downstream of the BDC Reservoir, providing additional flood protection for the area.

Environment (Secondary). Improvements along portions of the creek channels would require protection and possible enhancement of ecosystems and riparian habitat.

SWRP Benefits

The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. ***To be eligible, projects must address at least two Main Benefits.***
1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
2) *Insert an '✓' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
		✔	WS	Water supply reliability			
	✔		WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)	100	AF/day	volume recharged
		✔	FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
		✔	E	Riparian enhancement			
		✔	E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
		✔	SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Conjunctive Use - The project will provide improved use of storm/flood water through improved management, capture and recharge of water within the channels and area recharge basins. A conservative estimate of 100acre-feet per day of recharge when water is available has been estimated based on increased conveyance capacity allowing water diversion to recharge facilities as well as potential channel recharge during summer months.

Water Supply Reliability - The project will provide needed recharge to an overdrafted aquifer with limited suitable recharge areas, and allow for the capture of stormwater lost to region.

Decrease Flood Risk - Possible channel improvements downstream of BDC reservoir will provide improved conveyance capacity and reduce flood risk.

Riparian Enhancement - Improvements along portions of the creek channels would require protection and possible enhancement of ecosystems and riparian habitat.

Instream Flow Improvement - The project will provide instream channel improvements for increased capacity and reducing flood damage risk.

Reestablish natural drainage and treatment - Improvements along portions of the creek channels would allow previous drainage to be reestablished and increased flows provide natural treatment of stormwater.

Project Funding	Is permanent funding for the operation and maintenance of the project available? Please specify if a funding source is available and, if so, how the funding will be provided. Yes. Operation and maintenance of the stream flows received and routed from the Big Dry Creek has been part of operations for decades, and is subject to the agreement for shared responsibility of operations and maintenance by multiple local agencies.
Project Location	Is the project located on publicly owned land? ☑ Yes or ☐ No
Monitoring	Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. The project is anticipated to include improved measurement at specific locations along the channel to confirm flows and recharge amounts.

KINGS BASIN Water Authority

PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the IRWMP
Form Revised 8-16-12

Project Name	**Fancher Creek Storage Project**
Project Proponent(s)	**Fresno Irrigation District**
Project Location	Fancher Creek at the Friant Kern Canal.
Project Description	The project being considered is the use of the existing Fancher Creek Reservoir for surface water storage. The project being considered would divert water from the Friant Kern Canal to be stored in the existing Fancher Creek Reservoir.

Project Status

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	X
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

Background

The existing Fancher Creek Reservoir is operated by the Fresno Metropolitan Flood Control District (FMFCD) and is part of a system that provides critical flood protection for an area east of the City of Fresno. Much of the storm water detained is diverted downstream to FID facilities. The Eastside Stream Group is made up of the Fresno Irrigation District, the Fresno Metropolitan Flood Control District, the City of Fresno and the City of Clovis. These entities have jointly filed a water rights application for the utilization of the water that comes from these watersheds into FID's system and plan to utilize the water within the region. Water from these eastside streams historically terminated at the Sinks of Dry Creek, and area nearest what is now downtown Fresno. There remains a critical need for additional surface storage along San Joaquin River watershed and Friant Kern Canal system.

Project Workplan

This project is still at the conceptual stage so a detailed project workplan has not been developed. The following tasks are anticipated:

1. Engineering Feasibility – An evaluation of feasibility of the use of the Fancher Creek Reservoir to provide additional surface storage along the Friant Kern Canal System.
2. Project Financing/Partnership – Agency agreements for funding, operation, and maintenance need to be developed and a funding plan determined.
3. Environmental/Permitting – Environmental documentation will need to be prepared. CEQA and NEPA compliance will be required. Permits from several regulatory agencies will be needed.
4. Final Design – Final plans and specification will be prepared.
5. Bidding/Construction – The project will be competitively bid, and construction

implemented.

Regional Goals

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
	X	RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
X		RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
	X	RG4	Provide additional flood protection
	X	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

Primary:

- RG2 – Increasing surface storage along the Friant Kern Canal system will increase flexibility and water supply reliability.

Secondary:

- RG1 – If water is diverted to the reservoir for storage, the project will provide some additional, albeit minimal, recharge at the reservoir as water is diverted to storage when the reservoir is not used or not fully utilized.
- RG4 – The project may consider channel improvements along Fancher Creek or at the reservoir that increase operational flexibility and increase flood protection.
- RG5 – Additional surface storage along the Friant Kern Canal system that provides improved water supply reliability and operational flexibility will help sustain efforts to maintain flows in the San Joaquin river fisheries program.

Measurable Objectives

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Objective
	X	MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	X	MO4	Increase average annual supply and reduce demand
		MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
X		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects

		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

Primary:

- MO10 – The project will increase surface storage through the use and storage of water in Fancher Creek Reservoir.

Secondary:

- MO1 – If water is diverted to the reservoir for storage, the project will provide some additional recharge at the reservoir as water is diverted to storage when the reservoir is not used or not fully utilized.
- MO4 – The capture of excess or flood water for storage and later use will increase available supply.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce water demand	Agricultural water use efficiency	X
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	X
	Water transfers	
	Conjunctive management and groundwater storage	X
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	X
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	

	Rainfed agriculture	
	Drought planning	X

- Reduce Water Demand – Agricultural Water Use Efficiency: One of the Efficient Water Management Practices of the 2009 California Water Plan Update is "conjunctive use of surface and groundwater". This project will provide for recharge of surface water to help sustain groundwater supplies in the area.
- Improve Operational Efficiency and Transfers – Conjunctive Management and Groundwater Storage: The project will consider the storage for later use of available surface or flood water in an area with limited water supply.
- Improve Operational Efficiency and Transfers – Surface Storage – Regional/Local: The project will allow for additional surface storage at Fancher Creek Reservoir.
- Other Strategies – Drought Planning: The project will provide for additional surface storage in wet years, allowing for diversion and later use.

DAC Water Needs	N/A
Project Schedule	Has a schedule for project completion been identified? **No**
Estimated Cost	The total project cost is estimated at $2,000,000.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Fancher Creek Storage Project

SWRP Goals

***1)** Insert an '✓' next to the **ONE** primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2)** Insert an '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more). **(Minimum 75 words)

Put '✓' by one Primary SWRP Goal	Put '✓' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
✓		Augment Surface or Groundwater Supply (WS)
	✓	Floodwater Management (FM)
	✓	Environmental (E)
		Community (C)

Augment Surface or Groundwater Supply. The project will provide improved surface water storage leading to better management of available supplies for delivery to recharge and beneficial uses.

Floodwater Management. The project will provide additional storage for floodwater management and may consider channel improvements along Fancher Creek allowing increased operational flexibility and flood protection.

Environment. Improvement storage and operation flexibility will help sustain efforts to maintain fisheries management programs.

SWRP Benefits

*The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. **To be eligible, projects must address at least two Main Benefits.***
***1)** Insert an '✓' next to the **ONE** primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
***2)** Insert an '✓' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3)** For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more). **(Minimum 75 words)

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
		✔	WS	Water supply reliability			
	✔		WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
			FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Conjunctive Use - The project will provide increased surface storage and operational flexibility to allow for improved stormwater capture.

Water Supply Reliability - The project will allow for the capture of water lost to region.

Project Funding	Is permanent funding for the operation and maintenance of the project available? Please specify if a funding source is available and, if so, how the funding will be provided. Yes. Operation and maintenance of the stream flows received and routed from Fancher Creek are part of a cooperative agreement amongst multiple local agencies.
Project Location	Is the project located on publicly owned land? ☑ Yes or ☐ No
Monitoring	Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. The project is anticipated to include improved measurement at specific locations along the channel to confirm flows and recharge amounts.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 6/26/2018

Project Name	**Storm Pump Station Rehab & Basin Upgrades**
Project Proponent(s)	**City of San Joaquin**
IRWMP Adoption	**Yes, Adopted 11-07-2012**
Project Contact	**Mario Gouveia, City Engineer, mgouveia@gouveiaengineering.com**
Project Location	Project located in City of San Joaquin, 4 Locations within the city. California Avenue Drainage Basin (36.613832, -120.189473) Colorado Avenue Drainage Basin (36.612332, -120.194216) Manning Avenue Pump Station (36.603238, -120.201959) Industrial Park Drainage Basin (36.600256, -120.186268)
Project Description	The project consists of storm drain improvements at four sites including the replacement of aging pumping equipment, installing pumping equipment where none exists, installing generators and controls where pumping equipment is to be placed, installing or modifying piping to allow basin recharge, regrading existing basins to improve percolation and the excavation of a new drainage basin on city property. The four sites have different improvement needs as follows: **Site 1 – Manning Ave. Storm Pump Rehab** • Replace two pumps with new submersible, non-clog pumps, wet well, and discharge piping. • Provide and install pump control panel. • Replace buried discharge pipes and construct headwall at canal discharge. • Install new generator. • Replace fencing and gates. • Install SCADA system improvements. **Site 2 - California Ave. Storm Basin Upgrades** • Re-grade basin embankments and remove sediment buildup from bottom. • Install gravity turnout from canal for basin recharge. • Install new submersible, non-clog pumps, wet well, and discharge piping. • Install new generator. • Provide and install pump control panel. • Replace fencing and gates. • Install SCADA system improvements. **Site 3 - Colorado Ave. Basin and Pump Station Rehab** • Re-grade basin embankments and remove sediment buildup from bottom. • Replace two pumps with new submersible, non-clog pumps, wet well, and discharge piping. • Install new generator. • Provide and install pump control panel. • Install gravity turnout for basin recharge. • Replace fencing and gates. • Install SCADA system improvements.

Site 4 - Industrial Park Storm Basin Replacement

- Excavate new 100-year flood retention basin to replace a temporary pond.
- Extend drainage pipes to new basin.
- Fill-in existing pond.
- Install fencing and gates.

Project Status

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	X
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

Needs have been identified for improvements for each of the project sites to enhance the reliability of the existing equipment, improve flood control, and promote groundwater recharge. The California Avenue and Colorado Avenue basin improvements would include basin regrading, installing new pumping systems with controls and backup generator and adding safety perimeter fencing for equipment. The improvements at Manning Avenue would include a new pumping system with controls and backup generator and new safety perimeter fencing. At the Industrial Park Storm Basin, the temporary pond would be replaced with a new basin sized for 100-year flood and install safety fencing at basin perimeter. The city anticipates completing a mitigated negative declaration for CEQA clearance.

Background

The City of San Joaquin has aging equipment and outdated pumping and degraded storm basins that are in need of improvements as follows:

- Manning Avenue pump station is composed of a wet-well that receives storm water from approximately half of the city street runoff then pumped to a nearby canal managed by James Irrigation District (J.I D.). Pumps are outdated and replacement is necessary to improve efficiency and reliability. This pump station does not have an existing generator and is vulnerable in the event of citywide power failure.
- California Avenue Basin requires re-grading to increase percolation. This basin does not have a flood control pumping system and has experience spillage onto the streets during severe storms. Also, there is no existing piping to allow basin to recharge. The project would connect to an adjacent irrigation canal by J.I.D. for gravity recharge of approximately 100 ac-ft annually. The city has been coordinating with J.I.D. and they fully support recharge opportunities for this site.
- Colorado Avenue Basin requires re-grading to increase percolation. This basin discharges to a wet well at Colorado Avenue and Sutter Avenue where outdated pumps lift the storm water to an adjacent canal managed by J.I.D. The city has tried using the existing piping to recharge the basin but with little success. Additional piping and a new connection to the canal are needed to take full advantage of recharge opportunities at this site via gravity of approximately 200 ac-ft annually. The aging pumping equipment is in need of replacement and J.I.D strongly supports recharge at this site as well.

- Industrial Park Drainage Basin is a temporary pond at the wrong location and does not have nearby irrigation canals for flood control. This project would construct a 100-yr storm basin at the ultimate location and provide enough capacity to prevent any overflows from storm drainage of existing development.

Project Workplan

Direct Project Administration

Task 1: **Administration:** Project Administration: Meetings, agreement preparation, preparation of invoices and other project implementation items.

Task 2: **Labor Compliance Program:** Adopting and enforcing a labor compliance program.

Task 3: **Reporting:** Preparing reports required by grant agreement.

Planning/Design/Engineering/Environmental Documentation

Task 4: **Assessment and Evaluation:** Prepare evaluation of project effectiveness.

Task 5: **Final Design:** Prepare Plans, Specifications and Estimate.

Task 6: **Environmental Documentation:** Prepare environmental documents.

Task 7: **Permitting:** Prepare and secure regulatory agencies permitting.

Task 8: **Construction Contracting:** Provide bidding and contract award services: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract.

Task 9: **Construction:** This task will include mobilization and site preparation, construction of all work on plans, performance testing, and demobilization.

Task 10: **Construction Administration:** Provide construction contract administration and construction engineering services.

Regional Goals

Put 'X' by <u>one</u> Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
	X	RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
		RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	X	RG3	Improve and protect water quality
X		RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1 - Halt and ultimately reverse the current overdraft and provide for sustainable management of surface and groundwater. The overdraft within the region is evidenced by falling groundwater levels, and manifested by increasing costs of groundwater pumping and some groundwater degradation. The main specific long-term goal of the Kings Basin IRWMP, as well as other water management documents for the area, is to correct the overdraft and stabilize groundwater levels. The City of San Joaquin is dependent on groundwater as its sole source of supply to meet water demands and is committed to reversing the current aquifer overdraft and providing for sustainable management of groundwater as evidenced by the City's installation of water meters. The recharging of Storm Basins at Colorado Avenue and California Avenue will help the groundwater table rebound during storm season. The city has already witness this benefit with the interim recharge of Colorado basin.

RG3 – Improve and protect water quality. The main specific long-term goal of the Kings Basin IRWMP, as well as other management documents for the area, is to improve and protect water quality. The city of San Joaquin water supply is vulnerable to several contaminants including arsenic and manganese. The city currently actively treats its drinking water for manganese. The city has noticed improved manganese levels due to recharge activities at its Colorado basin.

RG4 - Provide additional flood protection. The main specific long-term goal of the Kings Basin IRWMP, as well as other water management documents for the area, is to address deficiencies on flood protection systems. The city of San Joaquin currently has limited storm water infrastructure and in combination with a citywide power failure, the city would not have the ability to properly manage storm waters and prevent overflows in the event of a storm. The addition of generators on the pump stations, upgrading and installing new pump stations and electric controls would enhance the reliability against overflowing drainage basins and street flooding. The upgrade of the drainage basin on Industrial Park to a 100-year flood would create the necessary storm water storage capacity to address demands of such flood event.

Measurable Objectives

Put 'X' by one Primary Objective	Put 'X' by Secondary Objectives that apply	No.	Objective
X		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
	X	MO2	Identify opportunities and Projects
	X	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand
		MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
	X	MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
	X	MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1 – Increase amount of groundwater with intent to eliminate the groundwater overdraft in 20 years.

MO2 – Identify opportunities and Projects. The project would be added to the Authority's Project List, and construction of flood control and recharge facilities are similar to other projects that have been successfully implemented in the region.

MO3 – Identify DAC priority needs and promote/support solutions to DAC storm water issues. A safe and reliable storm water system for this severely disadvantage community is a priority and the City is constantly pursuing solutions to its storm water issues. The City of San Joaquin is a severely disadvantaged community. The city is comprised almost entirely of minority populations. Based on the 2010 census 95.6% identify as Hispanic or Latino; 0.8% as African American; 1.3% as Native American; and 0.9% as Asian.

MO8 – Encourage Best Management Practices, policies & education that protect water quality. The City will implement best management practices in the operation of the storm water system, utilizing recharge to augment the ground water supply by utilizing excess surface water resulting from storm event.

MO13 – Increase public awareness of IRWMP efforts. The authority will include the project in its public releases, Authority highlight documents, and on the Authority website in an effort to communicate the projects and efforts of the Authority and IRWM in the region. The City will include clarification of the IRWMP funding source in its communication to customers.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	
	Water transfers	X
	Conjunctive management and groundwater storage	X
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	X
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	X
	Flood risk management	X
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	X
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	X
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	X
	Drought planning[1]	

Resource Management Strategies

Water Transfers – will allow the transfer of canal water to be used to recharge groundwater.

Conjunctive Management and Groundwater Storage – Increase amount of groundwater in ground and reduce overdraft.

Groundwater Remediation / aquifer remediation – Increase amount of recharge in to ground to increase supply.

Urban Runoff Management – Improve storm water system to properly collect and dispose of street runoff.

Flood Risk Management – By diverting excess storm water from the basin to the irrigation canal, the risk for flooding caused by storm basins overflowing is reduced.

Economic Incentive – Increase amount of groundwater with intent to eliminate the groundwater overdraft in 20 years. The recharge of groundwater will reduce the cost associated with having to provide deeper wells and pumping groundwater from higher depths.

Rainfed Agriculture – Excess Stormwater from drainage basins would be diverted to local canals and increase available irrigation water supply.

Project Feasibility	The proposed improvements are within publicly owned land, owned by the city of San Joaquin or by James Irrigation District whom had shown strong interest in these improvements. The need for proposed improvements within the city are eminent to reduce city flooding events and allow recharge groundwater during offseason. With limited local funds, the proposed improvements could not be implemented and expose the city to frequent flooding issues as in previous storm events. Grants requested would allow city to expedite these essential improvements and flood control measures.
DAC Water Needs	Yes, the project will provide specific and measurable benefits to the City of San Joaquin's groundwater supply and provide added safeguards in preventing floods. The City of San Joaquin is a severely disadvantaged community and qualifies as such since the City's annual median household income has been determined by the US Census Bureau to be $24,934 in the Year 2000 Decennial Census, which was 52.5% of statewide median household income in that year. In addition, the 2007-2011 American Community Survey indicated a median household income of $25,702 (+/- $1,710) which is 41.7% of the statewide median household income, well below the 80% threshold referred to in California Water Code Section 79505.5(a), and also below the threshold of 60% which defines a severely disadvantaged community. San Joaquin is listed in Table 4-3 of the Kings Basin IRWMP as a severely disadvantaged community.
Climate Benefits	This project would contribute to the region adapting to climate changes by adapting to unforeseen future flood events. Additionally, this project will surcharge groundwater reducing the environmental impact from having to provide deeper wells and the energy required to pump water from these wells. This project will reduce the energy required from having to extract water from deeper wells.
Project Schedule	A schedule for this project has not been identified.
Estimated Cost	The total project cost is estimated at $4,665,780. Is permanent funding for the operation and maintenance of the project available? Limited funds from this disadvantage community are scarce and current maintenance costs for outdated equipment are escalating. These current maintenance funds could be used more efficiently un an updated system and would provide the necessary operation and maintenance of proposed equipment and facilities.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

Project Name **Storm Pump Station Rehab & Basin Upgrades**

SWRP Goals

Put 'X' by one Primary SWRP Goal	Put 'X' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
	X	Augment Surface or Groundwater Supply (WS)
X		Floodwater Management (FM)
	X	Environmental (E)
		Community (C)

Augment Surface or Groundwater Supply – Groundwater recharging would take place in the three basins mentioned in this application.

Flood management – By updating pumps and introducing generators, the city would dewater the basins and as a result provide additional protection from an overflowing basin during a major storm with citywide power failure.

Environmental – This project will recharge groundwater reducing the cost and environmental impact associated with having to dig deeper wells and energy required to pump water from these wells.

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	Quantity	Units	Measurement
Main Benefits		X	SWQ	Increase infiltration and/or treatment of runoff			
		X	WS	Water supply reliability			
		X	WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
	X		FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
		X	E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Increase infiltration and/or treatment of runoff – This project will increase infiltration when basins are re-graded as part of this project.

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

Water supply reliability – Groundwater recharging would take place in the three basins and in turn increase supply.

Conjunctive use – Storm surface water would be captured and recharge would take place in the three basins.

Decrease flood risk by reducing runoff rate and/or volume – Flood risk would be decrease by providing additional storm water storage when transferring water more efficiently and under power failure to the irrigation canals from drainage basins.

Reduced energy use, greenhouse gas emissions, or provides a carbon sink – This project will surcharge groundwater reducing the environmental impact associated with having to dig deeper wells and produce the energy required to pump water from these wells.

Project Funding	Limited funds from this disadvantage community are scarce and current maintenance costs for outdated equipment are escalating. These current maintenance funds could be used more efficiently un an updated system and would provide the necessary operation and maintenance of proposed equipment and facilities.
Project Location	This project is located on publicly owned land.
Monitoring	Groundwater level to be monitored periodically at city wells to observe improvements to water levels.

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www.kingsbasinauthority.org

PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 3/20/2017

Project Name	**McMullin On-Farm Flood Capture Project, Phases 2 and 3.**
Project Proponent(s)	**Kings River Conservation District, Terranova Ranch Inc.**
Project Contact	**Name: David Merritt, Philip Bachand, Ph.D.** **Email:** dmerritt@krcd.org, Philip@bachandassociates.com
Project Location	Phase 2a is approximately 3,721 acres and is bound by Adams, Siskiyou, Manning and So Lake streets. Approx. center of phase 2a is located Lat: 36.617581, Long: -120.115669. Phase 2b is approximately 9,001 acres and is bound mainly by Manning, Jameson, Mountain View streets and the phase 1 boundary on the west side. Approx. center of phase 2b is located Lat: 36.574964, Long: -120.016681. Phase 3 is approximately 2,938 acres and is bound by Manning, Dickerson, Mountain View and Jameson street, Approx. center of phase 3 is located Lat: 36.574819, Long: -119.980289.
Project Description	The project covers a gross acreage of 15,660 acres; the net acreage will depend on grower participation. The estimated recharge for the project is expected to be between 0.20 ft/day to 0.25 ft/day. The main conveyance system (Phase 1) that will feed Phase 2 and 3 is in progress, with the final design expected to begin July 2017 and construction of Phase 1 in 2018. The capacity of the system is governed by phase 1 turnout which is 1,000 acre-feet per day.
Project Status	See table below.
Background	During high flow releases on the North Fork of the Kings River high flows continue to be a problem downstream of the Terranova Ranch, alleviating the pressure downstream by diverting water on to farmland near McMullin Grade and the James Bypass for the purposes ground water recharge provides a benefit to both areas. Terranova Ranch historically has looked for ways to recharge ground water. They have and continue to reach out to landowners and agencies to develop projects that will benefit the ground water. Currently they have entered into a grant with the Kings River Conservation District for Phase 1 of this project. Phase 2 and 3 will include other agencies and land owners in the area.
Project Workplan	1. Administration-this task includes all grant compliance tasks needed. • Quarterly progress reports-prepare project progress reports • Written project completion report-at the completion of the project

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	X
Preliminary Design (feasibility study completed)	
Ready for Construction	

Overall conceptual/design has been done as part of the Phase 1 project. The main conveyance system was designed with a capacity to extend into Phase 2 and 3, as well as the main concrete structural systems will be designed for ease of expansion, if needed.

2. Property Acquisitions-this task include due diligence in acquiring property.
    - Environmental Site Assessment-Phase 1 ESA shall be conducted
    - Easements-permanent, seasonal and conveyance
    - Property Appraisals
3. Project Implementation
    - Prepare easement agreements for property-these easements will be in place to help manage operation and ownership of project when complete
    - Hydrologic and Hydraulic Studies-to determine project benefits
    - Preparation of CEQA-this will include cultural assessment
    - Prepare draft permit applications-this will include preparing a list of permits needed
    - Design of system-this will include necessary hydraulic, geotechnical and structural design to develop plans and specifications for construction of the project
    - Construction-This task will include the construction of the project per the design plans, which include all conveyance systems, pump stations and road crossings
4. Monitoring-this task will include a ground water monitoring and reporting plan will be developed to record ground water levels.
5. Outreach and Education-this task will include outreach to other agencies and land owners, educating them to the Best Management Practices developed as part of this project.

Regional Goals

Put 'X' by <u>one</u> Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
X		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	X	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	X	RG3	Improve and protect water quality
	X	RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1-This project would capture a 1,000 AF a day and would directly contribute to ground water recharge in wet years.
RG2-This project will help in becoming sustainable as well as supply water for direct use as well in wet years.
RG3-by recharging the ground water with fresh water over time will increase ground water quality.
RG4-this project will reduce high flow impacts to the system downstream.

Measurable Objectives

Put 'X' by <u>one</u> Primary Objective	Put 'X' by Secondary Objectives that apply	No.	Objective
X		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years

		MO2	Identify opportunities and Projects
	X	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	X	MO4	Increase average annual supply and reduce demand
	X	MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
	X	MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
	X	MO13	Increase public awareness of IRWM Efforts
	X	MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1-This project will measure surface water diverted, infiltrated and used for irrigation when possible, all three benefits stated will contribute to increasing the ground water and eliminating overdraft.
MO3-This project will benefit many downstream DAC communities by reducing the flood flows in their areas.
MO4- The project will enhance groundwater supply for the area by capturing approximately 1,000 AF per day of flood water that might otherwise be lost from the basin.
MO5- The project will capture and divert water for recharge during wet years, allowing that water to be pumped from the aquifer in dry years.
MO8-BMP's are being developed as part of this project.
MO13-Outreach and education is a task in this project.
MO14-This project will show a partnering between the agencies and the landowners to ensure water supplies to the area so existing land use can continue.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	X
	Water transfers	
	Conjunctive management and groundwater storage	X
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	X
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	X
	Recharge area protection	X
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

- The project will develop a 500 cfs diversion for flood water from the Kings River and a new conveyance system to deliver this water to the east into the Raisin City Water District and to the north.
- Flood Risk Management-this project diverts flows and reduces the downstream flood risk.
- Land Use Planning-this project will incorporate a land use plan and be incorporated into the land management agreements to incorporate seasonal flooding of farmed fields.
- Recharge area protection-this project will designate seasonal and permanent flood easements for farmed fields to be flood when flows are available thus protecting the designated recharge areas.

DAC Water Needs	This project would enhance the ground water supply to the community of Raisin City by stabilizing the ground water levels and by recharging high quality surface water in and near the district.
Project Schedule	No project schedule has been completed.
Estimated Cost	This project is estimated to cost $29,000,000, Phase 2-$19,000,000 and Phase 3-$10,000,000

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 9/18/2017

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name

McMullin On-Farm Flood Capture Project, Phase 2 & 3, Terranova Ranch

SWRP Goals

1) *Insert a '✓' next to the **ONE** primary Kings Basin SWRP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert a '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	Goal
		Improve storm water quality
✓		Augment surface or groundwater supply
	✓	Flood management
		Environmental benefits
		Community benefits

Augment supply - The area covered by Phase 2 and 3 of the project is within Raisin City Water District or their sphere of influence, all of which currently has only groundwater supplies available for irrigation use by its landowners. The McMullin On-Farm Flood Capture Project would provide surface water from the Kings River from off of the North Fork of the Kings River, immediately upstream of James Weir near McMullin Grade for groundwater recharge and irrigation. High flows or floodwaters are envisioned that might otherwise have gone outside of the area.

Flood management - The project provides an additional area for possible diversions of Kings River floodwater, which then provides KRCD/KRWA additional flexibility in flood management options by the diversion of flows, which in turn reduces the peak flows going further downstream.

Quantitative Measures

1) *Insert a '✓' next to the **ONE** primary Kings Basin SWRP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective and the associated measurement and units.*
2) *Insert a '✓' next to secondary Kings Basin SWRP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

Put '✓' by <u>one</u> Primary Objective	Put '✓' by Secondary Objectives that apply	Objective
	✔	Increase infiltration and/or treatment of runoff
		Nonpoint source pollution control
		Reestablish natural drainage and treatment
✔		Water supply reliability
		Water conservation (Reduction of Demand)
	✔	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)
	✔	Decrease flood risk by reducing runoff rate and/or volume
		Reduce sanitary sewer overflows
		Wetland enhancement/creation
		Riparian enhancement
		Instream flow improvement
		Increased urban green space
		Reduced energy use, greenhouse gas emissions, or provides a carbon sink
		Reestablishment of natural hydrograph
		Water temperature improvements
		Enhanced and/or created recreational and public use areas
		Community involvement
		Employment opportunities provided
		Public education

Water supply reliability - The project will bring surface water supplies into a "groundwater only" area to dedicated recharge basins, on-farm in-field recharge or in-lieu recharge, which will greatly increase the water supply reliability for the area. Water measurement will be by metering and be reported in volume of water diverted to recharge in acre-feet.

Increase infiltration - Dedicated basins and farmland areas will accept water for recharge of Kings River flows. The area (in acres) will be determined for the areas accepting water each year and the duration that water is on the fields (or within a basin).

Conjunctive Use - When Kings River high flows occur during times of crop irrigation demand, water will be taken directly to meet crop evapotranspiration by those landowners close enough to the project facilities. Measurement will be by flow meter by volume of water taken in acre-feet.

Decrease flood risk - When the Kings River is at high flows, diversions at any point will decrease the risk of flooding downstream of the point of diversion. Diversions will be quantified in cubic feet per second (CFS) by the current method of measurement at the point of diversion, in this case depth of flow over weir boards, or the head difference between the turnout opening, and the time between measurements.

N/A

Project Funding	Is permanent funding for the operation and maintenance of the project available? ☑ Yes ☐ No Only private funding by landowners currently exists, but public funding will likely be available at a future date. Raisin City WD and/or the McMullin Area GSA will go through the Proposition 218 process in order to increase assessments to pay for the ongoing O&M, and the capital costs not funded from grants. With ongoing assessment, it is possible that the District or GSA could obtain bond funds. As an area with only groundwater supplies, bringing in surface water is imperative for the ongoing viability of irrigated agriculture in the area. KRCD received grant funding for Phase 1 of the project, and has applied for funding for Phase 2.
Project Location	Is the project located on publicly owned land? ☐ Yes ☑ No
Monitoring	All surface water flows that come into the area will be measured. Existing groundwater wells in the area will be monitored for quality periodically and to establish the background groundwater quality, as well as to compare for a baseline, in order to determine if there are changes to quality that are occurring.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 3/20/2017

Project Name	**Grantland Recharge Project**
Project Proponent(s)	**Raisin City Water District**
Project Contact	**Name: Gere Gunlund** **Email:** gere.gunlund@gmail.com
Project Location	36.525155, -119.912807
Project Description	The project includes building a new 100 cfs pump station and canal to convey flood water, when available, from the Liberty Millrace Canal to a new 320 acre groundwater recharge facility. The new facility will be located at the southwest of the intersection of Kamm Ave. and the Grantland Ave. alignment. The Project would be capable of receiving approximately 20,000 acre-feet of water during a 100-day flood release.

Project Status

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	X
Preliminary Design (feasibility study completed)	
Ready for Construction	

A conceptual analysis was performed to identify the potential costs and benefits of the project. The analysis included a review of available information to assess the soils around the project area, local topography, flood water availability, and opinions of construction cost.

Background

Over the past 18 months, the District has been closely reviewing various projects and programs to develop groundwater recharge within their boundaries. The project was conceptualized during a discussion with the Raisin City Water District and Laguna Irrigation District (LID). LID noted there may be capacity to convey Kings River flood water, when available, in the Liberty Millrace Canal. Based on these discussions and a subsequent review of the canal, the conceptual project was developed and analyzed. RCWD determined the Project to be favorable and is pursuing further investigation of the Project.

Project Workplan

1. **Feasibility Analysis.** This would include a hydraulic analysis of the Liberty Millrace Canal, a preliminary soils and hydrogeologic investigation and conceptual design.
2. **Environmental Documentation.** This would include the CEQA and NEPA analyses (if NEPA is required) to support the Project. Included in this task would be the biological and cultural resources reviews.
3. **Land Acquisition.** Under this task the land, right-of-way, easements required for the Project would be acquired.
4. **Engineering Design.** This would include the necessary hydraulic, geotechnical and structural design to develop plans and specifications for the construction of the Project.

5. **Construction.** Included in this task is the land clearing and earthwork to build the recharge basins and canal. This task would also include the construction of the necessary bridges, diversion structures, pump station(s), control structures and monitoring wells for the Project.
6. **Monitoring Plan.** Prior to operation of the facility a Groundwater Monitoring Plan would be developed. The intent of the plan would be to develop baseline groundwater levels and quality for the Project and develop the protocols for on-going monitoring of the Project.

Regional Goals

Put 'X' by <u>one</u> Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
X		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	X	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	X	RG3	Improve and protect water quality
	X	RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1 – Through construction of the Project, approximately 20,000 AF of surface water could be captured in a wet year and recharged in the aquifer. This would directly contribute to the efforts in the Kings Basin to achieve this goal.

RG2 – Groundwater is the primary water supply within the District, and the project will increase the reliability of the groundwater supply helping lead to sustainability.

RG3 – Groundwater quality within the Project area should benefit by recharging high quality Kings River surface water.

RG4 – By diverting flood water in wet years, the Project will lessen the burden on the downstream flood control facilities and provide an additional factor of safety to protect the communities and land that depends on them for protection.

Measurable Objectives

Put 'X' by <u>one</u> Primary Objective	Put 'X' by Secondary Objectives that apply	No.	Objective
X		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
	X	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	X	MO4	Increase average annual supply and reduce demand
	X	MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity

	X	MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
	X	MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
	X	MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1 – The project will measure the surface water delivered from the Liberty Millrace Canal to the new facility. Water delivered to the Project will either be directly recharged or delivered for irrigation (thereby allowing growers to reduce groundwater use) to benefit the aquifer and contribute to eliminating the overdraft.

MO3 – The Project would enhance the groundwater supply to the community of Raisin City by helping to stabilize the groundwater levels and by recharging high quality surface water within the District.

MO4 – By developing the project, the groundwater supply for the area will be enhanced by capturing approximately 20,000 AF of flood water that might otherwise be lost from the basin.

MO5 – The project will capture and divert water for recharge during wet years, allowing that water to be pumped from the aquifer in dry years.

MO7 – Prior to implementing the Project, a Groundwater Monitoring Plan will be developed that will include gathering groundwater samples and measuring the baseline groundwater quality in the vicinity of the Project. During operation of the Project, it is anticipated that groundwater samples will continue to be collected and analyzed as well as surface water samples during recharge events.

MO10 – With the dedicated recharge basins, the project will provide a small amount of surface storage volume estimated to be approximately 1200 acre-feet.

MO12 – The District plans to pursue feasible avenues to utilize the facility to enhance wildlife habitat. This may include developing project features that enhance habitat value and partnering with wildlife agencies.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	

	Improve operational efficiency and transfers	Conveyance - regional/local	X
		Water transfers	X
		Conjunctive management and groundwater storage	X
		Precipitation enhancement	
		Recycled municipal water	
		Surface storage - regional/local	
		Drinking water treatment and distribution	
	Improve water quality	Groundwater remediation/Aquifer remediation	
		Matching quality to use	
		Pollution prevention	
		Salt and salinity management	
		Urban runoff management	
		Flood risk management	X
	Improve flood management	Agricultural lands stewardship	
	Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
		Ecosystem restoration	
		Forest management	
		Land use planning and management	
		Recharge area protection	
		Water-dependent recreation	
		Watershed management	
		Crop idling for water transfers	
	Other strategies	Irrigated land retirement	
		Rainfed agriculture	
		Drought planning[1]	

DAC Water Needs	The Project would enhance the groundwater supply to the community of Raisin City by helping to stabilize the groundwater levels and by recharging high quality surface water within the District.
Project Schedule	No
Estimated Cost	The project is estimated to cost $14,500,000

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 9/18/2017

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name

Grantland Recharge Project, Raisin City Water District

SWRP Goals

1) *Insert a '✓' next to the* ***ONE*** *primary Kings Basin SWRP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert a '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	Goal
		Improve storm water quality
✔		Augment surface or groundwater supply
	✔	Flood management
		Environmental benefits
		Community benefits

Augment supply - Raisin City Water District currently has only groundwater supplies available for irrigation use by its landowners. The Grantland Recharge Project would provide King River surface water from off of the Liberty Millrace Canal for irrigation and groundwater recharge. High flows or floodwaters are envisioned, though the purchase of others supplies could also be possible from member units of the Kings River Water Association.

Flood management - The project provides an additional area for possible diversions of Kings River floodwater, it provides KRCD/KRWA additional flexibility in flood management.

Quantitative Measures

1) *Insert a '✓' next to the* ***ONE*** *primary Kings Basin SWRP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective and the associated measurement and units.*
2) *Insert a '✓' next to secondary Kings Basin SWRP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

Put '✓' by <u>one</u> Primary Objective	Put '✓' by Secondary Objectives that apply	Objective
	✔	Increase infiltration and/or treatment of runoff
		Nonpoint source pollution control
		Reestablish natural drainage and treatment
✔		Water supply reliability
		Water conservation (Reduction of Demand)
	✔	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)
	✔	Decrease flood risk by reducing runoff rate and/or volume
		Reduce sanitary sewer overflows
		Wetland enhancement/creation
		Riparian enhancement
		Instream flow improvement
		Increased urban green space
		Reduced energy use, greenhouse gas emissions, or provides a carbon sink
		Reestablishment of natural hydrograph
		Water temperature improvements
		Enhanced and/or created recreational and public use areas
		Community involvement
		Employment opportunities provided
		Public education

Water supply reliability - The project will bring surface water supplies into a "groundwater only" area to a dedicated recharge basin, on-farm in-field recharge or in-lieu recharge, which will greatly increase the water supply reliability for the area. Water measurement will be by metering and be reported in volume of water diverted to recharge in acre-feet.

Increase infiltration - Dedicated basin and farmland areas will accept water for recharge of Kings River flows. The area (in acres) and duration of infiltration will be determined for the areas accepting water each year.

Conjunctive Use - When Kings River high flows occur during times of crop irrigation demand, water will be taken directly to meet crop evapotranspiration by those landowners close enough to the project facilities. Measurement will be by flow meter by volume of water taken in acre-feet.

Decrease flood risk - When the Kings River is at high flows, diversions at any point will decrease the risk of flooding downstream of the point of diversion. Diversions will be quantified in cubic feet per second (CFS) by the current method of measurement at the point of diversion, in this case depth of flow over weir boards, or the head difference between the turnout opening, and the time between measurements.

N/A

Project Funding

Is permanent funding for the operation and maintenance of the project available? ☑ Yes ☐ No

Only private funding by landowners currently exists, but public funding will be available at a future date. Raisin City WD and/or the McMullin Area GSA will go through the Proposition 218 process in order to increase assessments to pay for the ongoing O&M, and the capital costs not funded from grants. With ongoing assessment, it is possible that the District could obtain bond funds. As an area with only groundwater supplies, bringing in surface water is imperative for the ongoing viability of irrigated agriculture in the area.

Project Location

Is the project located on publicly owned land? ☑ Yes ☐ No *It will be publicly owned ROW or fee title at a future date.*

Monitoring

All surface water flows that come into the area will be measured. Existing groundwater wells in the area will be monitored for quality periodically and to establish the background groundwater quality, as well as to compare for a baseline, in order to determine if there are changes to quality that are occurring.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 1/3/2018

Project Name	Orange Cove Storm Water Planning Study
Project Proponent(s)	City of Orange Cove
Project Contact	Gary Horn, Orange Cove City Engineer ghorn@yhmail.com
Project Location	Lat 36.624350, Long -119.313580

Project Description

Prepare a Storm Water Resource Plan for the City of Orange Cove and the natural stream channels that flow through the city. The plan will address: 1) reducing flooding within the City of Orange Cove, 2) capturing storm water runoff within the city for groundwater recharge and detention of storm water for controlled release to the Alta Irrigation District (AID) canal system for conveyance to water banking facilities.

The plan will provide a storm water master plan for the City of Orange Cove that will include pipeline sizes, inlet locations and proposed storm water detention basins. The basins will be located adjacent to the two natural streams that flow through the city: Wooten Creek and the Orange Cove Drain, see attached Figure 2. The detention basins will be sized to detain storm water runoff not only from the city, but also from the upstream drainage areas. Once the storm has passed, water can be discharged from the basins to AID canals for conveyance to their existing groundwater recharge basins, see Figure 4 for locations of AID basins.

Project Status

At what stage of development is the project?

Project Status	Put ✓ next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	✔
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

The project is at the conceptual stages and needs to have feasibility study completed to identify project components and costs.

Background

The project is needed to fulfill two needs for the City of Orange Cove and Alta Irrigation District. First, the City of Orange Cove does not have a comprehensive storm drain master plan. Runoff is directed to two natural channels: the Orange Cove Drain and Wooten Creek. Flooding of streets and buildings has occurred in the past. Adequate facilities need to be planned designed and constructed to prevent flooding.

Secondly, the two natural channels drain into the Alta Irrigation District's East Main Canal that borders the city on the southwesterly boundary. In addition to storm water runoff from the city, storm water from adjacent farm land upstream of the city drains into these creeks. These storm water releases are uncontrolled. Please see attached Figure 2. The uncontrolled releases pose a threat to the integrity of the East Main Canal.

The City of Orange Cove is the project sponsor and Alta Irrigation District will cooperate with the project. the two jurisdictions are adjacent as shown in Figure 3.

Project Workplan

Please see attached Exhibit A.

Regional Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	No.	Goal
	✔	RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
		RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
✔		RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

Primary Goal RG4 - The project will provide additional flood protection for not only the City of Orange Cove, but also areas downstream that would be subject to flooding from the AID East Main Canal overflow.

Secondary Goal RG1 - The project will provide controlled releases to the AID canal system that can be directed to their groundwater recharge facilities. Currently the uncontrolled releases to the AID canal pose a potential threat to the integrity of their system.

Measurable Objectives

1) *Insert an '✔' next to the* ***ONE*** *primary Kings Basin IRWMP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective.*
2) *Insert an '✔' next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✔' by one Primary Objective	Put '✔' by Secondary Objectives that apply	No.	Objective
		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
✔		MO2	Identify opportunities and Projects
	✔	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand
		MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

Primary Objective MO2 - The planning project will help identify projects for future funding opportunities. The need for storm water facilities in the city is great, but the city does not have the resources to prepare a plan of this magnitude.

Secondary Objective MO3 - The City of Orange Cove is a severely disadvantaged community. The Median Household Income in Orange Cove for 2016 was $26,838, which is 43% of the state average. The project will help develop a plan to address the storm water runoff needs of the city.

Additional space for Measurable Objectives narrative.

Resource Management Strategies

*Identify by inserting an '✓' next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (**Minimum 50 words**).*

Category	Strategy	Check all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	
	Water transfers	
	Conjunctive management and groundwater storage	✔
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	✔
	Flood risk management	
Improve flood management	Agricultural lands stewardship	✔
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Resource Management Strategies	The plan will provide guidelines for cooperation between the City of Orange Cove and Alta Irrigation District to manage storm water runoff and allow the beneficial use of that storm water for recharge purposes. The Storm Water Resource Plan will address the management of urban runoff. It will provide a master plan to detain storm runoff for release to downstream facilities at rates that will allow existing canals to safely convey storm water to groundwater recharge facilities. The project will provide a plan to decrease flooding of downstream agricultural lands.

DAC Water Needs	Yes. The Medium Household Income for Orange Cove for 2016 was $26,838, which is 43% of the statewide average. This is much lower than the 80% definition in Sec. 79505.5(a) of the California Water Code.

Project Schedule	A schedule has not be identified. We estimate the completion time to be 24 months.

Estimated Cost	We estimate the cost for the plan to $250,000. Funding for the ongoing maintenance of the storm drain facilities will come from the City of Orange Cove Local Transportation Funds, such as Gas Tax and LTF.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Orange Cove Storm Water Planning Study

SWRP Goals

1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert an '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary SWRP Goal	Put '✓' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
	✔	Augment Surface or Groundwater Supply (WS)
✔		Floodwater Management (FM)
		Environmental (E)
		Community (C)

FM - The project will provide a plan to manage floodwaters generated not only in the City of Orange Cove, but also flowing from the farmlands upstream of the city. Detention basins will be used to control the rate of runoff which now enters the Alta Irrigation District (AID) East Main Canal uncontrolled.

WS - The project will determine methods to allow storm water runoff to be conveyed to existing AID groundwater recharge and water banking facilities. This additional amount of water will augment current sources and be available for use in water-short years.

SWRP Benefits

The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. ***To be eligible, projects must address at least two Main Benefits.***
1) *Insert an '✓' next to the* ***ONE*** *primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
2) *Insert an '✓' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
			WS	Water supply reliability			
	✔		WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
	✔		FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

WS - The proposed project will plan for the conjunctive use of water by capturing storm water in detention basins and releasing it at controlled rates for use in existing AID groundwater banking and recharge basins.

FM - The project will provide a plan to reduce the risk of flooding by controlling the rate of runoff downstream of the proposed detention basins. Currently floodwater in Wooten Creek and Orange Cove Drain enters the AID East Main Canal uncontrolled and poses a risk to the integrity of the canal banks. The floodwaters will be stored in detention basins and released at manageable rates after the storm event.

Project Funding	The storm drain pipelines and detention basins will be operated and maintained by the City of Orange Cove using its Gas Tax and Local Transportation Funds made available to it each year. The canals and recharge basins will be operated and maintained by Alta Irrigation District using funds from annual property assessments.
Project Location	Is the project located on publicly owned land? ☑ Yes or ☐ No
Monitoring	The flow rates of storm water being discharged from the detention basins will be metered for rate of discharge and volume.

EXHIBIT A
WORKPLAN

A. Topographic Survey – Complete a topographic survey of the Orange Cove Planning Area which consists of the following:
   a. Spot elevations in undeveloped areas within the Orange Cove Sphere of Influence at 300 foot grid.
   b. Curb grades for existing streets
   c. Cross-sections of existing creeks and drainage channels
   d. Structures, culverts and bridges cross sections and slopes.

B. Geotechnical Studies
   a. Take soil borings and evaluate the percolation potential for proposed basin sites.
   b. Evaluate soils within the City of Orange Cove to determine feasibility of onsite basins, swales and other onsite methods to increase recharge and reduce storm water runoff.

C. Computer Model – Create a computer model of storm water flows within the City of Orange Cove that will address the following:
   a. Existing and proposed streets, pipelines and basins.
   b. Calculations for natural stream flows in the Wooten Creek and Orange Cove Drain channels.
   c. Determine downstream discharge rates that are acceptable to Alta Irrigation District for conveyance of storm water to their water banking facilities.
   d. Determine optimal basin sizes based on inflow and acceptable discharge rates to Alta ID.

D. Report – Prepare a report that addresses all of the listed items below:
   a. Drainage System Master Plan for the City of Orange Cove Sphere of Influence.
   b. Detention Basin Preliminary Design. Size and locate basins for efficient interception of natural channel flows and delivery to Alta Irrigation District facilities. Consider dual use basins for recreational activities with low flow areas and natural methods to filter pollutants.
   c. Best Management Practices for storm water collection and reuse within the City of Orange Cove.
   d. Prepare Cost Estimates for improvements proposed.
   e. Prepare preliminary agreement between the City of Orange Cove and Alta Irrigation District for the conveyance of storm water.
   f. Prepare a list of all permits required for the proposed project.

E. CEQA Review – Prepare an initial study of proposed basin sites and any proposed channel widening areas to determine the level of environmental review that will be needed for implementation of projects.

F. Administration –
   a. Coordinate studies and design work, prepare requests for proposals and consultant agreements.

b. Prepare reports and invoicing to State reimbursements.
c. Prepare reports to City Staff and City Council for review and consideration of project reports.
d. Facilitate three community workshops to present materials and results of studies to the public.

7.63 Mi²

WOOTEN CREEK DRAINAGE

FRESNO CO
TULARE CO

5.99 Mi²

ORANGE COVE DRAIN - DRAINAGE AREA

FRIANT-KERN CANAL

Wooten Creek

Wooten Cr.

ORANGE COVE DRAIN

A.I.D. EAST MAIN CANAL

USGS The National Map: National Boundaries Dataset, 3D Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; U.S. Census Bureau - TIGER/Line

City of Orange Cove - Drainage Areas

FM Force Main

Natural Drainage Channel

City Drainage Zone Boundary

Upstream Drainage Areas

City Limits

FIGURE 2

0 1,500 3,000
Feet

Yamabe & Horn Engineering, Inc.
CIVIL ENGINEERS • LAND SURVEYORS

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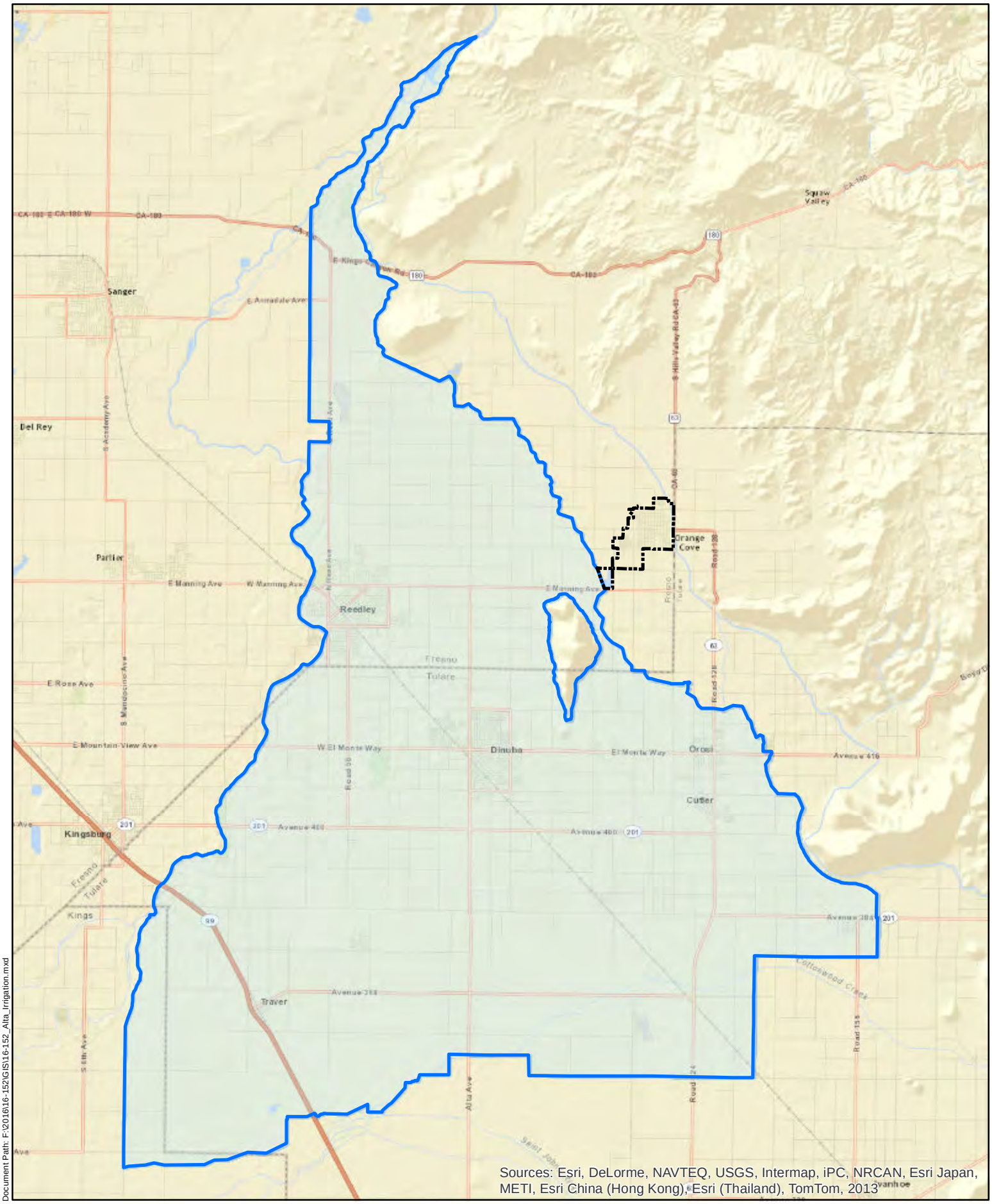

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Orange Cove City Limits

Alta Irrigation Boundary

0 8,000 16,000 Feet

FIGURE 3

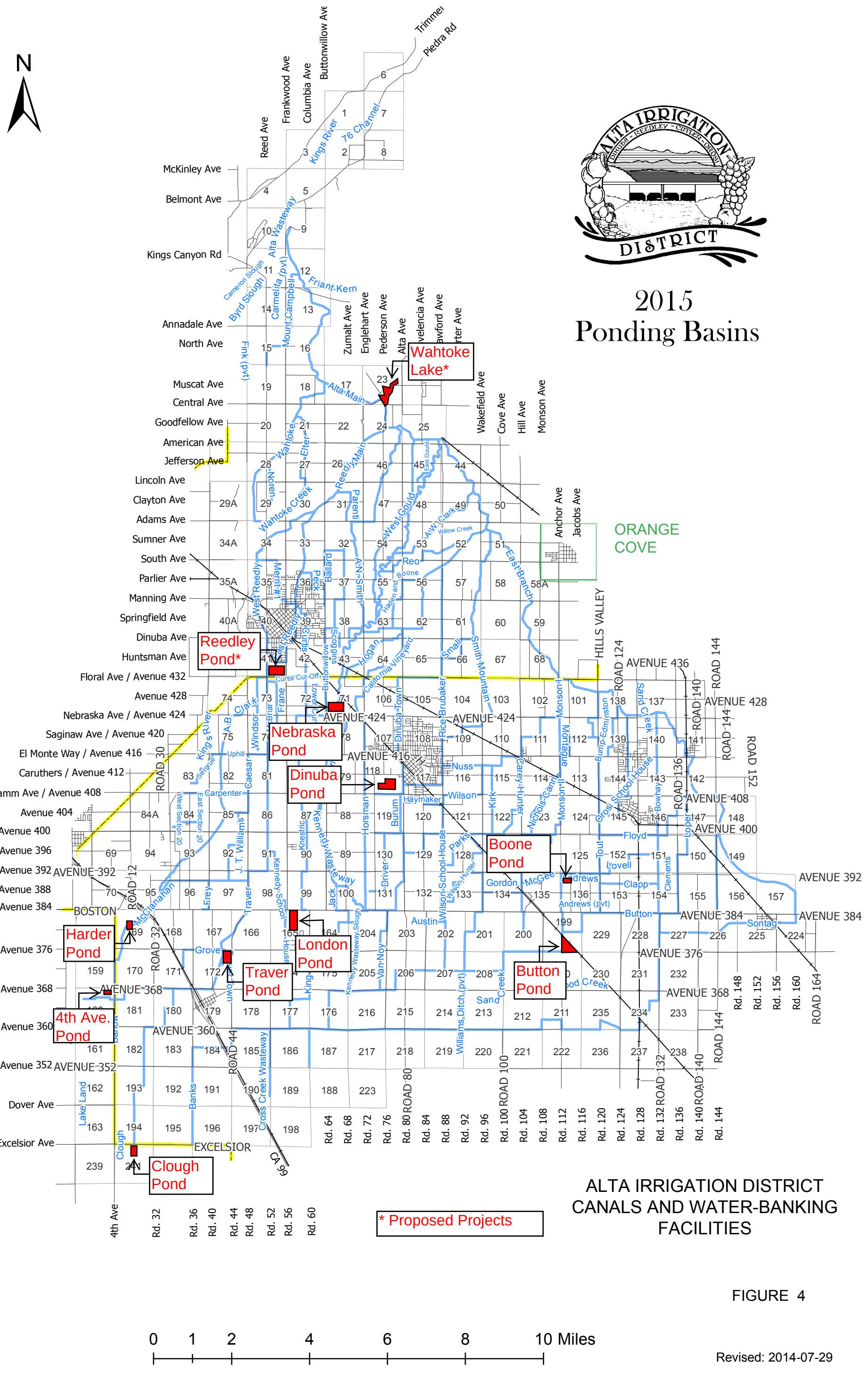
Alta Irrigation Service Boundary

Yamabe & Horn Engineering, Inc.

N

ALTA IRRIGATION DISTRICT
DINUBA - REEDLEY - CUTLER - OROSI

2015 Ponding Basins



* Proposed Projects

ALTA IRRIGATION DISTRICT CANALS AND WATER-BANKING FACILITIES

FIGURE 4

0 1 2 4 6 8 10 Miles

Revised: 2014-07-29

KINGS BASIN Water Authority
www.kingsbasinauthority.org

PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 9/18/2017

Project Name	Fresno County Elkhorn Property Recharge Project
Project Proponent(s)	Liberty Water District
Project Contact	Name: Kevin Johansen Email: kjohansen@ppeng.com
Project Location	The property is located in Fresno County, just north of Elkhorn Avenue and just east of Highway 41. Coordinates of the approximate center of the parcel are Lat: 36.494292 and Long : -119.779495. The parcel is APN 042-040-51. The project is located within the North Fork Kings Groundwater Sustainability Agency (NFKGSA) area.
Project Description	A portion of the property is proposed for a groundwater recharge basin, primarily utilizing Kings River floodwater to help address sustainability issues within the NFKGSA. The purchase of other Kings River water supplies could also be possible that was available from Kings River Water Association member units. Total acreage of the parcel is 317.12 acres, although the expected amount of recharge area is approximately 80 acres, likely located in the western portion of the property. The main conveyance system to deliver water to the property would be the Liberty Canal. The property is adjacent to an existing small recharge basin owned by Liberty Water District at the northeast corner of Elkhorn and Highway 41, which was excavated during expansion of Highway 41 and has a percolation rate of over 1 ft/day. The recharge rate of the proposed project will be influenced by the depth of excavation in the basin, but is expected to be approximately 0.75 ft/day and the site would be able to recharge approximately 60 acre-feet per day.

Project Status

At what stage of development is the project?

Project Status	Put ✓ next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	
Planning (feasibility study and analysis work initiated)	✔
Preliminary Design (feasibility study completed)	
Ready for Construction	

A feasibility study for groundwater recharge on the property has been initiated by Fresno County, who currently owns the parcel. Conceptual level costs have been developed, and Moore Twining Associates conducted a Subsurface Exploration and Preliminary Assessment of Infiltration Characteristics evaluation of the western portion of the property in May 2016. Two soil borings were drilled to a depth of 100 feet, and a third boring was drilled to a depth of 150 feet. Additional planning work to evaluate the feasibility of the project is currently in process.

Background

In an average year, surface water deliveries within the NFKGSA from the Kings River are insufficient to meet the total water demand of irrigated agriculture. Landowners are forced to pump groundwater to supplement the surface water deliveries to meet crop water demands. Above average water years means less groundwater pumping, but surface water availability often does not meet agronomic needs.

Flood release events on the Kings River occur on average every 3 to 4 years. Millions of acre-feet of floodwater have been lost over the years from the Kings River service area because insufficient infrastructure exists to capture the flood flows and retain them within the Kings groundwater basin. Numerous areas have been identified as conducive for groundwater recharge, but they frequently have high value permanent crops or other structures that prevent their use as a groundwater recharge facility.

The proposed project site is located within the portion of the NFKGSA that does not receive any surface water and thus growers are solely dependent upon groundwater for irrigation. The NFKGSA is in a critical state of groundwater overdraft and to achieve sustainability under the Sustainable Groundwater Management Act (SGMA), additional surface water must be captured and used for groundwater recharge or demand must be reduced. This project is one of several that are being planned or are currently underway to utilize Kings River flood flows for groundwater recharge within the NFKGSA.

Project Workplan

1. Feasibility Analysis. This would include additional soils and hydrogeologic investigation as well as a hydraulic analysis of the Liberty Canal and conceptual project design.

2. Environmental Documentation. This would include the CEQA and NEPA analyses (if NEPA is required) to support the Project. Included in this task would be the biological and cultural resources reviews and identification of regulatory and permitting requirements.

3. Land Acquisition. Under this task the land, right-of-way, and easements required for the Project would be acquired.

4. Engineering Design. This would include the necessary hydraulic, geotechnical and structural design to develop plans and specifications for the construction of the Project.

5. Construction. Included in this task is the land clearing and earthwork to build the recharge basin(s) and canal improvements. This task would also include the construction of the necessary diversion structures, pump station(s), control structures and monitoring wells for the Project.

6. Monitoring Plan. Prior to operation of the facility a Groundwater Monitoring Plan would be developed. The intent of the plan would be to develop baseline groundwater levels and quality for the Project and develop the protocols for on-going monitoring of the Project.

Regional Goals

1) *Insert a '✓' next to the* ***ONE*** *primary Kings Basin IRWMP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert a '✓' next to secondary Kings Basin IRWMP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	No.	Goal
✔		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	✔	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	✔	RG3	Improve and protect water quality
	✔	RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1 – Through construction of the Project, it is expected that approximately 60 AF/day of surface water could be captured in a wet year and recharged in the aquifer. This would directly contribute to the efforts in the Kings Basin to reverse the groundwater overdraft and achieve sustainability in the NFKGSA.

RG2 – Groundwater is the primary water supply for the area, and the project will increase the reliability of the groundwater supply helping lead to sustainability.

RG3 – Groundwater quality within the Project area should benefit by recharging high quality Kings River surface water.

RG4 – By diverting flood water in wet years, the Project will lessen the burden on the downstream flood control facilities and provide an additional factor of safety to protect the communities and land that depends on those flood control facilities for protection.

Measurable Objectives

1) *Insert a '✓' next to the* ***<u>ONE</u>*** *primary Kings Basin IRWMP objective that is most applicable to this project and provide a <u>narrative explanation</u> as to how the project meets that one objective.*
2) *Insert a '✓' next to secondary Kings Basin IRWMP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective.*

Put '✓' by <u>one</u> Primary Objective	Put '✓' by Secondary Objectives that apply	No.	Objective
✔		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
	✔	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
	✔	MO4	Increase average annual supply and reduce demand
	✔	MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
	✔	MO7	Compile baseline water quality data for ground & surface water
	✔	MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
	✔	MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
	✔	MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1 – Capturing additional Kings River floodwater when it is available and recharging the groundwater aquifer will contribute to reducing overdraft and increasing the amount of groundwater in storage. The project will measure the amount of surface water diverted, as well as the area where infiltrated and the time period of infiltration.
MO3 - This project will benefit DAC's in the NFKGSA area by increasing the amount of groundwater in storage and improving water quality. The project will also benefit downstream DAC communities by reducing the flood flows in those areas by diverting the water upstream before it can reach any downstream DAC.
MO4 - The project will enhance groundwater supply for the area by capturing approximately 60 AF per day of flood water that might otherwise be lost from the basin.
MO5 - The project will capture and divert water for recharge during wet years, allowing that water to be pumped from the groundwater aquifer in drier years.
MO7 - Monitoring of groundwater levels and water quality will occur as part of the project.
MO8 - BMP's will be developed as part of the project.
MO12 - As part of the feasibility investigation for the project, opportunities for incorporating habitat benefits will be investigated.
MO14 - The landowners and the NFKGSA are partnering together to ensure water supplies are available

Additional space for measurable objectives narrative.

Resource Management Strategies

Identify *by inserting a '✓'* next to all Resource Management Strategies outlined by the Kings Basin IRWMP that the project clearly addresses and provide a narrative description of how each relates to your project. Overstating the benefits of your project may cause more harm than good (i.e. less is more). (***Minimum 50 words***).

Category	Strategy	Put ✓ by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	✔
	Water transfers	
	Conjunctive management and groundwater storage	✔
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	
	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	
	Salt and salinity management	
	Urban runoff management	
	Flood risk management	✔
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Resource Management Strategies

Local Conveyance - Improve the Liberty Canal conveyance system to increase the canal capacity to deliver water to the project and allow future expansion or service to additional projects.

Conjunctive Management and Groundwater Storage - The project increases groundwater storage in wet years so groundwater can be used during drier years.

Flood Risk Management - The project will divert and store water during periods of high flows or floodwater periods, decreasing the risk of flooding downstream of the point of diversion and helping reduce the flood risk for the cities of Mendota and Firebaugh.

DAC Water Needs

The proposed project will indirectly benefit the DACs of Riverdale and Lanare by increasing groundwater levels and improving water quality in the area. The project will also reduce the risk of potential flooding of any DACs that are located downstream of the diversion.

Project Schedule

A project schedule has not been completed at this time, but some feasibility study work has already begun. If the project proves feasible and funding is obtained, it is expected that the project would be constructed in the near future in order to help satisfy SGMA compliance requirements.

Estimated Cost

The estimated project cost is approximately $5,000,000.

The estimated cost above assumes that only 80 acres is purchased, and that limited excavation occurs. Factors that can significantly increase cost that have not been fully addressed yet include: 1) land acquisition - how much land needs to be acquired for the project, and whether the land is purchased or if the landowner retains ownership for potential future groundwater credits, and 2) the amount of excavation that must occur to obtain good recharge rates and whether the needed excavation is part of the project cost or if the basin can be excavated by others for another project or use.

If your project includes a storm water connection or benefit, please complete this form as well.

Project Name	Fresno County Elkhorn Property Recharge Project

SWRP Goals

1) *Insert a '✓' next to the* ***ONE*** *primary Kings Basin SWRP goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2) *Insert a '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by one Primary Goal	Put '✓' by Secondary Goals that apply	Goal
		Improve storm water quality
✓		Augment surface or groundwater supply
	✓	Flood management
		Environmental benefits
		Community benefits

Augment surface or groundwater supply - The NFKGSA area is highly dependent on groundwater and is in a state of critical overdraft, and the area near the project only has groundwater supplies available for irrigation use by landowners. The project would capture Kings River surface water for irrigation and groundwater recharge. High flows or floodwaters are envisioned, though the purchase of other supplies could also be possible from any water supply source that was available from Kings River Water Association member units.

Flood management - The project provides an additional area for possible diversions of floodwater, providing the KRCD/KRWA additional flexibility in flood management.

Quantitative Measures

1) *Insert a '✓' next to the* ***ONE*** *primary Kings Basin SWRP objective that is most applicable to this project and provide a narrative explanation as to how the project meets that one objective and the associated measurement and units.*
2) *Insert a '✓' next to secondary Kings Basin SWRP Measurable objectives that apply to this project (checking more than one secondary objective is OK) and provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3) *For each primary and secondary objective selected, you must provide sufficient detail as to how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more).* ***(Minimum 75 words)***

Put '✓' by <u>one</u> Primary Objective	Put '✓' by Secondary Objectives that apply	Objective
	✔	Increase infiltration and/or treatment of runoff
		Nonpoint source pollution control
		Reestablish natural drainage and treatment
✔		Water supply reliability
		Water conservation (Reduction of Demand)
	✔	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)
	✔	Decrease flood risk by reducing runoff rate and/or volume
		Reduce sanitary sewer overflows
		Wetland enhancement/creation
		Riparian enhancement
		Instream flow improvement
		Increased urban green space
		Reduced energy use, greenhouse gas emissions, or provides a carbon sink
		Reestablishment of natural hydrograph
		Water temperature improvements
		Enhanced and/or created recreational and public use areas
		Community involvement
		Employment opportunities provided
		Public education

Water supply reliability - The project will bring surface water supplies into a "groundwater only" area to a dedicated recharge basin, which will greatly increase the water supply reliability for the area within the NFKGSA. Water delivered to the project will be measured by a flowmeter and be reported in volume of water diverted to recharge in acre-feet.

Increase infiltration - The dedicated basin will accept water for recharge of surface water flows. The area (in acres) and duration of infiltration will be determined for the areas accepting water each year.

Conjunctive Use - Floodwater flows will be captured for recharge when available and used to recharge the groundwater aquifer. Measurement will be by flow meter by volume of water taken in acre-feet.

Decrease flood risk - When diversion occurs during periods of high flows or floodwater periods, diversions at any point will decrease the risk of flooding downstream of the point of diversion. Diversions will be quantified in cubic feet per second (CFS) by the current method of measurement at the point of diversion.

Additional space for quantitative measures narrative.

Project Funding	Is permanent funding for the operation and maintenance of the project available? ☐ Yes ☑ No The NFKGSA is in the process of conducting a Proposition 218 election to establish a land based assessment structure for the next five years to fund administration of the GSA, fund preparation of a Groundwater Sustainability Plan, and start an enterprise fund for future project development. Subsequent land based assessments or groundwater extraction fees will be used for further project development and administration. This project will be considered along with other proposed projects in the NFKGSA and prioritized to construct the most cost-effective projects first. The land for the project is currently owned by Fresno County. It is assumed at this time that the County will sell the land needed for the project.
Project Location	Is the project located on publicly owned land? ☑ Yes ☐ No
Monitoring	All surface water flows that are delivered to the project site will be measured. The water level of existing groundwater wells in the area will be measured and monitored for water quality periodically. These measurements will be used to establish the background groundwater quality, as well as to compare for a baseline, in order to determine if there are changes to quality that are occurring.

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PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 8/28/2018

Project Name	Bakman Recharge Project
Project Proponent(s)	Bakman Water Company
IRWMP Adoption	Yes, December 1, 2012
Project Contact	Name: Shay Bakman Email: shay@bakmanwater.com
Project Location	The specific project location has not been identified yet but it will be within the Bakman Water Company (Bakman) service area, generally bounded by Olive Avenue and Kings Canyon Boulevard on the north and south and Winery and Fowler Avenues on the west and east, respectively.
Project Description	The project will serve to recharge surface water supplies within the Bakman service area. The anticipated basin size is between 40 and 80 acres; Bakman is seeking property within that range but has not acquired it at this time.
Project Status	At what stage of development is the project?

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	X
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

The project has been identified by Bakman owners/operator as a priority and property is actively being sought. Bakman has also been successful in negotiating surface water rights and would have a surface water supply to use for recharge.

Planning work is the next step to evaluate the capacity for recharge of the chosen property and then begin design.

Background

Bakman is an urban water purveyor utilizing groundwater solely to meet the demands of their customers. In years past Bakman has seen the need to recharge groundwater within their service area to offset the extraction. With the addition of SGMA regulations, this need is becoming more urgent. The project has been conceptualized in response to need for increased groundwater recharge throughout the area to halt overdraft, replenish the aquifer and ultimately contribute to sustainability in the basin.

Bakman is actively pursuing property on which they can design and construct a recharge basin. This basin would serve to offset the groundwater extraction of Bakman's wells and aid in a sustainable water balance for the future.

Project Workplan

- Property Analysis evaluation: complete geotechnical investigation of the potential property(s) to determine if the site would yield beneficial percolation results and recharge volumes. Once the percolation rate is determined for the property, determine the total volume that can be accommodated at the proposed basin.
- Property acquisition and Preliminary design: acquire the property for the project and prepare a basis of design memorandum including, but not limited to, recharge basin facilities design constraints and parameters, permitting requirements, and schematic design documents.
- Environmental documents: prepare environmental documents to comply with CEQA and NEPA (if required) for the project components.
- Construction document: prepare construction documents for the project components including construction plans, specifications and an engineer's opinion of probable construction cost.
- Permitting: submit plans and specifications to appropriate agencies to acquire necessary permits, including Fresno Irrigation District, Fresno County and/or the City of Fresno.
- Construction: construct the basin, turnout structure, and mains as shown on the construction plans.
- Monitoring: conduct ongoing monitoring in accordance with monitoring plan and timeline required by the State.

Regional Goals

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
X		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	X	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
	X	RG3	Improve and protect water quality
		RG4	Provide additional flood protection
	X	RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG1: Through construction of the project, Bakman would recharge surface water (high quality) supplies into the groundwater aquifer. This would directly contribute to reversing overdraft and providing sustainability in the area.

RG2: As the project contributes to sustainable usage of groundwater supplies and provide higher levels of reliability for use of groundwater as a source, particularly during periods of drought, the overall water supply reliability is increased in the area.

RG3: The groundwater beneath the Bakman service area has varying concentrations of such contaminants as 1,2,3,-trichloropropane (TCP), dibromocholorpropane (DBCP) and nitrates. Recharging the aquifer with high quality surface water that is free of these constituents provides benefit by diluting the concentrations of contaminants.

RG4: The project enhances the ability of downstream users to accommodate additional flows during wet years and may provide additional outlets for flood waters during non-irrigation portions of the year.

RG5: The project would provide an area where wildlife, including aquatic, land and aviary species, could find habitat and respite from migratory activities.

Measurable Objectives

Put 'X' by one Primary Objective	Put 'X' by Secondary Objectives that apply	No.	Objective
X		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
	X	MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand
		MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
	X	MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
	X	MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
	X	MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1: The project will increase the amount of water stored in the aquifer and contribute to the overall goal of eliminating overdraft in the basin. The performance of this objective will be measured by the quantity of water recharged on an annual basis.

MO3: This project will benefit a disadvantaged community. The performance of the objective will be measured through completion of the project.

MO10: This project will increase the capacity for storing surface water supplies, including stormwater, in the area. The performance of this objective will be through calculation of addition storage provided.

MO12: The project provides opportunities to incorporate wildlife habitat into local project, particularly within an urban area where habitats are being reduced typically, not increased.

MO14: This project involves a local water company in planning for consistency with the

Groundwater Sustainability Plan that will be in effect for this area for years to come. It is also consistent with the KBWA IRWMP goals and the Fresno Metropolitan Flood Control District, Storm Water Resources Plan, Functional Equivalent.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce Water Demand	Agricultural Water Efficiency	
	Urban Water Efficiency	
Improve Operational Efficiency and Transfers	Conveyance - Regional/local	
	System Reoperation	
	Water Transfers	
Increase Water Supply	Conjunctive Management & Groundwater Storage	X
	Precipitation Enhancement	
	Recycled Municipal Water	
	Surface Storage - Regional/local	X
Improve Water Quality	Drinking Water Treatment & Distribution	
	Groundwater Remediation/ Aquifer Remediation	
	Matching Quality to Use	
	Pollution Prevention	
	Salt and Salinity Management	
	Urban Stormwater Runoff Management	
Improve Flood Management	Flood Risk Management	
Practice Resources Stewardship	Agricultural Lands Stewardship	
	Ecosystem Restoration	
	Forest Management	
	Land Use Planning and Management	
	Recharge Area Protection	
	Watershed Management	
People & Water	Economic Incentives (Loans, Grants, & Water Pricing)	
	Outreach and Engagement	
	Water and Culture	
	Water-Dependent Recreation	
Other Strategies	Crop Idling for Water Transfers	
	Irrigated Land Retirement	
	Rainfed Agriculture	
	Drought Planning	

Conjunctive Management & Groundwater Storage: this project increases groundwater in storage, so it can be utilized during periods of drought at a later date.

Surface Storage – Regional/Local: the project will provide additional potential for storage within the area in wet years.

Project Feasibility

Describe how the project has been determined to be technical feasible. (If the project is still conceptual, you do not have to answer this question.)

Describe the economic feasibility of the project. (If the project is still conceptual, you do not have to answer this question.)

N/A

DAC Water Needs

Does the project provide specific benefits to critical water supply or water quality needs of a Disadvantaged Community (DAC) as defined by CWC 79505.5(a) and as listed within Tables 4-2 and 4-3 of the Kings Basin IRWMP? If so, how, and are there any Environmental Justice concerns? If non-DAC, mark N/A.

The project benefits will benefit the service area of Bakman Water Company, which has been documented previously to be a DAC and is listed in Tables 4-2 and 4-3 of the IRWMP. The service area is not entirely within a city or a census designated place but instead overlies portions or all of Census Tract Numbers 14.11, 29.03, 29.04, 29.05, 30.01, 30.03, 30.04, and 58.05 (25%). The MHI of California is $63,783.

The overall weighted average of these tracts, in relation to how much area is within Bakman's service area is $42,106, below the threshold for DACs. This information is according to Table DP03 of the 2012-16 American Community Survey.

Census Tract	MHI	% of Area within Bakman Service Area
14.11	$40,357	100%
29.03	$21,091	75%
29.04	$38,750	75%
29.05	$32,406	75%
30.01	$38,622	50%
30.03	$22,267	100%
30.04	$58,030	100%
58.05	$78,563	10%

Climate Benefits

Does the project contribute to region adapting to the effects of climate change? If so, how?

Yes, the project does contribute to the region adapting to the effects of climate change. The effects of climate change can include increased periods of drought as well as increased intensity of wet seasons. This project would provide replenishment to groundwater supplies that help guard against droughts.

Does the project contribute to reducing Greenhouse Gas emissions? If so, how?

The project does not contribute to reducing Greenhouse Gas emissions.

Project Schedule	Has a schedule for project completion been identified? Yes or No If yes, please provide. No
Estimated Cost	The total project cost is unknown at this time. Is permanent funding for the operation and maintenance of the project available? Yes, Bakman would incorporate operation and maintenance of the facility into its ongoing operation and maintenance program.

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STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

Project Name Bakman Recharge Project

SWRP Goals

Put 'X' by one Primary SWRP Goal	Put 'X' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
X		Augment Surface or Groundwater Supply (WS)
	X	Floodwater Management (FM)
		Environmental (E)
		Community (C)

Augment Water Supply: The project will augment groundwater supply through recharge. The basin Bakman draws upon for water supply to its customers is in a state of critical overdraft; projects such as this provide high quality recharge water to the aquifer.

Flood Water Management: This project provides a potential area for diversion of floodwater, if needed during wet periods.

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known)		
					Qty	Unit	Measurement
Main Benefits		X	SWQ	Increase infiltration and/or treatment of runoff			
	X		WS	Water supply reliability			
		X	WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
		X	FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

	Water Supply Reliability: The project will improve water supply reliability in the area through recharging the aquifer, which in turn increases reliability of groundwater supplies need throughout the year. The performance of the benefit will be determined through tracking of volume recharged, in acre-feet or gallons per year. Increase infiltration: The project will create a dedicated basin for the purposes of infiltration throughout the year. The performance of the benefit will be determined through tracking of volume recharged, in acre-feet or gallons per year. Conjunctive Use: Surface water will be collected for use as recharge within the basin, augmenting the groundwater supply for an area that would not otherwise be able to put surface water supplies to beneficial use. The performance of the benefit will be determined through tracking of volume recharged, in acre-feet or gallons per year. Decrease Flood Risk: This project will enable provide a potential location for storage of floodwater during wet periods and will decrease the flood risk both locally and downstream. The performance of the benefit will be determined through tracking of volume diverted, as needed, in acre-feet or gallons per year.
Project Funding	Is permanent funding for the operation and maintenance of the project available? Yes, Bakman would incorporate operation and maintenance of the facility into its ongoing operation and maintenance program.
Project Location	Is the project located on publicly owned land? It will be on privately owned land, as Bakman is a private entity.
Monitoring	Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. The project could include a flowmeter to document the quantity of water recharged at the project site. It is not anticipated water quality monitoring will be included with this project.

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www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Yettem-Button Ditch Flood Control Project

SWRP Goals

***1)** Insert an '✓' next to the **ONE** primary Kings Basin Storm Water Resources Plan (SWRP) goal that is most applicable to this project and provide a narrative explanation as to how the project meets that one goal.*
2)** Insert an '✓' next to secondary Kings Basin SWRP goals that apply to this project (checking more than one secondary goal is OK) and provide a brief narrative explanation as to how the project meets each goal. Overstating the benefits of your project may cause more harm than good (i.e. less is more). **(Minimum 75 words)

Put '✓' by one Primary SWRP Goal	Put '✓' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
		Augment Surface or Groundwater Supply (WS)
✓		Floodwater Management (FM)
		Environmental (E)
	✓	Community (C)

The proposed flood control project will provide additional flood protection for the severely disadvantaged community of Yettem. The flood protection levels within the region are varied, and major storm events in the Yettem area can have the potential for significant impacts to existing transportation routes and land use in the community. Local flood control facility improvements will help better manage flood runoff and protect existing land uses in the community. The project has specific benefits to Yettem by helping assure that the critical flood control measures to protect the community are implemented.

SWRP Benefits

*The Kings SWRP, in accordance with the State's SWRP Guidelines identifies Main and Additional Benefits. **To be eligible, projects must address at least two Main Benefits.***
***1)** Insert an '✓' next to the **ONE** primary Kings Basin SWRP Benefit that is most applicable as the Main Benefit to this project and provide a narrative explanation as to how the project provides that Benefit and the associated measurement and units.*
***2)** Insert an '✓' next to at least one other Kings Basin SWRP Main Benefit and as many Additional Benefits that apply to this project (checking more than one secondary objective is OK). Provide a brief narrative explanation as to how the project meets each objective and the associated measurement and units.*
3)** For each Benefit selected, you must provide sufficient detail as to how the project will provide the benefit and how the performance of the objective will be measured. Overstating the benefits of your project may cause more harm than good (i.e. less is more). **(Minimum 75 words)

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known & Support in Narrative)		
					Quantity	Units	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
		✔	WS	Water supply reliability			
			WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
	✔		FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
		✔	C	Community involvement			

Water Supply Reliability- The proposed project will assist with localized conveyance of both irrigation and flood waters in the Button Ditch which is a constructed canal. This localized project is part of a larger regional conveyance system and as such enhances regional conveyance capacity and water supply reliability.
Decrease flood risk by reducing runoff rate and/or volume- The proposed project will assist with urban runoff management activities by managing storm water runoff that passes through the community of Yettem. The proposed project will assist with flood risk management by assisting the County of Tulare and/or Alta Irrigation District in flood flows that can cause property damage to the communyit of Yettem. The proposed improvements on Button Ditch will reduce flood risk.
Community Involvement- Yettem is a severely disadvantaged community. Yettem is comprised almost entirely of minority populations with the vast majority identifying as Hispanic or Latino. The community is comprised almost entirely of minority populations. The proposed project would have a beneficial impact relative to environmental justice concerns. The proposed project has specific benefits to Yettem by helping assure that the identified critical flood control measures to protect the community are implemented.

Project Funding	Is permanent funding for the operation and maintenance of the project available? Please specify if a funding source is available and, if so, how the funding will be provided. Ongoing O&M of this project would be funded through Tulare County's Flood Control Fund.
Project Location	Is the project located on publicly owned land? ☐ Yes or ☑ No
Monitoring	Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project. Water supply and/or water quality data could be collected by the Alta Irrigation District, if desired or included in a later project phase, should the data be deemed valuable.

KINGS BASIN Water Authority
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PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 8/28/2018

Project Name	**Central Fresno County Flood Mitigation Project**
Project Proponent(s)	**Fresno County**
IRWMP Adoption	**Yes, February 5, 2013**
Project Contact	**Name: Augie Ramirez** **Email:** auramirez@co.fresno.ca.us
Project Location	The project includes components in various areas east of State Route 41, south of the City of Fresno, within Fresno County. Project Component 1 – Latitude: 36.43183, Longitude: -119.86143 Project Component 2 – Latitude: 36.43088, Longitude: -119.85372 Project Component 3 – Latitude: 36.60047, Longitude: -119.90410
Project Description	The project will include several components to provide flood protection for various areas within Fresno County. The components are further identified as follows: Project Component 1: Riverdale, CA near the intersection of Henson and Malsbary Streets. Existing piping and inlets in the area are undersized and, during heavy rains, require pumping to alleviate flooding of the intersection. This project component would include approximately 300 feet of storm drain main, replacement/installation of four inlets and replacement of the outfall structure in the existing basin. Project Component 2: Riverdale, CA along Mt. Whitney between Feland and Marks Avenues. The area drains to a low point in front of the Saint Ann Church where there are existing dry wells installed. The dry wells are quickly overcome, and flooding occurs during most rain events. The project would include replacement of the dry wells with two inlets, approximately 1100 feet of storm drain main and an outlet into the canal south of the church. A pumping station may be required depending on elevations of the related improvements and the canal high water levels. Project Component 3: Raisin City, CA in several areas of the community there is localized flooding that could be resolved through installation of approximately 8-10 dry wells throughout the community. If property could be acquired, this component of the project could include storm drain mains, inlets and a basin; however, that is undetermined.
Project Status	At what stage of development is the project?

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	X
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

The project has been identified by community members and the Sultana Community Services District as an area of concern. Discussions with the related parties and feasibility studies are the next step.

Background

The community members of Riverdale have identified several localized flooding points during storm events: (1) near the intersection of Henson and Malsbary Streets; and (2) along Mt. Whitney between Feland and Marks Avenues.

The flooding near the Henson and Malsbary Streets intersection threatens businesses and inhibits access to the area during rain events.

The flooding along Mt. Whitney causes possible vehicular accidents as motorists swerve to avoid the flooded areas and also inundates the parking lot of the adjacent church and the front yard of the adjacent residence.

The flooding throughout the Raisin City community threatens homes and businesses with damage during periods of light and heavy rains. The school children must also navigate around flooded areas on their way to school, making the route unsafe.

The project sponsor is Fresno County.

Work has not been completed beyond the conceptual stage at this time. The project is considered at the beginning of the Planning stage; however, the project could be made shovel ready in a reasonably short period of time.

Project Workplan

- Analysis work: complete topographic surveys in the project areas to determine the volume of stormwater runoff to be captured and coordinate with Riverdale Irrigation District, the church and other stakeholders.
- Preliminary design: prepare a basis of design memorandum including, but not limited to, storm drain collection facilities design constraints and parameters, pump design constraints and parameters (if required), permitting requirements, and schematic design documents.
- Environmental documents: prepare environmental documents to comply with CEQA and NEPA (if required) for the project components.
- Construction document: prepare construction documents for the project components including construction plans, specifications and an engineer's opinion of probable construction cost.
- Permitting: submit plans and specifications to appropriate agencies to acquire approvals and necessary permits, including Fresno County Road Encroachment and Riverdale Irrigation District Encroachment.
- Construction: construct mains, manholes, inlets and the pumping station (if required) as shown on the construction plans.
- Monitoring: conduct ongoing monitoring in accordance with monitoring plan and timeline required by the State.

Regional Goals

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
	X	RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	X	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
X		RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG4: The primary goal for the project is to provide flood protection. There is some flood protection in the area currently, this project would augment and improve the current improvements.

RG1: The project will improve water use in the area through capturing and putting the stormwater runoff to beneficial use. The area, in both cases, is mostly paved, therefore the runoff is not percolating but is being lost to evaporation and not used beneficially.

RG2: The capture of additional stormwater supply will add to the overall water supply in the area.

Measurable Objectives

Put 'X' by one Primary Objective	Put 'X' by Secondary Objectives that apply	No.	Objective
	X	MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
X		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand
		MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1: The project will improve water use in the area through capturing and putting the stormwater runoff to beneficial use. As noted above, the stormwater does not percolate well in the area, therefore is mostly lost to evaporation. This project would add those supplies to the existing irrigation supplies for use downstream. This use of an additional supply provides reduction to the overall extraction of groundwater in the area. The performance of the objective will be through tracking of volume of water pumped into the nearby canal.

MO3: This project will benefit a disadvantaged community. The performance of the objective will be measured through completion of the project.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce Water Demand	Agricultural Water Efficiency	
	Urban Water Efficiency	
Improve Operational Efficiency and Transfers	Conveyance - Regional/local	
	System Reoperation	
	Water Transfers	
Increase Water Supply	Conjunctive Management & Groundwater Storage	
	Precipitation Enhancement	
	Recycled Municipal Water	
	Surface Storage - Regional/local	
Improve Water Quality	Drinking Water Treatment & Distribution	
	Groundwater Remediation/ Aquifer Remediation	
	Matching Quality to Use	X
	Pollution Prevention	
	Salt and Salinity Management	
	Urban Stormwater Runoff Management	X
Improve Flood Management	Flood Risk Management	X
Practice Resources Stewardship	Agricultural Lands Stewardship	
	Ecosystem Restoration	
	Forest Management	
	Land Use Planning and Management	
	Recharge Area Protection	
	Watershed Management	
People & Water	Economic Incentives (Loans, Grants, & Water Pricing)	
	Outreach and Engagement	
	Water and Culture	
	Water-Dependent Recreation	
Other Strategies	Crop Idling for Water Transfers	
	Irrigated Land Retirement	
	Rainfed Agriculture	
	Drought Planning	

Matching Quality to Use: Storm water, by its nature is not of a quality sufficient to meet drinking water demands but is well suited for recharge purposes. This project would enable the stormwater to be collected in the area and put to use in recharge or potentially

	agricultural uses downstream of the Riverdale community. Urban Stormwater Runoff Management: This project would remove or reduce risk of damage being caused by stormwater in the areas either through property damage or vehicular accidents, as discussed above. The project takes excess runoff caused by urbanization and redirects it to groundwater recharge or reuse. Flood Risk Management: This project will enable the community to better plan for rain events and avoid potential flooding (disaster preparedness).
Project Feasibility	Describe how the project has been determined to be technical feasible. (If the project is still conceptual, you do not have to answer this question.) Describe the economic feasibility of the project. (If the project is still conceptual, you do not have to answer this question.) N/A
DAC Water Needs	Does the project provide specific benefits to critical water supply or water quality needs of a Disadvantaged Community (DAC) as defined by CWC 79505.5(a) and as listed within Tables 4-2 and 4-3 of the Kings Basin IRWMP? If so, how, and are there any Environmental Justice concerns? If non-DAC, mark N/A. The project benefits will benefit the communities of Riverdale and Raisin City, directly and the local region indirectly. Riverdale is a Census Designated Place, as determined by the US Census Bureau with a Median Household Income (MHI) of $49,100, which is 77% of the statewide MHI, according to the 2012-2016 American Community Survey (ACS). Raisin City is a Census Designated Place, as determined by the US Census Bureau with an MHI of $37,965, which is 59% of the statewide MHI, according to the 2012-2016 ACS. Riverdale and Raisin City are listed within the IRWMP as a DAC, also. There are not environmental justice concerns related to this project.
Climate Benefits	Does the project contribute to region adapting to the effects of climate change? If so, how? Yes, the project does contribute to the region adapting to the effects of climate change. The effects of climate change can include increased periods of drought as well as increased intensity of wet seasons. This project would capture excess stormwater through the wet seasons and provide recharge to groundwater supplies that help guard against droughts. Does the project contribute to reducing Greenhouse Gas emissions? If so, how? The project does not contribute to reducing Greenhouse Gas emissions.

Project Schedule	Has a schedule for project completion been identified? Yes or No If yes, please provide. No
Estimated Cost	The total project cost is estimated at $752,800 Is permanent funding for the operation and maintenance of the project available? Yes, the County of Fresno would incorporate operation and maintenance of the facility into its ongoing operation and maintenance program. The existing system currently falls within that program, the new improvements would be an expansion on those costs.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Central Fresno County Flood Mitigation Project

SWRP Goals

Put 'X' by one Primary SWRP Goal	Put 'X' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
	X	Augment Surface or Groundwater Supply (WS)
X		Floodwater Management (FM)
		Environmental (E)
		Community (C)

Flood Water Management: This project will enable the community to reduce the risk of flooding by reducing the volume of stormwater left uncaptured.

Augment Water Supply: The project will improve water use in the area through capturing and putting the stormwater runoff to beneficial use. This project would add those supplies to the existing irrigation supplies for use downstream. This use of an additional supply provides reduction to the overall extraction of groundwater in the area.

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known)		
					Qty	Unit	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
		X	WS	Water supply reliability			
			WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
	X		FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Decrease Flood Risk: This project will enable the community to reduce the risk of flooding by reducing the volume of stormwater left uncaptured. The performance of the benefit will be determined through visual inspection (i.e. lack of flooding) and volume of water discharged into the nearby canal.

Water Supply Reliability: The project will improve water supply reliability in the area through capturing and putting the stormwater runoff to beneficial use, which in turn reduces the reliance on groundwater or provides recharge to the aquifer. The performance of the benefit will be determined through tracking of volume of water discharged into the nearby canal, in acre-feet or gallons per year.

Project Funding

Is permanent funding for the operation and maintenance of the project available?

Yes, the County of Fresno would incorporate operation and maintenance of the facility into its ongoing operation and maintenance program. The existing system currently falls within that program, the new improvements would be an expansion on those costs.

Project Location

Is the project located on publicly owned land?

Partially. An easement would be need to facilitate Project Component 2.

Monitoring

Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project.

The project could include a flowmeter to document the quantity of water collected and discharged into the canal. It is not anticipated water quality monitoring will be included with this project.

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PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 8/28/2018

Project Name	Sultana Area Stormwater Project
Project Proponent(s)	County of Tulare
IRWMP Adoption	Yes, April 30, 2013
Project Contact	Name: Ross Miller Email: rmiller@co.tulare.ca.us
Project Location	The project is generally located along Sultana Road, north of Avenue 416 in the community of Sultana. Latitude: 36.54725 Longitude: -119.33970
Project Description	The project will serve to alleviate stormwater flooding in two main areas within the community of Sultana. The project will include approximately 1500 linear feet of storm drain mains, manholes, inlets and replacement of an existing pump.
Project Status	At what stage of development is the project?

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	X
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

The project has been identified by community members and the Sultana Community Services District as an area of concern. Discussions with the related parties and feasibility studies are the next step.

Background

The community members of Sultana have identified several localized flooding points during storm events: (1) near the intersection of Sultana Road and Avenue 417; and (2) along Avenue 416, west of Road 104.

The flooding in the neighborhood at Sultana Road and Avenue 417 causes impairment for students walking to school, creates long-term ponding due to soil conditions being unfavorable to rapid percolation, and serves as a potential health concern as the water stagnates over time.

The flooding along Avenue 416 causes full blockage of the roadway during times of heavy rainfall and, given the low lighting and speed limit in the area, is a significant hazard at night. During times of moderate rainfall, the flooding is limited to the shoulder or partial encroachment onto Avenue 416, which can still pose a hazard.

The project sponsor is Tulare County.

Work has not been completed beyond the conceptual stage at this time. The project is considered at the beginning of the Planning stage; however, the project could be made shovel ready in a reasonably short period of time.

Project Workplan

- Analysis work: complete topographic surveys in the area to determine the volume of stormwater runoff to be captured and confirm with Alta Irrigation District that the volume can be accommodated.
- Preliminary design: prepare a basis of design memorandum including, but not limited to, storm drain collection facilities design constraints and parameters, pump design constraints and parameters, permitting requirements, and schematic design documents.
- Environmental documents: prepare environmental documents to comply with CEQA and NEPA (if required) for the project components.
- Construction document: prepare construction documents for the project components including construction plans, specifications and an engineer's opinion of probable construction cost.
- Permitting: submit plans and specifications to appropriate agencies to acquire necessary permits, including Tulare County Road Encroachment and Alta Irrigation District Encroachment.
- Construction: construct mains, manholes, inlets and upgrades to the pumping facility as shown on the construction plans.
- Monitoring: conduct ongoing monitoring in accordance with monitoring plan and timeline required by the State.

Regional Goals

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
	X	RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	X	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
X		RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG4: The primary goal for the project is to provide flood protection. There is some flood protection in the area currently, this project would augment and improve the current system.

RG1: The project will improve water use in the area through capturing and putting the stormwater runoff to beneficial use. As noted above, the stormwater does not percolate well in the area, so it is mostly lost to evaporation. This project would add those supplies to the existing AID supplies for use downstream.

RG2: The capture of additional stormwater supply will add to the overall water supply in the

area.

Measurable Objectives

Put 'X' by <u>one</u> Primary Objective	Put 'X' by Secondary Objectives that apply	No.	Objective
	X	MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
X		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand
		MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO1: The project will improve water use in the area through capturing and putting the stormwater runoff to beneficial use. As noted above, the stormwater does not percolate well in the area, therefore is mostly lost to evaporation. This project would add those supplies to the existing AID supplies for use downstream. This use of an additional supply provides reduction to the overall extraction of groundwater in the area. The performance of the objective will be through tracking of volume of water pumped into the AID canal.

MO3: This project will benefit a disadvantaged community. The performance of the objective will be measured through completion of the project.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce Water Demand	Agricultural Water Efficiency	
	Urban Water Efficiency	
Improve Operational Efficiency and Transfers	Conveyance - Regional/local	
	System Reoperation	
	Water Transfers	
Increase Water Supply	Conjunctive Management & Groundwater Storage	
	Precipitation Enhancement	
	Recycled Municipal Water	
	Surface Storage - Regional/local	
Improve Water Quality	Drinking Water Treatment & Distribution	
	Groundwater Remediation/ Aquifer Remediation	
	Matching Quality to Use	X
	Pollution Prevention	
	Salt and Salinity Management	
	Urban Stormwater Runoff Management	X
Improve Flood Management	Flood Risk Management	X
Practice Resources Stewardship	Agricultural Lands Stewardship	
	Ecosystem Restoration	
	Forest Management	
	Land Use Planning and Management	
	Recharge Area Protection	
	Watershed Management	
People & Water	Economic Incentives (Loans, Grants, & Water Pricing)	
	Outreach and Engagement	
	Water and Culture	
	Water-Dependent Recreation	
Other Strategies	Crop Idling for Water Transfers	
	Irrigated Land Retirement	
	Rainfed Agriculture	
	Drought Planning	

Matching Quality to Use: Storm water, by its nature is not of a quality sufficient to meet drinking water demands but is well suited for recharge purposes. This project would enable the stormwater to be collected in the area and put to use in recharge or potentially agricultural uses downstream of the Sultana community.

Urban Stormwater Runoff Management: This project would remove or reduce risk of damage being caused by stormwater in the area either through property damage or vehicular accidents, as discussed above. The project takes excess runoff caused by urbanization and redirects it to groundwater recharge or reuse.

Flood Risk Management: This project will enable the community to better plan for rain events and avoid potential flooding (disaster preparedness).

Project Feasibility	Describe how the project has been determined to be technical feasible. (If the project is still conceptual, you do not have to answer this question.) Describe the economic feasibility of the project. (If the project is still conceptual, you do not have to answer this question.) N/A
DAC Water Needs	Does the project provide specific benefits to critical water supply or water quality needs of a Disadvantaged Community (DAC) as defined by CWC 79505.5(a) and as listed within Tables 4-2 and 4-3 of the Kings Basin IRWMP? If so, how, and are there any Environmental Justice concerns? If non-DAC, mark N/A. The project benefits will benefit the community of Sultana directly and the local region indirectly. Sultana is a Census Designated Place, as determined by the US Census Bureau and has a Median Household Income (MHI) of $25,486, which is 40% of the statewide MHI, according to the 2012-2016 American Community Survey. Sultana is listed within the IRWMP as a DAC, also. There are no environmental justice concerns related to this project.
Climate Benefits	Does the project contribute to region adapting to the effects of climate change? If so, how? Yes, the project does contribute to the region adapting to the effects of climate change. The effects of climate change can include increased periods of drought as well as increased intensity of wet seasons. This project would capture excess stormwater through the wet seasons and provide replenishment to groundwater supplies that help guard against droughts. Does the project contribute to reducing Greenhouse Gas emissions? If so, how? The project does not contribute to reducing Greenhouse Gas emissions.
Project Schedule	Has a schedule for project completion been identified? Yes or No If yes, please provide. No
Estimated Cost	The total project cost is estimated at $682,300 Is permanent funding for the operation and maintenance of the project available? Yes, the County of Tulare would incorporate operation and maintenance of the facility into its ongoing operation and maintenance program. The existing system currently falls within that program, the new improvements would be a small expansion on those costs.

KINGS BASIN Water Authority
www.kingsbasinauthority.org

STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Sultana Area Stormwater Project

SWRP Goals

Put 'X' by one Primary SWRP Goal	Put 'X' by Secondary SWRP Goals that apply	Goal
	X	Improve Storm Water Quality (SWQ)
	X	Augment Surface or Groundwater Supply (WS)
X		Floodwater Management (FM)
		Environmental (E)
		Community (C)

Flood Water Management: This project will enable the community to reduce the risk of flooding by reducing the volume of stormwater left uncaptured.

Augment Water Supply: The project will improve water use in the area through capturing and putting the stormwater runoff to beneficial use. This project would add those supplies to the existing AID supplies for use downstream. This use of an additional supply provides reduction to the overall extraction of groundwater in the area.

Improve Storm Water Quality: The project will provide source pollution control benefits by installing inlet filters to remove sediment from the stormwater prior to discharge into the basins. Removal of the sediment will provide a greater quality for recharge or reuse.

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known)		
					Qty	Unit	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
		X	WS	Water supply reliability			
			WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
	X		FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits		X	SWQ	Source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Decrease Flood Risk: This project will enable the community to reduce the risk of flooding by reducing the volume of stormwater left uncaptured. The performance of the benefit will be determined through visual inspection (i.e. lack of flooding) and volume of water discharged into the AID canal.

Water Supply Reliability: The project will improve water supply reliability in the area through capturing and putting the stormwater runoff to beneficial use, which in turn reduces the reliance on groundwater or provides recharge to the aquifer. The performance of the benefit will be determined through tracking of volume of water discharged into the AID canal, in acre-feet or gallons per year.

Project Funding

Is permanent funding for the operation and maintenance of the project available?

Yes, the County of Tulare would incorporate operation and maintenance of the facility into its ongoing operation and maintenance program. The existing system currently falls within that program, the new improvements would be a small expansion on those costs.

Project Location

Is the project located on publicly owned land?

Yes

Monitoring

Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project.

The project could include a flowmeter to document the quantity of water collected and discharged into the canal. It is not anticipated water quality monitoring will be included with this project.

KINGS BASIN Water Authority
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PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 8/28/2018

Project Name	Traver Stormwater Project
Project Proponent(s)	County of Tulare
IRWMP Adoption	Yes, April 30, 2013
Project Contact	Name: Ross Miller Email: rmiller@co.tulare.ca.us
Project Location	The project is generally located along Merritt Drive and Burke Drive, east of Highway 99 in the community of Traver. Latitude: 36.453639 Longitude: -119.487503
Project Description	The purpose of the project is to relieve stormwater flooding in three areas of Traver. The project will include installation of approximately 6000 feet of storm drain mains, manholes, inlets, and pump station.
Project Status	At what stage of development is the project?

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	X
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

The project has been identified by community members as an area of concern. Discussions with the related parties and feasibility studies are the next step.

Background

The community members of Traver have identified several localized flooding points during storm events: (1) along Burke Drive on the west side of the community; (2) along Merritt Drive, the main east-west thoroughfare through Traver, particularly between the two markets; and (3) along Canal Drive adjacent to Traver Joint Elementary School.

The flooding along Burke Drive causes full blockage of the roadway during times of heavy rainfall and, given the low lighting and speed limit in the area, is a significant hazard at night. During times of moderate rainfall, the flooding can still encroach significantly onto the roadway which poses a hazard.

Merritt Drive floods even with moderate rain. There is significant ponding between Traver Market and Tri-M's market, which is a heavily trafficked area and the location of one of the community bus stops. The high volume of vehicles and pedestrians, coupled with minimal streetlighting, makes this a hazardous area to have consistent flooding.

The project sponsor is Tulare County.

Work has not been completed beyond the conceptual stage at this time. The project is considered at the beginning of the Planning stage; however, the project could be made shovel ready in a reasonably short period of time.

Project Workplan

- Analysis work: complete topographic surveys in the area to determine the volume of stormwater runoff to be captured and confirm with Alta Irrigation District whether the volume can be accommodated in their canal.
- Preliminary design: prepare a basis of design memorandum including, but not limited to, storm drain collection facilities design constraints and parameters, pump design constraints and parameters, permitting requirements, and schematic design documents.
- Environmental documents: prepare environmental documents to comply with CEQA and NEPA (if required) for the project components.
- Construction document: prepare construction documents for the project components including construction plans, specifications and an engineer's opinion of probable construction cost.
- Permitting: submit plans and specifications to appropriate agencies to acquire necessary permits, including Tulare County Road Encroachment and Alta Irrigation District Encroachment (if required).
- Construction: construct mains, manholes, inlets and pumping facility as shown on the construction plans.
- Monitoring: conduct ongoing monitoring in accordance with monitoring plan and timeline required by the State.

Regional Goals

Put 'X' by one Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
	X	RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
	X	RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
X		RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG4: The primary goal for the project is to provide flood protection. It would provide stormwater a path for drainage from critical areas in the community.

RG1: The project will improve water use in the area through capturing and putting the stormwater runoff to beneficial use. The stormwater does not percolate well in the area, so it is mostly lost to evaporation. This project would add those supplies to the existing AID supplies for use downstream.

RG2: The capture of additional stormwater will add to the overall water supply in the area.

Measurable Objectives

Put 'X' by <u>one</u> Primary Objective	Put 'X' by Secondary Objectives that apply	No.	Objective
	X	MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
		MO2	Identify opportunities and Projects
X		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand
		MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
		MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO3: This project will benefit a disadvantaged community. The performance of the objective will be measured through completion of the project.

MO1: The project will improve water use in the area through capturing and putting the stormwater runoff to beneficial use. As noted above, the stormwater does not percolate well in the area, therefore is mostly lost to evaporation. This project would add those supplies to the existing AID supplies for use downstream. This use of an additional supply provides reduction to the overall extraction of groundwater in the area. The performance of the objective will be through tracking of volume of water pumped into the AID canal.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce Water Demand	Agricultural Water Efficiency	
	Urban Water Efficiency	
Improve Operational Efficiency and Transfers	Conveyance - Regional/local	
	System Reoperation	
	Water Transfers	
Increase Water Supply	Conjunctive Management & Groundwater Storage	
	Precipitation Enhancement	
	Recycled Municipal Water	
	Surface Storage - Regional/local	
Improve Water Quality	Drinking Water Treatment & Distribution	
	Groundwater Remediation/ Aquifer Remediation	
	Matching Quality to Use	X
	Pollution Prevention	
	Salt and Salinity Management	
	Urban Stormwater Runoff Management	X
Improve Flood Management	Flood Risk Management	X
Practice Resources Stewardship	Agricultural Lands Stewardship	
	Ecosystem Restoration	
	Forest Management	
	Land Use Planning and Management	
	Recharge Area Protection	
	Watershed Management	
People & Water	Economic Incentives (Loans, Grants, & Water Pricing)	
	Outreach and Engagement	
	Water and Culture	
	Water-Dependent Recreation	
Other Strategies	Crop Idling for Water Transfers	
	Irrigated Land Retirement	
	Rainfed Agriculture	
	Drought Planning	

Matching Quality to Use: Storm water, by its nature is not of a quality sufficient to meet drinking water demands but is well suited for recharge purposes. This project would enable the stormwater to be collected in the area and put to use in recharge or potentially agricultural uses downstream of the Traver community.

Urban Stormwater Runoff Management: This project would remove or reduce risk of damage being caused by stormwater in the area either through property damage or vehicular accidents. The project takes excess runoff caused by urbanization and redirects it to groundwater recharge or reuse.

Flood Risk Management: This project will enable the community to better plan for rain events and avoid potential flooding (disaster preparedness).

Project Feasibility	Describe how the project has been determined to be technical feasible. (If the project is still conceptual, you do not have to answer this question.) Describe the economic feasibility of the project. (If the project is still conceptual, you do not have to answer this question.) N/A
DAC Water Needs	Does the project provide specific benefits to critical water supply or water quality needs of a Disadvantaged Community (DAC) as defined by CWC 79505.5(a) and as listed within Tables 4-2 and 4-3 of the Kings Basin IRWMP? If so, how, and are there any Environmental Justice concerns? If non-DAC, mark N/A. The project will benefit the community of Traver directly and the local region indirectly. Traver is a Census Designated Place, as determined by the US Census Bureau and has a Median Household Income (MHI) of $33,341, which is 52% of the statewide MHI, according to the 2012-2016 American Community Survey. Traver is listed within the IRWMP as a DAC, also. There are no environmental justice concerns related to this project.
Climate Benefits	Does the project contribute to region adapting to the effects of climate change? If so, how? Yes, the project does contribute to the region adapting to the effects of climate change. The effects of climate change can include increased periods of drought as well as increased intensity of wet seasons. This project would capture excess stormwater through the wet seasons and provide replenishment to groundwater supplies that help guard against droughts. Does the project contribute to reducing Greenhouse Gas emissions? If so, how? The project does not contribute to reducing Greenhouse Gas emissions.
Project Schedule	Has a schedule for project completion been identified? Yes or No If yes, please provide. No
Estimated Cost	The total project cost is estimated at $1,992,100 Is permanent funding for the operation and maintenance of the project available? Yes, the County of Tulare would incorporate operation and maintenance of the facility into its ongoing operation and maintenance program. This system would be a small expansion on those costs.

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STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

This form shall be completed for any existing project already on the project list that includes a storm water component. Submit to slee@krcd.org.

Project Name Traver Area Stormwater Project

SWRP Goals

Put 'X' by one Primary SWRP Goal	Put 'X' by Secondary SWRP Goals that apply	Goal
	X	Improve Storm Water Quality (SWQ)
	X	Augment Surface or Groundwater Supply (WS)
X		Floodwater Management (FM)
		Environmental (E)
		Community (C)

Flood Water Management: This project will enable the community to reduce the risk of flooding by reducing the volume of stormwater left uncaptured.

Augment Water Supply: The project will improve water use in the area through capturing and putting the stormwater runoff to beneficial use. This project would add those supplies to the existing AID supplies for use downstream. This use of an additional supply provides reduction to the overall extraction of groundwater in the area.

Improve Storm Water Quality: The project will provide source pollution control benefits by installing inlet filters to remove sediment from the stormwater prior to discharge into the basins. Removal of the sediment will provide a greater quality for recharge or reuse.

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	(Enter if Known) Qty	Unit	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
		X	WS	Water supply reliability			
			WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
	X		FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits		X	SWQ	Source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Decrease Flood Risk: This project will enable the community to reduce the risk of flooding by reducing the volume of stormwater left uncaptured. The performance of the benefit will be determined through visual inspection (i.e. lack of flooding) and volume of water discharged into the AID canal.

Water Supply Reliability: The project will improve water supply reliability in the area through capturing and putting the stormwater runoff to beneficial use, which in turn reduces the reliance on groundwater or provides recharge to the aquifer. The performance of the benefit will be determined through tracking of volume of water discharged into the AID canal, in acre-feet or gallons per year.

Project Funding

Is permanent funding for the operation and maintenance of the project available?

Yes, the County of Tulare would incorporate operation and maintenance of the facility into its ongoing operation and maintenance program. This system would be a small expansion on those costs.

Project Location

Is the project located on publicly owned land?

Yes

Monitoring

Describe any water supply or water quality monitoring and data acquisition that will be implemented in conjunction with the proposed project.

The project could include a flowmeter to document the quantity of water collected and discharged into the canal. It is not anticipated water quality monitoring will be included with this project.

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PROJECT INFORMATION FORM

Project Review Process is described by Chapter 7 of the Kings Basin IRWMP
Form Revised 6/26/2018

Project Name	**STORM DRAIN IMPROVEMENTS AT 9TH AND 6TH SREETS**
Project Proponent(s)	**City of San Joaquin**
IRWMP Adoption	**Yes, Adopted 11-07-2012**
Project Contact	**Mario Gouveia, City Engineer, mgouveia@gouveiaengineering.com**
Project Location	**City of San Joaquin Streets 6th and 9th from California to Nevada Avenue**
Project Description	Install drainage inlets and storm pipes along 9th and 6th streets to address recurrent flooding of the area during storm events.

Project Status

Project Status	Put X next to which stage best describes project status
Conceptual (no feasibility or study work initiated)	X
Planning (feasibility study and analysis work initiated)	
Preliminary Design (feasibility study completed)	
Ready for Construction	

The need for drainage inlets within these two street segments has been identified as an essential upgrade to reduce area flooding from street surface drainage and improve safer pedestrian access to San Joaquin Elementary School. Currently, these streets are lacking the proper storm drain infrastructure to handle the proper storm runoff currently addressed by gutter flow only. The installation of pipes and inlets would collect the anticipated storm runoff and properly convey to existing drainage basins.

Background

6th Street and 9th Street do not have drainage inlets from California Avenue to Colorado Avenue. Existing collecting inlets are located on California Avenue and Colorado Avenue. Nevada Avenue, 6th and 9th Streets are surface drained and continuously flood during rain events. During a storm, the crosswalks at these streets can become unsafe especially for elementary school pedestrians. New drainage inlets at 6th and 9th would reduce surface flow around the school crosswalks and increase the pedestrian safety during a storm. The school district would strongly support the implementation of these improvements. The project is a relatively straightforward project for CEQA clearance.

Project Workplan

Direct Project Administration

Task 1: **Administration:** Project Administration: Meetings, agreement preparation, preparation of invoices and other project implementation items.

Task 2: **Labor Compliance Program:** Adopting and enforcing a labor compliance program.

Task 3: **Reporting:** Preparing reports required by grant agreement.

Planning/Design/Engineering/Environmental Documentation

Task 4: **Assessment and Evaluation:** Prepare evaluation of project effectiveness.

Task 5: **Final Design:** Prepare Plans, Specifications and Estimate.

Task 6: **Environmental Documentation:** Prepare environmental documents.

Task 7: **Permitting:** Prepare and secure regulatory agencies permitting.

Task 8: **Construction Contracting:** Provide bidding and contract award services: Advertisement for bids; pre-bid contractors meeting; evaluation of bids; award contract.

Task 9: **Construction:** This task will include mobilization and site preparation, construction of all work on plans, performance testing, and demobilization.

Task 10: **Construction Administration:** Provide construction contract administration and construction engineering services.

Regional Goals

Put 'X' by <u>one</u> Primary Goal	Put 'X' by Secondary Goals that apply	No.	Goal
		RG1	Halt, and ultimately reverse, the current overdraft and provide for sustainable management of surface and groundwater
		RG2	Increase the water supply reliability, enhance operational flexibility, and reduce system constraints
		RG3	Improve and protect water quality
X		RG4	Provide additional flood protection
		RG5	Protect and enhance aquatic ecosystems and wildlife habitat.

RG4 – The installation of drainage inlets would reduce gutter flow within the school's pedestrian paths during storm events. The excessive water flows on 6th and 9th streets accumulate to flooding levels triggering unsafe crosswalks for school pedestrian traffic.

Measurable Objectives

Put 'X' by <u>one</u> Primary Objective	Put 'X' by Secondary Objectives that apply	No.	Objective
		MO1	Increase amount of groundwater in storage with intent to eliminate the groundwater overdraft in 20 years
	X	MO2	Identify opportunities and Projects
X		MO3	Identify DAC priority needs and promote/support solutions to DAC water issues
		MO4	Increase average annual supply and reduce demand

		MO5	Increase dry year supply
		MO6	Increase regional conveyance capacity
		MO7	Compile baseline water quality data for ground & surface water
		MO8	Encourage Best Management Practices, policies & education that protect water quality
		MO9	Identify sources of water quality problems & promote/support solutions to improve water quality
		MO10	Increase surface storage
		MO11	Sustain the Kings River Fisheries Management Program
		MO12	Pursue opportunities to incorporate habitat benefits into projects
	X	MO13	Increase public awareness of IRWM Efforts
		MO14	Involve local water districts and land use agencies in generating and confirming the current and future water needs to ensure compatibility and consistency with land use and water supply plans.
		MO15	Comply with SBx7-7

MO2 – Identify opportunities and Projects. The project would be added to the Authority's Project List, and construction of flood control facilities are similar to other projects that have been successfully implemented in the region.

MO3 – Identify DAC priority needs and promote/support solutions to DAC storm water issues. A safe and reliable storm water system for this severely disadvantage community is a priority and the City is constantly pursuing solutions to its storm water issues. The City of San Joaquin is a severely disadvantaged community. The city is comprised almost entirely of minority populations. Based on the 2010 census 95.6% identify as Hispanic or Latino; 0.8% as African American; 1.3% as Native American; and 0.9% as Asian. The proposed project has specific benefits to the City of San Joaquin by helping assure that a safer walk path is provided for pedestrian traffic during a storm event around the San Joaquin Elementary School.

MO13 – Increase public awareness of IRWMP efforts. The authority will include the project in its public releases, Authority highlight documents, and on the Authority website in an effort to communicate the projects and efforts of the Authority and IRWM in the region. The City will include clarification of the IRWMP funding source in its communication to customers.

Resource Management Strategies

Category	Strategy	Put X by all that apply
Reduce water demand	Agricultural water use efficiency	
	Urban water use efficiency	
Improve operational efficiency and transfers	Conveyance - regional/local	
	Water transfers	
	Conjunctive management and groundwater storage	
	Precipitation enhancement	
	Recycled municipal water	
	Surface storage - regional/local	

	Drinking water treatment and distribution	
Improve water quality	Groundwater remediation/Aquifer remediation	
	Matching quality to use	
	Pollution prevention	X
	Salt and salinity management	
	Urban runoff management	X
	Flood risk management	X
Improve flood management	Agricultural lands stewardship	
Practice resource stewardship	Economic incentives (loans, grants & water pricing)	
	Ecosystem restoration	
	Forest management	
	Land use planning and management	
	Recharge area protection	
	Water-dependent recreation	
	Watershed management	
	Crop idling for water transfers	
Other strategies	Irrigated land retirement	
	Rainfed agriculture	
	Drought planning[1]	

Pollution Prevention – The improved storm drain system would contain the storm runoff within designated areas and prevent foreign materials or substances from mixing with surface runoff and entering the city's storm drain system and ultimate recharge sources such as the groundwater.

Urban Runoff Management – 6th and 9th streets experience excessive water flows. During storm event, street crosswalks around the school become unsafe especially for school pedestrian traffic. The introduction of drainage inlets would result in safer crosswalks around the elementary school and greatly improve the runoff management within the area.

Flood Risk Management – By properly collecting and disposing of street runoff, the risk of flooding within 6th and 9th streets is reduced.

Project Feasibility	This proposed project is feasible and constructible. All areas that could be impacted are within the city right of way. This proposed project will required the assistance from grants such as this to accelerate the upgrade for this project and improve the city urban runoff management system.
DAC Water Needs	The project does not provide specific benefits to critical water supply or water quality needs for this DAC.
Climate Benefits	The project does not contribute to region adapting to the effects of climate change. The project does not contribute to reducing Greenhouse Gas emissions.
Project Schedule	A schedule for project completion has not been identified.
Estimated Cost	The total project cost is estimated at $713,230. Is permanent funding for the operation and maintenance of the project available? Maintenance for this project would be funded from existing funds used for the city's storm drain system.

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STORM WATER PROJECT SUPPLEMENTAL FORM

Form Revised 1/3/2018

Project Name **STORM DRAIN IMPROVEMENTS AT 9TH AND 6TH SREETS**

SWRP Goals

Put 'X' by one Primary SWRP Goal	Put 'X' by Secondary SWRP Goals that apply	Goal
		Improve Storm Water Quality (SWQ)
		Augment Surface or Groundwater Supply (WS)
X		Floodwater Management (FM)
		Environmental (E)
		Community (C)

Flood management – The project addresses localized flooding within the city of San Joaquin by properly disposing of storm runoff to designated areas and provides safer path of travel for pedestrians around San Joaquin Elementary.

SWRP Benefits

	Primary	Secondary	SWRP Goals	Objective	Quantity	Units	Measurement
Main Benefits			SWQ	Increase infiltration and/or treatment of runoff			
			WS	Water supply reliability			
		X	WS	Conjunctive use (incl. Stormwater Capture & Reuse/Recharge)			
	X		FM	Decrease flood risk by reducing runoff rate and/or volume			
			E	Wetland enhancement/creation			
			E	Riparian enhancement			
			E	Instream flow improvement			
			E	Increased urban green space			
			C	Employment opportunities provided			
			C	Public Education			
Additional Benefits			SWQ	Nonpoint source pollution control			
			SWQ	Reestablish natural drainage and treatment			
			WS	Water conservation (Reduction of Demand)			
			FM	Reduce sanitary sewer overflows			
			E	Reduced energy use, greenhouse gas emissions, or provides a carbon sink			
			E	Reestablishment of natural hydrograph			
			E	Water temperature improvements			
			C	Enhanced and/or created recreational and public use areas			
			C	Community involvement			

Decrease flood risk by reducing runoff rate and/or volume – The project would contain the runoff volume to acceptable levels for surface flows and decrease the risk of flooding within the project sites.

Project Funding Maintenance for this project would be funded from existing funds used for the city's storm drain system.

Project Location Yes, the project is located within publicly owned land.

Monitoring The project would not provide any water supply or water quality monitoring.

NOTE: Participation information, upcoming meeting dates, and a copy of the SWRP can be obtained from our website at www.kingsbasinauthority.org

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Appendix C

Storm Water Resources Plan Checklist and Self-Certification

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Appendix A: Checklist and Self-Certification

Checklist Instructions:

For <u>each element</u> listed below, review the applicable section in the Storm Water Resource Plan Guidelines and enter ALL of the following information.

A. **Mark the box if the Storm Water Resource Plan, or a functional equivalent Plan, meets the provision**
B. **In the provided space labeled <u>References</u>, enter:**

1. **Title of document(s) that contain the information;**
2. **The chapter/section, <u>and page number(s)</u> where the information is located within the document(s);**
3. **The entity(ies) that prepared the document(s);**
4. **The date the document(s) was prepared, and subsequent updates; and**
5. **Where each document can be accessed[1] (website address or attached).**

STORM WATER RESOURCE PLAN CHECKLIST AND SELF-CERTIFICATION		
Mandatory Required Elements per California Water Code are Shaded		
Y/N	**Plan Element**	**Water Code Section**

Answers to Questions 1, 3, 4 and 5 for all references listed below are:
1. Kings Basin Water Authority Storm Water Resources Plan
3. Kings Basin Water Authority
4. Prepared December 2018, updated 4/29/2021
5. www.kingsbasinwaterauthority.com

WATERSHED IDENTIFICATION (GUIDELINES SECTION VI.A)		
Y	Plan identifies watershed and subwatershed(s) for storm water resource planning.	10565(c) 10562(b)(1) 10565(c)
References: Section 2.1, page 2-1		
Y	Plan is developed on a watershed basis, using boundaries as delineated by USGS, CalWater, USGS Hydrologic Unit designations, or an applicable integrated regional water management group, and includes a description and boundary map of each watershed and sub-watershed applicable to the Plan.	
References: Section 2.1, page 2-1 and Figure 2-1, page 2-3		

[1] All documents referenced must include a website address. If a document is not accessible to the public electronically, the document must be attached in the form of an electronic file (e.g. pdf or Word 2013) on a compact disk or other electronic transmittal tool.

WATERSHED IDENTIFICATION
(GUIDELINES SECTION VI.A)

Y	Plan includes an explanation of why the watershed(s) and sub-watershed(s) are appropriate for storm water management with a multiple-benefit watershed approach;

References:

Section 2.3, page 2-5

Y	Plan describes the internal boundaries within the watershed (boundaries of municipalities; service areas of individual water, wastewater, and land use agencies, including those not involved in the Plan; groundwater basin boundaries, etc.; preferably provided in a geographic information system shape file);

References:

Section 2.2, page 2-2 and Figure 2-2, page 2-4

Y	Plan describes the water quality priorities within the watershed based on, at a minimum, applicable TMDLs and consideration of water body-pollutant combinations listed on the State's Clean Water Act Section 303(d) list of water quality limited segments (a.k.a impaired waters list);

References:

Section 2.4, pages 2-5 through 2-7

Y	Plan describes the general quality and identification of surface and ground water resources within the watershed (preferably provided in a geographic information system shape file);

References:

Section 2.5, pages 2-7 through 2-8

Y	Plan describes the local entity or entities that provide potable water supplies and the estimated volume of potable water provided by the water suppliers;

References:

Section 2.6, page 2-7

Y	Plan includes map(s) showing location of native habitats, creeks, lakes, rivers, parks, and other natural or open space within the sub-watershed boundaries; and

References:

Section 2.7, pages 2-8 through 2-9 and Figure 2-3, page 2-10

Y	Plan identifies (quantitative, if possible) the natural watershed processes that occur within the sub-watershed and a description of how those natural watershed processes have been disrupted within the sub-watershed (e.g., high levels of imperviousness convert the watershed processes of infiltration and interflow to surface runoff increasing runoff volumes; development commonly covers natural surfaces and often introduces non-native vegetation, preventing the natural supply of sediment from reaching receiving waters).

References:

Section 2.8, page 2-11

WATER QUALITY COMPLIANCE
(GUIDELINES SECTION V)

Y	Plan identifies activities that generate or contribute to the pollution of storm water or dry weather runoff, or that impair the effective beneficial use of storm water or dry weather runoff.	10562(d)(7)

References:

Section 3.1, page 3-1

Y	Plan describes how it is consistent with and assists in, compliance with total maximum daily load implementation plans and applicable national pollutant discharge elimination system permits.	10562(b)(5)

References:

Sections 3.2 and 3.3, pages 3-1 through 3-4

Y	Plan identifies applicable permits and describes how it meets all applicable waste discharge permit requirements.	10562(b)(6)

References:

Sections 3.4 through 3.8, pages 3-4 through 3-7

ORGANIZATION, COORDINATION, COLLABORATION
(GUIDELINES SECTION VI.B)

Y	Local agencies and nongovernmental organizations were consulted in Plan development.	10565(a)

References:

Sections 4.2 through 4.4, pages 4-1 through 4-3 and Section 4.7, page 4-4

Y	Community participation was provided for in Plan development.	10562(b)(4)

References:

Section 4.5, pages 4-3 through 4-4

Y	Plan includes description of the existing integrated regional water management group(s) implementing an integrated regional water management plan.

References:

Section 4.1, page 4-1 and Section 4.8, pages 4-4 through 4-5

ORGANIZATION, COORDINATION, COLLABORATION
(GUIDELINES SECTION VI.B)

Y	Plan includes identification of and coordination with agencies and organizations (including, but not limited to public agencies, nonprofit organizations, and privately owned water utilities) that need to participate and implement their own authorities and mandates in order to address the storm water and dry weather runoff management objectives of the Plan for the targeted watershed.

References:

Sections 4.2 through 4.3, pages 4-1 through 4-2 and Section 4.7, page 4-4

Y	Plan includes identification of nonprofit organizations working on storm water and dry weather resource planning or management in the watershed.

References:

Section 4.3, page 4-2

Y	Plan includes identification and discussion of public engagement efforts and community participation in Plan development.

References:

Section 4.5, pages 4-3 through 4-4

Y	Plan includes identification of required decisions that must be made by local, state or federal regulatory agencies for Plan implementation and coordinated watershed-based or regional monitoring and visualization

References:

Section 4.6, page 4-4

Y	Plan describes planning and coordination of existing local governmental agencies, including where necessary new or altered governance structures to support collaboration among two or more lead local agencies responsible for plan implementation.

References:

Section 4.7, page 4-4

Y	Plan describes the relationship of the Plan to other existing planning documents, ordinances, and programs established by local agencies.

References:

Section 4.8, pages 4-4 through 4-5

Y	(If applicable)Plan explans why individual agency participation in various isolated efforts is appropriate.

References:

Section 4.7, page 4-4

QUANTITATIVE METHODS
(GUIDELINES SECTION VI.C)

Y	**For all analyses:** Plan includes an integrated metrics-based analysis to demonstrate that the Plan's proposed storm water and dry weather capture projects and programs will satisfy the Plan's identified water management objectives and multiple benefits.

References:

Section 5.3, pages 5-3 through 5-5

Y	**For water quality project analysis (section VI.C.2.a)** Plan includes an analysis of how each project and program complies with or is consistent with an applicable NPDES permit. The analysis should simulate the proposed watershed-based outcomes using modeling, calculations, pollutant mass balances, water volume balances, and/or other methods of analysis. Describes how each project or program will contribute to the preservation, restoration, or enhancement of watershed processes (as described in Guidelines section VI.C.2.a)

References:

Section 5.3.3, page 5-5

Y	**For storm water capture and use project analysis (section VI.C.2.b):** Plan includes an analysis of how collectively the projects and programs in the watershed will capture and use the proposed amount of storm water and dry weather runoff.

References:

Section 5.3.4, page 5-5

Y	**For water supply and flood management project analysis (section VI.C.2.c):** Plan includes an analysis of how each project and program will maximize and/or augment water supply.

References:

Section 5.3.5, page 5-5

Y	**For environmental and community benefit analysis (section VI.C.2.d):** Plan includes a narrative of how each project and program will benefit the environment and/or community, with some type of quantitative measurement.

References:

Section 5.3.6, page 5-5

Y	**Data management (section VI.C.3):** Plan describes data collection and management, including: a) mechanisms by which data will be managed and stored; b) how data will be accessed by stakeholders and the public; c) how existing water quality and water quality monitoring will be assessed; d) frequency at which data will be updated; and e) how data gaps will be identified.

References:

Section 5.4, pages 5-6 through 5-7

IDENTIFICATION AND PRIORITIZATION OF PROJECTS
(GUIDELINES SECTION VI.D)

Y	Plan identifies opportunities to augment local water supply through groundwater recharge or storage for beneficial use of storm water and dry weather runoff.	10562(d)(1)

References:

Section 5.3, pages 5-3 through 5-5
Appendix B

Y	Plan identifies opportunities for source control for both pollution and dry weather runoff volume, onsite and local infiltration, and use of storm water and dry weather runoff.	10562(d)(2)

References:

Section 5.3, pages 5-3 through 5-5
Appendix B

Y	Plan identifies projects that reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent feasible.	10562(d)(3)

References:

Section 5.3, pages 5-3 through 5-5
Appendix B

Y	Plan identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including wetlands, riverside habitats, parkways, and parks.	10562(d)(4)

References:

Section 5.3, pages 5-3 through 5-5
Appendix B

Y	Plan identifies opportunities to use existing publicly owned lands and easements, including, but not limited to, parks, public open space, community gardens, farm and agricultural preserves, school sites, and government office buildings and complexes, to capture, clean, store, and use storm water and dry weather runoff either onsite or offsite.	10562(d)(5), 10562(b)(8)

References:

Section 5.3, pages 5-3 through 5-5
Appendix B

IDENTIFICATION AND PRIORITIZATION OF PROJECTS
(GUIDELINES SECTION VI.D)

Y	For new development and redevelopments (if applicable): Plan identifies design criteria and best management practices to prevent storm water and dry weather runoff pollution and increase effective storm water and dry weather runoff management for new and upgraded infrastructure and residential, commercial, industrial, and public development.	10562(d)(6)

References:

Section 3.2, page 3-2, Table 3-1

Y	Plan uses appropriate quantitative methods for prioritization of projects. (This should be accomplished by using a metrics-based and integrated evaluation and analysis of multiple benefits to maximize water supply, water quality, flood management, environmental, and other community benefits within the watershed.)	10562(b)(2)

References:

Section 5.3, pages 5-3 through 5-5

Y	*Overall:* Plan prioritizes projects and programs using a metric-driven approach and a geospatial analysis of multiple benefits to maximize water supply, water quality, flood management, environmental, and community benefits within the watershed.

References:

Section 5.3, pages 5-3 through 5-5

Y	*Multiple benefits:* Each project in accordance with the Plan contributes to at least two or more **Main Benefits** and the maximum number of **Additional Benefits** as listed in Table 4 of the Guidelines. (Benefits are not counted twice if they apply to more than one category.)

References:

Section 5.2, pages 5-1 through 5-3

IMPLEMENTATION STRATEGY AND SCHEDULE
(GUIDELINES SECTION VI.E)

Y	Plan identifies resources for Plan implementation, including: 1) projection of additional funding needs and sources for administration and implementation needs; and 2) schedule for arranging and securing Plan implementation financing.	

References:

Section 6.1, pages 6-1 through 6-9

Y	Plan projects and programs are identified to ensure the effective implementation of the storm water resource plan pursuant to this part and achieve multiple benefits.	10562(d)(8)

References:

Section 5.2, pages 5-1 through 5-3
Section 6.2, pages 6-9 through 6-11
Appendix B

Y	The Plan identifies the development of appropriate decision support tools and the data necessary to use the decision support tools.	10562(d)(8)

References:

Section 5.2, pages 5-1 through 5-3

Y	Plan describes implementation strategy, including: a) Timeline for submitting Plan into existing plans, as applicable; b) Specific actions by which Plan will be implemented; c) All entities responsible for project implementation; d) Description of community participation strategy; e) Procedures to track status of each project; f) Timelines for all active or planned projects; g) Procedures for ongoing review, updates, and adaptive management of the Plan; and h) A strategy and timeline for obtaining necessary federal, state, and local permits.	

References:

Section 6.2, pages 6-9 through 6-11

Y	Applicable IRWM plan: The Plan will be submitted, upon development, to the applicable integrated regional water management (IRWM) group for incorporation into the IRWM plan.	10562(b)(7)

References:

Section 1.1, page 1-1

IMPLEMENTATION STRATEGY AND SCHEDULE
(GUIDELINES SECTION VI.E)

Y	Plan describes how implementation performance measures will be tracked.

References:

Section 6.2, pages 6-9 through 6-11

EDUCATION, OUTREACH, PUBLIC PARTICIPATION
(GUIDELINES SECTION VI.F)

Y	Outreach and Scoping: 10562(b)(4) Community participation is provided for in Plan implementation.

References:

Section 7.1, pages 7-1 through 7-4

Y	Plan describes public education and public participation opportunities to engage the public when considering major technical and policy issues related to the development and implementation.

References:

Section 7.1, pages 7-1 through 7-4

Y	Plan describes mechanisms, processes, and milestones that have been or will be used to facilitate public participation and communication during development and implementation of the Plan.

References:

Section 7.1, pages 7-1 through 7-4

Y	Plan describes mechanisms to engage communities in project design and implementation.

References:

Section 7.1, pages 7-1 through 7-4

Y	Plan identifies specific audiences including local ratepayers, developers, locally regulated commercial and industrial stakeholders, nonprofit organizations, and the general public.

References:

Section 7.1, pages 7-1 through 7-4

EDUCATION, OUTREACH, PUBLIC PARTICIPATION
(GUIDELINES SECTION VI.F)

Y	Plan describes strategies to engage disadvantaged and climate vulnerable communities within the Plan boundaries and ongoing tracking of their involvement in the planning process.

References:

Section 7.1.3, page 7-4

Y	Plan describes efforts to identify and address environmental injustice needs and issues within the watershed.

References:

Section 7.2, page 7-6

Y	Plan includes a schedule for initial public engagement and education.

References:

Section 7.3, pages 7-6 through 7-7

DECLARATION AND SIGNATURE

I declare under penalty of perjury that all information provided is true and correct to the best of my knowledge and belief.

Signature	Title	Date
Mary L. Gast	Board President	4/29/2021
William R. Hulet	Board Vice President	4/29/2021