

---

# **Cottonwood Creek Storm Water Resource Plan**

## **Public Draft September 2018**

Project Number 184031062

Prepared for:

**Tulare County Resource Management Agency**

Prepared by:

**Stantec  
3301 C, Suite 1900  
Sacramento, CA 95816**



# Table of Contents

---

<b>Acronyms and Abbreviations .....</b>	<b>i</b>
<b>Section 1 Plan Objectives.....</b>	<b>1-1</b>
1.1 Introduction .....	1-1
1.2 Objectives .....	1-1
1.3 Plan Organization.....	1-1
<b>Section 2 Watershed Identification.....</b>	<b>2-1</b>
2.1 Watersheds and Subwatersheds .....	2-1
2.2 Political and Service-Area Boundaries .....	2-1
2.3 Water Quality Priorities .....	2-6
2.4 Surface Water and Groundwater Resources .....	2-7
<b>Section 3 Water Quality Compliance .....</b>	<b>3-1</b>
3.1 Land Use and Activities.....	3-1
3.2 TMDL and NPDES Compliance .....	3-2
3.3 Waste-Discharge Permit Compliance .....	3-2
<b>Section 4 Organization, Coordination, and Collaboration.....</b>	<b>4-1</b>
4.1 Local Agencies.....	4-1
4.1.1 Tulare County .....	4-1
4.1.2 Other Local Agencies .....	4-2
4.2 Nongovernmental Organizations.....	4-6
4.3 Integrated Regional Water Management Groups.....	4-6
4.3.1 Kings Basin IRWM Group.....	4-7
4.3.2 Kaweah River Basin IRWM Group .....	4-7
4.4 Regulatory Agencies .....	4-10
4.4.1 State Water Resources Control Board .....	4-10
4.4.2 Relationship with Other Planning Documents.....	4-10
4.5 Public Outreach and Engagement .....	4-12
4.5.1 Community Participation.....	4-12
<b>Section 5 Quantitative Methods.....</b>	<b>5-1</b>
5.1 Metrics-based Analysis .....	5-1
5.1.1 Water Quality Project Analysis .....	5-1

5.1.2 Storm Water Capture and Use Project Analysis ..... 5-3

5.1.3 Water Supply and Flood Management Project Analysis ..... 5-3

5.1.4 Environmental and Community Benefit Analysis ..... 5-3

**Section 6 Project Identification and Prioritization..... 6-1**

6.1 Opportunities to Augment Local Water Supply..... 6-1

6.1.1 JDF Complex Project..... 6-1

6.1.2 Yettem-Button Ditch Flood Control Project ..... 6-3

6.1.3 Upper Detention/Retention Project ..... 6-3

6.2 Opportunities for Source Control..... 6-4

6.3 Projects that Reestablish Natural Water Drainage ..... 6-4

6.4 Opportunities to Develop, Restore, or Enhance Habitat..... 6-4

6.5 Opportunities to Capture, Clean, Store, and Use Storm Water ..... 6-5

6.5.1 Flood Management Benefits..... 6-5

6.5.2 Water Quality Benefits..... 6-9

6.6 Design Criteria and BMPs for New Development and Redevelopment..... 6-10

6.7 Project Prioritization using Quantitative Methods..... 6-10

6.8 Approach and Geospatial Analysis ..... 6-12

6.9 Summary of Benefits..... 6-12

**Section 7 Implementation Strategy and Schedule ..... 7-1**

7.1 Resources for Implementation ..... 7-1

7.2 Project and Program Implementation..... 7-9

7.3 Data Collection and Decision Support Tools..... 7-10

7.4 Implementation Strategy ..... 7-10

7.4.1 Timeline for Integration with Existing Plans ..... 7-11

7.4.2 Implementation Actions ..... 7-11

7.4.3 Responsible Parties..... 7-12

7.4.4 Project Tracking Procedures ..... 7-12

7.4.5 Planned Project Timeline..... 7-14

7.4.6 Adaptive Management Procedure ..... 7-16

7.4.7 Permitting ..... 7-18

7.5 Incorporation with IRWM Plan..... 7-19

**Section 8 Education, Outreach, and Public Participation..... 8-1**

8.1 Community participation..... 8-1

    8.1.1 Watershed-based Participation..... 8-1

    8.1.2 Site-Specific Participation ..... 8-2

    8.1.3 Other Communication Activities..... 8-2

8.2 Implementation of Technical and Policy Issues..... 8-3

8.3 Mechanisms to Facilitate Public Participation ..... 8-3

8.4 Project Design Engagement..... 8-4

8.5 Audience Identification ..... 8-4

8.6 Disadvantaged and Climate-Vulnerable Communities ..... 8-6

8.7 Identification of environmental injustice needs ..... 8-8

8.8 Schedule for public engagement and education ..... 8-9

**Section 9 References ..... 9-1**

**Section 10 Appendix A – SWRP Checklist and Self-Certification ..... 10-1**

**Tables**

Table 3-1 Land-Use Type Present in Watershed ..... 3-1

Table 3-2 Event Mean Concentration (EMC) by Land-Use Type from Stein et al. (2007)  
..... 3-2

Table 4-1. Domestic Water Services Providers in the Cottonwood Creek Watershed .4-3

Table 4-2. Groundwater Sustainability Agencies, Member Agencies..... 4-6

Table 4-5. Tulare County General Plan Policies Addressing Storm water ..... 4-11

Table 6-1 – Runoff Volume Captured and Infiltrated at the JDF Complex Project ..... 6-1

Table 6-2 – Estimated Annual Infiltration at the JDF Project Site..... 6-3

Table 6-3 – Estimated Annual Infiltration at the Yette-Button Ditch Flood Control  
Project Site..... 6-3

Table 6-4 – Estimated Annual Infiltration at the UDR Project Site..... 6-4

Table 6-5 – Acres of Habitat Restoration ..... 6-4

Table 6-6 – Runoff Volume Decrease for JDF Complex Project ..... 6-5

Table 6-7 – Peak Discharge Decrease Downstream from the JDF Complex Project... 6-6

Table 6-8 – Runoff Volume Decrease for Yette-Button Detention Project ..... 6-6

Table 6-9 – Peak Discharge Decrease Downstream from the Yette-Button Project ..... 6-7

Table 6-10 – Runoff Volume Decrease for UDR Project ..... 6-7

Table 6-11 Peak Discharge Decrease Downstream from UDR Project..... 6-8

Table 6-12 – Peak Discharge Decrease Downstream from the Robles Project ..... 6-8

Table 6-13 – Peak Discharge Decrease Robles Lomas Ranch Project at Watershed  
Outlet..... 6-9

Table 6-14 – Percent Load Reduction for JDF Project..... 6-9

Table 6-15 – Percent Load Reduction for Yettem Detention Project.....	6-10
Table 6-16 – Percent Load Reduction for Upper Detention/Retention Basin .....	6-10
Table 6-17 – Project Prioritization for Augmenting Local Water Supply .....	6-11
Table 6-18 – Project Prioritization for Restoring Habitat.....	6-11
Table 6-19 – Project Prioritization for Flood Management Peak Flow Reduction.....	6-11
Table 6-20 – Project Prioritization for Flood Management Peak Flow Reduction.....	6-12
Table 6-21 Overall Project Prioritization .....	6-12
Table 7-1 Cost Projection of the Plan Projects.....	7-2
Table 7- 2 Identified Project Funding Opportunities .....	7-2
Table 7-3 Cottonwood Creek State Funding Opportunities .....	7-3
Table 7-4 Federal Funding Opportunities.....	7-6
Table 7-5 Cottonwood Creek Storm Water Resource Plan Multi-Benefit Categories...	7-9
Table 7-6. Funding Contingent Plan Project Schedule.....	7-15
Table 7-7. Anticipated Cottonwood Creek Storm Water Resource Plan Implementation and Update Activities.....	7-17
Table 7-8 Identified Project Permits .....	7-18
Table 8-2 DAC/SDAC Communities in Cottonwood Creek .....	8-7
Table 8-3. Public Engagement and Education Schedule .....	8-9

## Figures

Figure 2-1 Cottonwood Creek Watershed.....	2-2
Figure 2-2 Cottonwood Creek Watershed Natural Habitat Boundaries .....	2-3
Figure 2-3 Cottonwood Creek Watershed Political Boundaries.....	2-4
Figure 2-4 Cottonwood Creek Watershed Service-Area Boundaries .....	2-5
Figure 4-1. Cottonwood Creek Groundwater Sustainability Agency Boundaries.....	4-5
Figure 4-2. Cottonwood Creek IRWMP Boundaries.....	4-9
Figure 5-1 Mechanistic Growth Model for Water Quality Analysis.....	5-2
Figure 6-1 Cottonwood Creek Project Locations.....	6-2
Figure 7-1. Iterative Cottonwood Creek Storm Water Resource Plan Amendment Process .....	7-13
Figure 8-2 Cottonwood Creek Disadvantaged Communities.....	8-5

# Acronyms and Abbreviations

---

AB	Assembly Bill
af	acre-feet
af/yr	acre-feet per year
BMP	Best Management Practices
CalEnviroScreen	California Communities Environmental Health Screening
cfs	cubic feet per second
Commission	Tulare County Flood Control Commission
County	County of Tulare
CSD	community services district
CWC	Community Water Center
DAC	disadvantaged community
District	Tulare County Flood Control District
DO	dissolved oxygen
DWR	California Department of Water Resources
EMC	event mean concentration
FEMA	Federal Emergency Management Agency
GSA	groundwater sustainability agency
GSP	groundwater sustainability plan
HEC-HMC	Hydrologic Engineering Center – Hydrologic Modeling System
ID	irrigation district
IRWM	integrated regional water management

---

JDF Complex	Juvenile Detention Facility – Cottonwood Creek Project
LCJA	Leadership Counsel for Justice and Accountability
MHI	median household income
mL	milliliter
NAHC	California Native American Heritage Commission
NGO	non-governmental organization
NPDES	National Pollutant Discharge Elimination System
Plan	Cottonwood Creek Storm Water Resources Plan
PUD	public utilities district
REC-1	water contact recreation
REC-2	non-contact water recreation
RMA	Tulare County Resource Management Agency
Robles	Robles Lomas Ranch Project
RWQCB	Regional Water Quality Control Board
§	section
SDAC	severely disadvantaged community
SGMA	Sustainable Groundwater Management Agency
SHE	Self-Help Enterprises
State Water Board	California State Water Resources Control Board
SWRP	Storm Water Resource Plan
sq mi	square mile
TMDL	Total Maximum Daily Load
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

USEPA	United States Environmental Protection Agency
UDR	Upper Detention/Retention Project
Watershed	Cottonwood Creek Watershed
Water Quality Control Plan	Water Quality Control Plan for the Tulare Lake Basin
WC	Water Code
WD	Water District
Yettem Project	Yettem-Button Ditch Flood Control Project



# Section 1

## Plan Objectives

---

### 1.1 INTRODUCTION

Water Code Section 10563 (as amended by Senate Bill 985) requires public agencies to develop a storm water resource plan (SWRP) as a condition of receiving grant funds from a bond (approved after January 2014) for storm water and dry weather runoff capture projects. The intent of Senate Bill 985 is to encourage the use of storm water and dry weather runoff as a resource to improve water quality, reduce localized flooding, and increase water supplies for beneficial uses and the environment.

Proposition 1 (Assembly Bill 1471) authorized \$7.545 billion in general obligation bonds for water projects, of which, \$200 million will be awarded to multi-benefit storm water management projects. Tulare County has applied for a Proposition 1 Storm Water Program grant to assist with construction of the Juvenile Detention Facility – Cottonwood Creek Flood Control (JDF Complex) Project, located in the Cottonwood Creek Watershed (Watershed). This necessitated development of a SWRP for the Watershed, pursuant to the requirements of Water Code Section 10563.

### 1.2 OBJECTIVES

The Cottonwood Creek Watershed Storm Water Resource Plan (Plan) was developed to comply with Water Code Section 10562 and guidance developed by the California State Water Resources Control Board (State Water Board) for development of SWRPs. The objective of the Plan is to identify multi-benefit storm water projects to improve water quality, reduce localized flooding, and increase supplies for beneficial uses and the environment in the Cottonwood Creek Watershed.

### 1.3 PLAN ORGANIZATION

This Plan is divided into nine sections:

**Section 1 Plan Objectives** provides an overview of Plan objectives and organization.

**Section 2 Watershed Identification** identifies the boundaries of the Cottonwood Creek Watershed, water quality priorities, and surface and groundwater resources in the Watershed.

**Section 3 Water Quality Compliance** describes the land-use activities, total maximum daily loads (TMDL) and National Pollutant Discharge Elimination System (NPDES) compliance, and waste-discharge permit compliance.

**Section 4 Organization, Coordination, and Collaboration** describes the coordination and outreach activities completed by Tulare County.

**Section 5 Quantitative Methods** discusses the quantitative methods used to determine the benefits for the projects identified in the Plan.

**Section 6 Project Identification and Prioritization** discusses the projects included in the Plan and the qualitative analysis results of the identified benefits.

**Section 7 Implementation Strategy and Schedule** describes the resources required for project and Plan implementation; including data collection and decision support, and incorporation with integrated regional water management (IRWM) planning efforts.

**Section 8 Education, Outreach, and Public Participation** discusses community participation in the Plan and a schedule for public engagement.

**Section 9 References** lists the references used in completing the Plan.

DRAFT

## Section 2

# Watershed Identification

---

### 2.1 WATERSHEDS AND SUBWATERSHEDS

The Watershed is shown on Figure 2-1, including subbasins. The Watershed extent is generally based on US Geologic Survey boundaries. However, because of the extensive modification of drainage patterns that has occurred in the valley portion of the Watershed, it was necessary to determine the internal subbasins using ArcGIS and the GEO-HMS program from the US Army Corps of Engineers (USACE). This program uses existing topography and drainage channels to determine subbasin boundaries.

Particular attention was given to the effects of the Friant-Kern and other canals on the drainage patterns in the Watershed. The upstream, or foothill portion, of the Watershed is 95 percent natural habitat with the delineations shown in Figure 2-2. The downstream, valley, or agricultural lowlands portions of the Watershed is 14 percent natural habitat with the delineations shown in Figure 2-2.

The Cottonwood Creek Watershed, and the adjacent Sand Creek Watershed to the north, are two of the few Tulare County watersheds that originate in the foothills of the Sierra Nevada but are not controlled like major rivers such as the neighboring Kaweah/St. Johns River. Sand Creek is included in the analysis because of the potential for flows from Sand Creek to enter Cottonwood Creek via overflow into the Alta East Branch Canal.

### 2.2 POLITICAL AND SERVICE-AREA BOUNDARIES

The political boundaries, service-area boundaries of water, wastewater, and land use agencies in the Watershed are shown in Figures 2-3 and 2-4.

The upper portion of the Watershed (89.65 square miles) is comprised of foothills with elevations ranging from 500 to 3,000 feet, and a varied topography of mostly gently rolling hills with some rougher terrain of steep hills in the upper reaches of the Watershed. Numerous small streams traverse this area and join to form Cottonwood Creek before entering the valley floor. The main Plan approach to that part of the watershed is to maintain cleanliness and flow of existing drainage patterns, except for the potential to develop detention to reduce flows entering the lower portion of the Watershed.

The lower portion of the Watershed, upstream from Sand Creek (38.31 square miles), is comprised of level lowlands, characteristic of the Central Valley. Elevations range from 200 to 500 feet above sea level. Since most of the Watershed's population resides in this region, the Plan focuses on potential projects in this area. Sand Creek and other tributary areas downstream from Sand Creek add an additional 172 square miles.

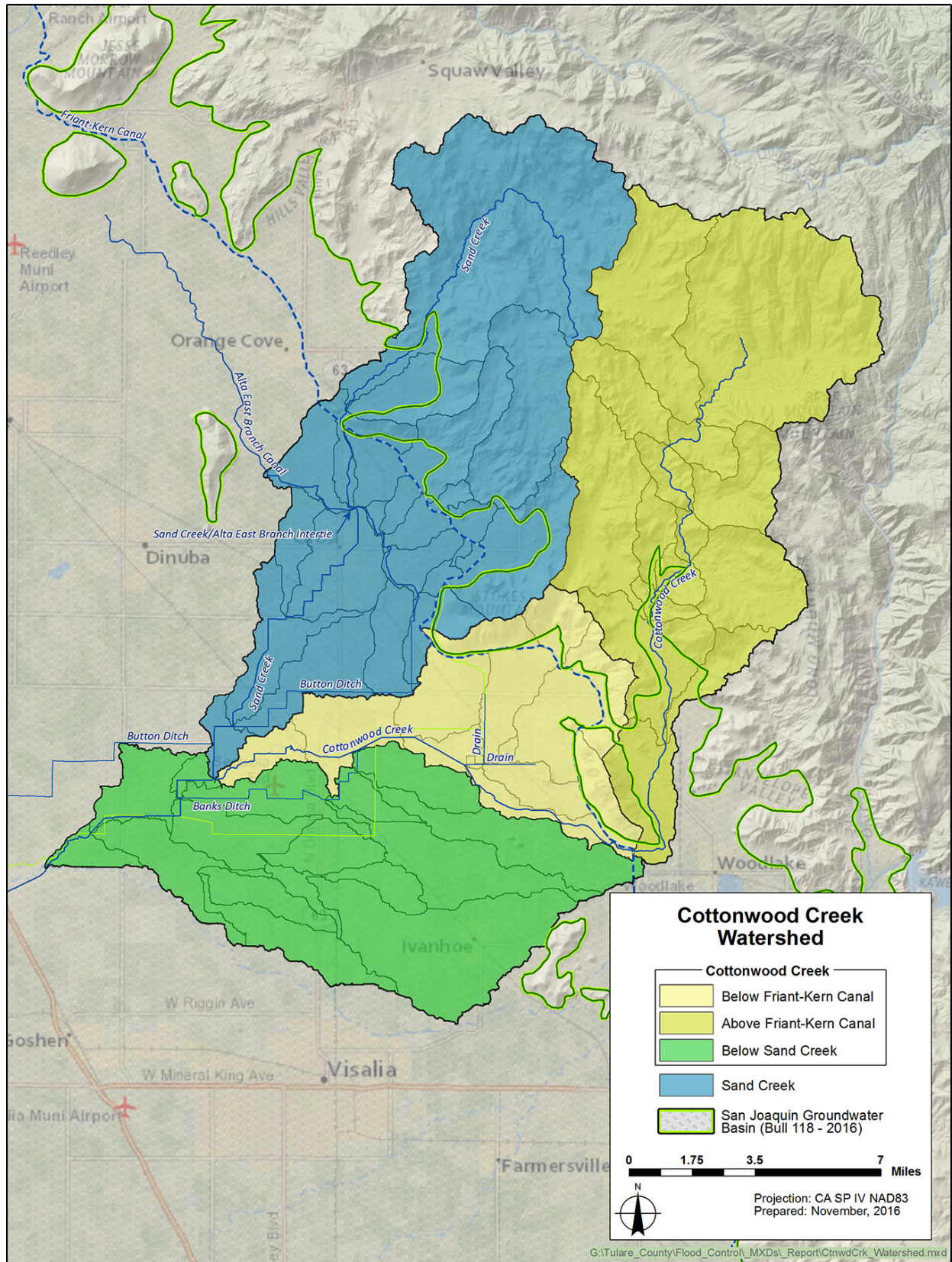


Figure 2-1 Cottonwood Creek Watershed



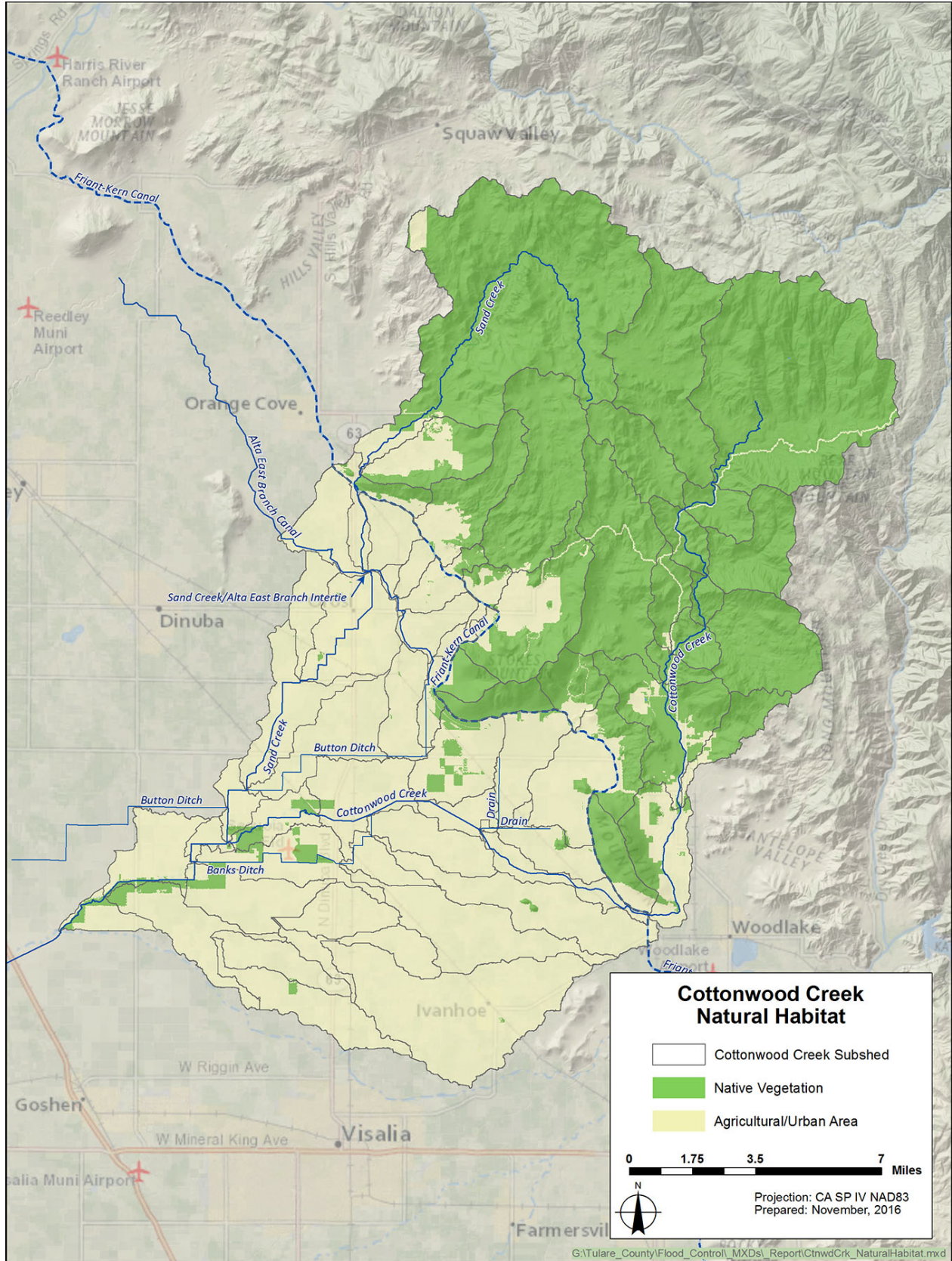


Figure 2-2 Cottonwood Creek Watershed Natural Habitat Boundaries



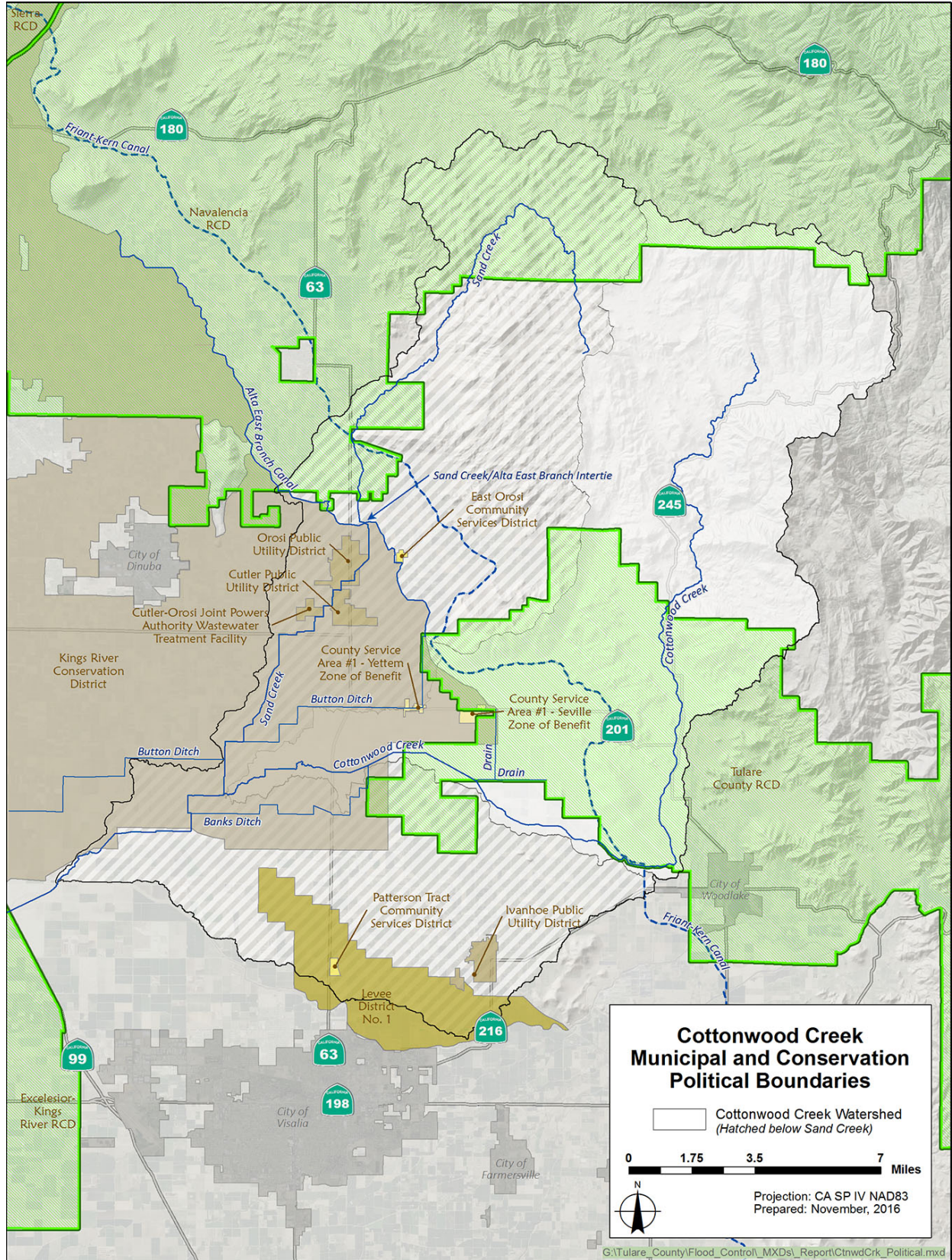


Figure 2-3 Cottonwood Creek Watershed Political Boundaries



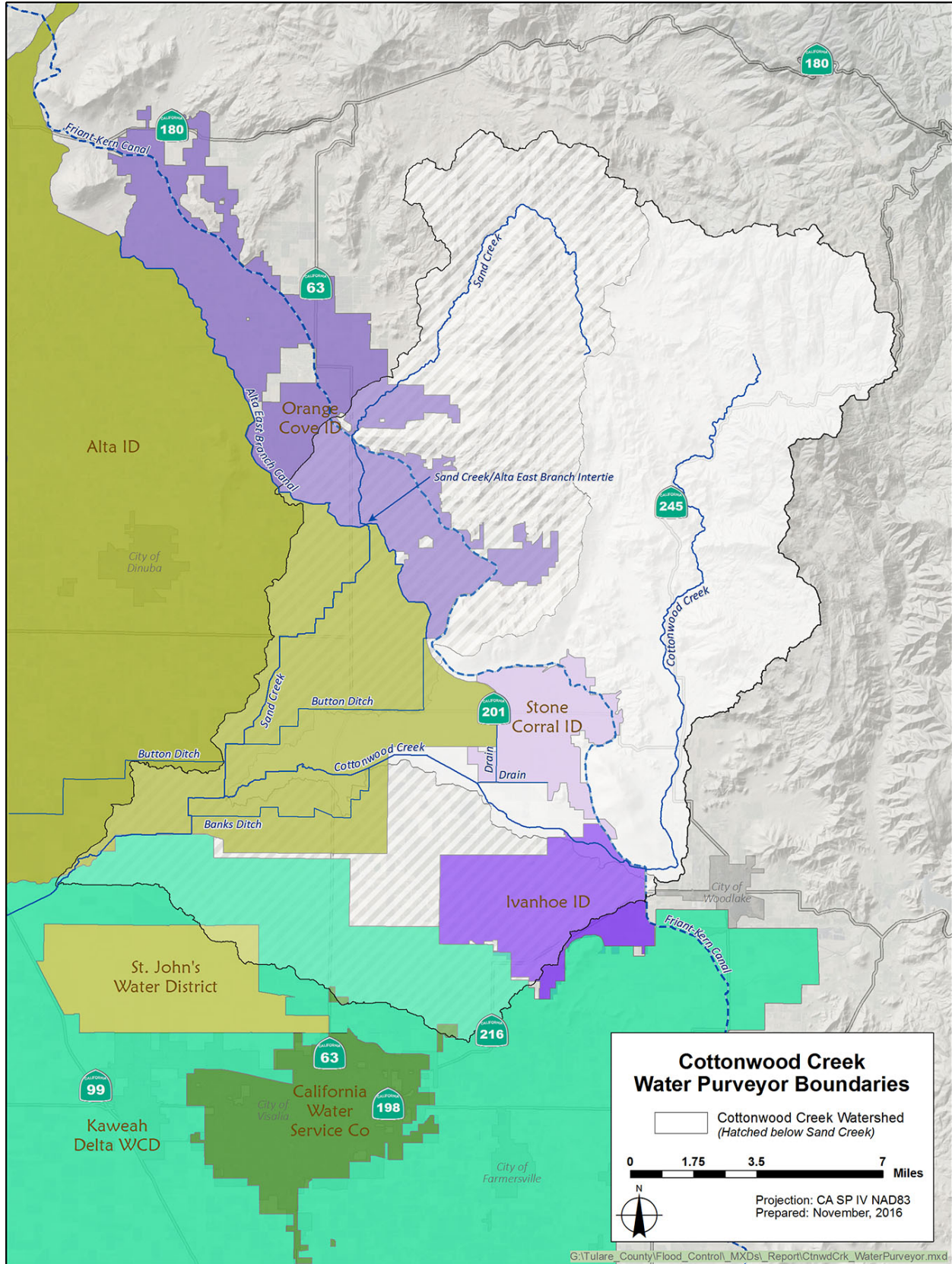


Figure 2-4 Cottonwood Creek Watershed Service-Area Boundaries

### 2.3 WATER QUALITY PRIORITIES

The Watershed is not currently subject to any TMDLs, nor does it contribute to any receiving water bodies on the State Clean Water Act Section 303(d) impaired water body list. However, in order to maintain a standard of surface water quality in the Tulare Lake Basin, a set of specific water quality objectives were outlined by the California Regional Water Quality Control Board in the Water Quality Control Plan for the Tulare Lake Basin (Second Edition) (Water Quality Control Plan). These objectives are outlined in the Water Quality Control Plan as follows:

**Ammonia:** Waters shall not contain un-ionized ammonia in amounts which adversely affect beneficial uses. In no case shall the discharge of wastes cause concentrations of un-ionized ammonia (NH<sub>3</sub>) to exceed 0.025 mg/L (as N) in receiving waters.

**Bacteria:** In waters designated REC-1, the fecal coliform concentration—based on a minimum of not less than five samples for any 30-day period—shall not exceed a geometric mean of 200 per 100 mL, nor shall more than 10 percent of the total number of samples taken during any 30-day period exceed 400 per 100 mL.

**Biostimulatory Substances:** Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

**Chemical Constituents:** Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.

**Color:** Waters shall be free of discoloration that causes nuisance or adversely affects beneficial uses.

**Dissolved Oxygen:** Waste discharges shall not cause the monthly median dissolved oxygen concentrations (DO)—in the main water mass at centroid of flow of streams and above the thermocline in lakes—to fall below 85 percent of saturation concentration, and the 95 percentile concentration to fall below 75 percent of saturation concentration.

**Floating Material:** Waters shall not contain floating material, including, but not limited to: solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.

**Oil and Grease:** Waters shall not contain oils, greases, waxes, or other materials in concentrations that: cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

**pH:** The pH of water shall not be depressed below 6.5, raised above 8.3, or changed at any time more than 0.3 units from normal ambient pH.



**Pesticides:** Waters shall not contain pesticides in concentrations that adversely affect beneficial uses.

**Radioactivity:** Radionuclides shall not be present in concentrations that are harmful to human, plant, animal, or aquatic life; or which result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

**Salinity:** Waters shall be maintained as close to natural concentrations of dissolved matter as is reasonable, considering careful use of the water resources.

**Sediment:** The suspended sediment load and suspended sediment discharge rate of waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

**Settleable Material:** Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

**Tastes and Odors:** Waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance, adversely affect beneficial uses, or impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to domestic or municipal water supplies.

## 2.4 SURFACE WATER AND GROUNDWATER RESOURCES

*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);*

Surface-water supplies tributary to or imported for use within the Watershed are inadequate to support the present level of agricultural and other development. Therefore, ground water resources in the valley portion are being mined to provide additional water to supply demand.

The Kaweah/St. Johns River, which drains from the west face of the Sierra Nevada Mountains, is of excellent quality and provides the bulk of the surface water supply from areas nearby the Tulare Lake Basin. Imported surface supplies—which are also of good quality—enter the Watershed from the Friant-Kern Canal. Adequate control to protect the quality of these resources is essential, as imported surface water supplies contribute nearly half the increase of salts occurring within the Watershed.

Buena Vista Lake and Tulare Lake, natural depressions on the valley floor, receive floodwater from Cottonwood Creek during times of heavy runoff. During extremely heavy runoff, flood flows may leave the Tulare Lake Basin through the Fresno Slough.

## Section 3

# Water Quality Compliance

---

### 3.1 LAND USE AND ACTIVITIES

The majority of the land-use type within the Watershed consists of agricultural and open area. The open land use consists of a combination of idle, native riparian vegetation, as well as urban vacant areas. The agricultural land use, which comprises approximately 43 percent of the Watershed, consists of row crops, orchards, dairies, and grazing lands. Combined urban areas of commercial, residential, and industrial use comprise a little over 2 percent of the total area within the watershed. Table 3-1 shows land-use type present within the watershed.

**Table 3-1**  
**Land-Use Type Present in Watershed**

Land-Use Type	Total Acreage Present in Watershed	Percentage of Land-Use Type in Watershed
Open	104,022	54.01%
Agricultural	83,370	43.29%
Residential	3,395	1.76%
Open Water	1,270	0.66%
Industrial	346	0.18%
Commercial	191	0.10%
<b>Total</b>	<b>192,595</b>	<b>100%</b>

Stein *et al.* (2007) presents a study of event mean concentration (EMC), or the average runoff concentration over a particular storm, for land-use types and indicator contaminants in Los Angeles County. Results of this study are applicable to the study area because water quality is discussed from the perspective of land use.

As shown on Table 2 of Stein *et al.* (2007), included herein as Table 3-2, bacteria presence in storm-water runoff from agricultural sites is significantly higher than from other land-use types. Due to the large agricultural land use in the study area, it is expected that water quality benefits of the proposed projects will have the greatest impact on bacteria loading to Cottonwood Creek.

**Table 3-2  
Event Mean Concentration (EMC) by Land-Use Type from Stein et al. (2007)**

Land-Use Type (Number of Sites Sampled)	Mean EMC						
	TSS	Total Copper	Total Lead	Total Zinc	Total PAHs	<i>E. coli</i>	Entero- cocci
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(ng/L)	(MPN/ 100mL)	(MPN/ 100mL)
High-Density Residential (4)	77.4	26.0	<b>28.4</b>	207.7	4.4E+03	8.2E+03	2.7E+04
Low-Density Residential (3)	105.0	29.9	6.0	87.1	1.4E+03	3.0E+04	5.5E+04
Commercial (4)	49.6	38.1	20.4	362.2	1.2E+03	1.1E+04	7.7E+04
Industrial (4)	92.2	<b>70.3</b>	<b>24.1</b>	<b>599.1</b>	1.5E+03	3.8E+03	2.1E+04
Agriculture (1)	112.0	32.6	7.8	242.8	8.6E+02	4.0E+04	<b>1.2E+05</b>
Recreational (1)	<b>530.0</b>	38.0	16.3	131.5	4.6E+02	<b>5.3E+05</b>	<b>1.4E+05</b>
Transportation (2)	14.5	9.8	3.3	92.6	4.8E+02	1.4E+03	8.9E+03
Open Space (2)	134.0	7.6	1.2	23.2	NA	5.4E+03	2.1E+04

Key:

*E. coli* = Escherichia coli

EMC = Event Mean Concentration

Notes: Mean EMCs of TSS, total copper, total lead, total zinc, total PAHs, *E. coli*, and enterococci at land-use sites in the Los Angeles, California region. Bolded values indicate significant differences among land-use types ( $p < 0.001 - 0.03$ ).

NA = not applicable

PAH = Polycyclic Aromatic Hydrocarbons

TSS = Total Suspended Solids

### 3.2 TMDL AND NPDES COMPLIANCE

The Watershed is not currently subject to any US Environmental Protection Agency (USEPA) TMDL or NPDES permit requirements. Although there are no specific TMDL or NPDES permit requirements, the Water Quality Control Plan provides specific water quality objectives in order to determine potential impacts to beneficial uses of water. While specific NPDES compliance is not mandated, Tulare County “shall continue to support the State in monitoring and enforcing provisions to control non-point source water pollution contained in the USEPA NPDES program as implemented by the Water Quality Control Board” (Draft Program Environmental Impact Report, 2014). The proposed projects will result in a mitigated pollutant load due to detention of runoff.

### 3.3 WASTE-DISCHARGE PERMIT COMPLIANCE

The proposed projects are primarily for flood control purposes and do not involve any kind of waste discharge. While specific Federal NPDES permits are not applicable for the Watershed, the Water Quality Control Plan outlines requirements for waste discharges within the set water quality objectives. The Water Quality Control Plan states that:

“Effluent limits may be established to reflect what is necessary to achieve water quality objectives, or, if more stringent, will reflect the technology-based standard for the type of discharge being regulated. The objectives in this plan do not require improvement over

naturally occurring background concentrations. Water quality objectives contained in this plan, and any State or Federally promulgated objectives applicable to the Tulare Lake Basin, apply to the main water mass” (Regional Water Quality Control Board, 2015).

Additionally, the Water Quality Control Plan notes that waste disposal from land developments and farms—which comprise the majority of the land-use activities in the Watershed—must conform to the State Water Board’s Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems. New developments must consider collection systems and should connect to an existing collection and treatment system when possible.

DRAFT

---

## Section 4

# Organization, Coordination, and Collaboration

---

This section describes includes processes and activities that were used to facilitate stakeholder and public participation and communication during development of the Plan. Throughout Plan development, Tulare County coordinated and collaborated with a number of local agencies and organizations, including domestic and agricultural water providers, non-governmental organizations (NGO), IRWM groups, and regulatory agencies. The County also solicited broad public and stakeholder input, which used to identify projects and inform Plan development.

### 4.1 LOCAL AGENCIES

*Local agencies and nongovernmental organizations were consulted in Plan development.*

The Plan was developed by Tulare County's Resource Management Agency (RMA), in coordination with local agencies that benefit from projects that use storm water as a resource. A brief description of the County and other local agencies is provided below.

#### 4.1.1 Tulare County

Centrally located within the State, Tulare County is situated in a geographically diverse region. The County is an area of 4,863 sq. mi. where Sierra Nevada mountain peaks rise to more than 14,000 feet in its eastern half. Meanwhile, the extensively cultivated and very fertile valley floor in the western half, has allowed Tulare County to become the top producer of agricultural commodities in the United States. The County is growing, with a current population of 451,977 residents.

The Cottonwood Creek Watershed is located wholly within the County and includes: the unincorporated communities of Cutler, East Orosi, Ivanhoe, and Orosi; the hamlets of Monson, Seville, and Yetttem; and the Patterson Tract, an area viewed as a neighborhood within the Urban Area Boundaries of the City of Visalia<sup>1</sup>. Within the Watershed boundaries, the County is responsible for land-use planning and oversees compliance with the municipal separate storm sewer systems storm water permit in urbanized unincorporated areas. The County also maintains public storm water infrastructure in the communities of Orosi and Cutler. Agricultural storm water discharges are regulated separately by the State Water Board.

---

<sup>1</sup> 2030 Tulare County General Plan, SB 244 Disadvantaged Communities Assessment Report (2015)

The County is governed by the five-member Board of Supervisors, with each supervisor representing one of the County's five districts. The RMA was founded in 1996, when the County's Public Works, Planning, and Community Development/Redevelopment Divisions were merged. Today, there are three branches of the RMA which serve the unincorporated communities of the County: Public Works, Fiscal Services, and Planning and Economic Development.

The County Board of Supervisors act as the District's governing board and is advised by the Tulare County Flood Control Commission (Commission), a seven-member panel appointed by the Board. RMA staff led development of the Plan under direction of the Tulare County Flood Control District (District). The County Board of Supervisors serve as the District's governing board and is advised by the Tulare County Flood Control Commission (Commission), a seven-member panel appointed by the Board. Key decisions regarding the Plan were discussed at regularly scheduled, public meetings of the District and the Commission. These meetings also served as a venue for the members of the public to provide input on the Plan and its identified projects.

#### **4.1.2 Other Local Agencies**

The following entries describe other local agencies in the Cottonwood Creek Watershed and their applicable contributions to this plan.

##### **4.1.2.1 Water Service Providers**

There are a multitude of agencies in the Watershed that provide domestic and irrigation water supply and wastewater services. These include the County, water districts, special districts, and for-profit companies. Table 4-1 provides a list of domestic water suppliers and waste water services. Irrigation water is provided by Alta Irrigation District (ID), Orange Cove ID, Stone Corral ID, Ivanhoe ID, and St. Johns Water District.

**Table 4-1. Domestic Water Services Providers in the Cottonwood Creek Watershed**

Agency	Services Provided	Communities Served in the Watershed
California Water Service, Visalia District	Water	Patterson Tract
Tulare County <sup>1</sup>	Water and wastewater	Yettem <sup>4</sup> , Seville
Cutler-Orosi Joint Powers Wastewater Authority <sup>2</sup>	Wastewater	Cutler, Orosi, East Orosi, Yettem, Seville
Cutler PUD	Water and wastewater	Cutler
East Orosi CSD	Water and wastewater	East Orosi
Ivanhoe PUD	Water and wastewater	Ivanhoe
Orosi PUD	Water and wastewater	Orosi
Patterson Tract CSD <sup>3</sup>	Water	Patterson Tract

Key:

CSA = county service area

CSD = community services district

PUD = public utilities district

<sup>1</sup> The Tulare County Service Area #1 serves multiple zones of benefit, including the Yettem Zone of Benefits and Seville Zone of Benefit.

<sup>2</sup> The Cutler-Orosi Joint Powers Wastewater Authority was formed in March 1980 under an agreement between the Cutler PUD and Orosi PUD for the purposes of operating a wastewater treatment and disposal facility.

<sup>3</sup> Patterson Tract Community Services District only serves a portion of the census-designated place Patterson Tract. Patterson Tract Community Services District serves the east side of Road 124, Lincoln Road, and Grandview Road from Avenue 324 to Avenue 328. The remaining area of Patterson Tract is served by other water service providers or private wells.

<sup>4</sup> Tulare County provides water and sewer service to Yettem per receivership order of the Superior Court of the State of California, Tulare County, June 11, 2009.

The County consulted local water and wastewater service providers at two public/stakeholder meetings held in July and September of 2017. County staff presented information and solicited input on the Plan and its projects. Feedback collected at the workshops informed development of the Plan. Local water providers also participated in development of the Plan through locally formed Groundwater Sustainability Agencies (GSA) and IRWM groups, described below.

#### **4.1.2.2 Flood Management Agencies**

Flood management in the Watershed is overseen by the District. District directed development of the Plan through RMA, with advice by the Commission. The District is an independent special district with powers established under the Tulare County Flood District Act of 1969 (Cal. Stat. 2218; Cal. Water Code App. 111-1 esq.). Duties of the District include: planning, designing, constructing, and maintaining flood control projects within the District; coordinating with Federal and State flood control agencies; maintaining channels, pumps, and ponding basins; administering the FEMA National Flood Insurance Program in Tulare County, and providing flood zone information and performing flood control investigations.

---

### **4.1.2.3 Groundwater Sustainability Agencies**

The Sustainable Groundwater Management Act of 2014 (SGMA) requires governments and water agencies in high- and medium-priority groundwater basins—as defined by the California Department of Water Resources (DWR)—to form locally controlled GSAs and to develop groundwater sustainability plans (GSP). GSAs must bring groundwater basins into sustainability within 20 years of implementing their GSPs.

The Cottonwood Creek Watershed overlies two subbasins of the larger San Joaquin Valley Basin: the Kaweah Subbasin (DWR Bulletin 118, 5-022.11) and the Kings Subbasin (DWR Bulletin 118, 5-22.08). Pursuant to the requirements of SGMA, three GSAs have formed in the Kaweah Subbasin and seven GSAs have formed in the Kings Subbasin. As shown in Figure 4-1, three GSAs have boundaries in the Watershed: the Greater Kaweah GSA, East Kaweah GSA, and Kings River GSA. One GSA—the Mid-Kaweah GSA—can receive a groundwater recharge benefit via Plan projects. Table 4-2 lists member agencies for each GSA.

DRAFT



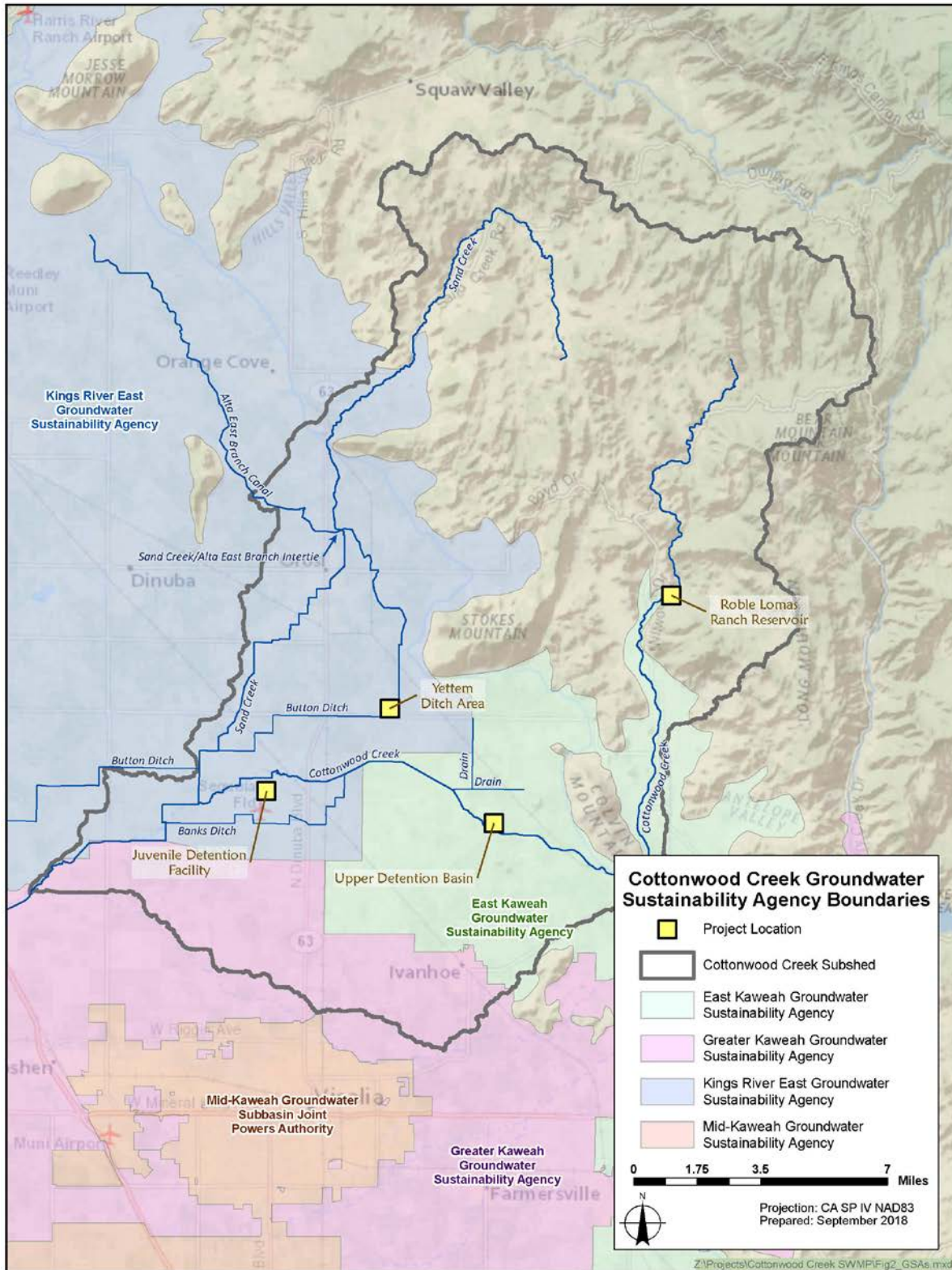


Figure 4-1. Cottonwood Creek Groundwater Sustainability Agency Boundaries

**Table 4-2. Groundwater Sustainability Agencies, Member Agencies**

GSA	GSA Member Agencies
Greater Kaweah GSA	Tulare County, Kings County WD, Lakeside Irrigation Water District, St. Johns Water District, California Water Service Company
East Kaweah GSA	Tulare County, City of Lindsay, Exeter ID, Lindmore ID, Stone Corral ID, Wutchumna Water Company, Ivanhoe ID, Lindsay-Strathmore ID, Sentinel Butte Mutual Water Company
Kings River East GSA	Tulare County, City of Dinuba, City of Orange Cove, City of Reedley, Alta ID, Hills Valley ID, Kings River WD, Orange Cove ID, Tri-Valley WD, County of Fresno, Cutler PUD, East Orosi PUD, London CSD, Orosi PUD, Sultana
Mid-Kaweah GSA	City of Tulare, City of Visalia, Tulare ID

Key:  
CSD = community services district  
ID = irrigation district  
PUD = public utilities district  
WD = water district

County staff presented the Plan and storm water projects at regularly scheduled Kaweah Subbasin Management Team and Kings River East GSA public meetings. Feedback provided by the GSA’s representatives at those meetings was incorporated into the Plan. The storm water projects identified in the Plan all provide an additional benefit of recharging the local groundwater basins. Therefore, the County will coordinate closely with Greater Kaweah GSA, East Kaweah GSA, and Kings River East GSA during project implementation and monitoring.

**4.2 NONGOVERNMENTAL ORGANIZATIONS**

*Plan includes identification of nonprofit organizations working on storm water and dry weather resource planning or management in the watershed.*

Tulare County partnered with NGOs to provide assistance in effectively engaging disadvantaged and rural communities in the Watershed. This included partnering with Self-Help Enterprises (SHE) to plan, promote, and facilitate Plan community meetings. SHE is a nonprofit community-development organization whose mission is to work with low-income families to build and sustain healthy homes and communities. SHE has a long history of working with public agencies and community members in the Watershed on a variety of water issues and projects.

**4.3 INTEGRATED REGIONAL WATER MANAGEMENT GROUPS**

*Plan includes description of the existing integrated regional water management group(s) implementing an integrated regional water management plan.*

The Cottonwood Creek Watershed is covered by two IRWM groups: the Kings Basin IRWM group and the Kaweah River Basin IRWM group. These IRWM planning areas

are illustrated in Figure 4-2. This section describes each of these IRWM groups and how they were consulted in the development of the Plan.

The final Plan will be incorporated as appendices to the updated Kings Basin IRWM Plan and Kaweah River Basin IRWM Plan. Boundaries of the Kings and Kaweah River Basin IRWM Plans follow, in part, the meander of Cottonwood Creek. As such, the Plan watershed overlaps portions of both IRWM boundaries. This Plan will be submitted to the Kings and Kaweah River Basin IRWM Plans for incorporation. This overlap section of the two basins stems from a request of the Kings County Water District that all of its service area be included in the Kings Basin IRWM area<sup>2</sup>. The Kings County Water District overlays most of the Lakeside Irrigation District, whose surface water supply portfolio includes the Kaweah River, a system that collects runoff from the Cottonwood Creek watershed.

#### **4.3.1 Kings Basin IRWM Group**

The Kings Basin IRWM group is managed by the Upper Kings Basin Integrated Water Management Authority (commonly known as the Kings Basin Water Authority). The Kings Basin Water Authority's IRWM region consists of the geographic areas under the jurisdiction of Water Authority members and includes the majority of the Kings Subbasin. The total land area of the IRWM region is 610,000 acres, with an irrigated land area of about 480,000 acres<sup>3</sup>. This IRWM region also includes regional and smaller local water agencies spanning parts of three counties: Fresno, Kings, and Tulare. The urban spheres of influence and current city boundaries are important because the water districts and urban entities need to work together to ensure compatibility and consistency between the prevailing land-use and water-supply plans for the area. The IRWM region includes most of the Kings Subbasin and small portions of the Delta-Mendota, Kaweah, and Tulare Lake Subbasins.

Tulare County consulted closely with the Kings Basin Water Authority during development of the Plan, and discussed the Plan at IRWM plan development meetings. During these meetings, SHE and consultant staff discussed both the Plan and IRWM plans and solicited public input on identifying multi-benefit storm water projects.

#### **4.3.2 Kaweah River Basin IRWM Group**

The Kaweah River Basin IRWM group was established in 2007 as a collaborative effort to manage all aspects of water resources in the Kaweah River Basin Region<sup>4</sup>. Agencies

---

<sup>2</sup> Email correspondence, Soua Lee, Associate Resource Analyst, Kings River Conservation District, 9/24/18

<sup>3</sup> Kings Basin Water Authority website: <http://www.kingsbasinauthority.org/about-us/>

<sup>4</sup> Kaweah Delta Water Conservation District website: <http://www.kdwcd.com/water-resources/>

and stakeholders involved in the group include the Kaweah Delta Water Conservation District, Tulare County, Exeter ID, Lakeside ID, Tulare ID; and the cities of Visalia, Tulare, Lindsay, and Farmersville. The objectives of the IRWM group include groundwater management, water supply, water quality, flood control, and ecosystem restoration.

The Kaweah River Basin IRWM group is currently in the process of updating its IRWM plan. While the IRWM Plan is being updated, the group was awarded funding in 2014 to allow the participating agencies to continue meeting monthly to oversee the update. The updated IRWM plan is anticipated to be adopted in Summer 2019. Tulare County is a signatory member of the Kaweah River Basin IRWM group and has discussed the Plan at public IRWM meetings. The County will continue to leverage the IRWM plan process to educate and engage stakeholders about the Plan and to coordinate Plan implementation activities.

DRAFT



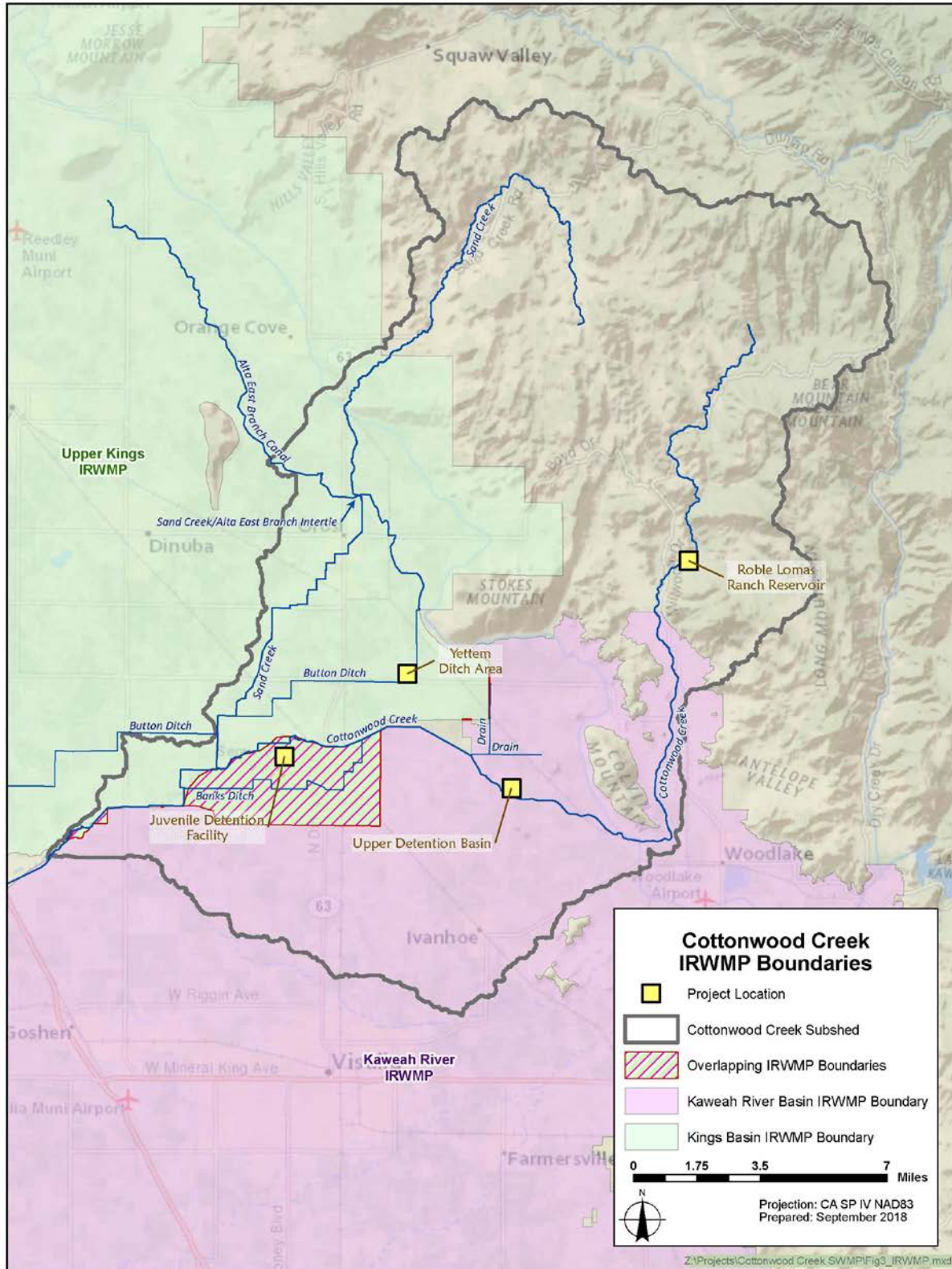


Figure 4-2. Cottonwood Creek IRWMP Boundaries

---

## 4.4 REGULATORY AGENCIES

The County developed the Plan in consultation with the State Water Board and in consideration of other local, regional, and statewide planning documents. The County may coordinate with additional regulatory and permitting agencies during Plan implementation, to obtain the necessary permits and approvals for project construction.

### 4.4.1 State Water Resources Control Board

The State Water Board was the primary state agency consulted during development of the Plan. Tulare County staff met with the State Water Board in March 2016 to discuss the proposed Plan and County's intention to apply for Proposition 1 Storm Water Grant Program funds.

On July 7, 2016, the County submitted an application to the Storm Water Grant Program for funding of the Cottonwood Creek Storm Water Retention Project (later renamed the Juvenile Detention Facility–Cottonwood Creek Project). The County was notified on August 28, 2018 that \$1,204,310 in grant funding was conditionally awarded to the project. The County will continue to keep the State Water Board informed of the status of the Plan and its project implementation milestones.

### 4.4.2 Relationship with Other Planning Documents

The Plan was developed in consideration of local, regional, and statewide planning efforts around storm water and integrated water management. Tulare County's General Plan was last updated in 2012 and provides a comprehensive, long-term plan for future land use and development in the County through the year 2030. Table 4-5 provides a list of General Plan policies that address storm water. The Plan was also developed in accordance with the community plans for Cutler-Orosi, East Orosi, and Ivanhoe; and the hamlet plans for Monson, Seville, and Yettem. The Plan and four projects address the County's objectives to increase storm water retention/detention, implement multipurpose storm water/flood control projects, and to improve storm water infrastructure in unincorporated communities and hamlets.

Other relevant regional and local planning documents include IRWM plans (described in Section 4.3), flood control plans, agricultural water plans, urban water management plans, climate action plans, groundwater management plans, and groundwater sustainability plans, once they are developed. Where appropriate, these plans were consulted to develop information for the Plan, identify key stakeholders, and to identify regional water quantity and quality priorities.

Public outreach and engagement activities also took into consideration recommendations outlined in the 2017 Disadvantaged Communities Infrastructure and Planning Policy Study developed by Tulare County, the Leadership Council for Justice and Accountability, and SHE.

**Table 4-5. Tulare County General Plan Policies Addressing Storm water**

General Plan Policy	General Plan Policy Number
<b>Multi-Purpose Flood Control Measures:</b> The County shall encourage multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the County's streams, creeks, and lakes. Where appropriate, the County shall also encourage the use of flood and/or storm water retention facilities for use as groundwater recharge facilities.	HS-5.4
<b>Storm water Management Plans:</b> The County shall oversee, as per Community Plan Content Table PF-2.1 and Specific Plan Content, Hamlet Plans Policy PF-3.3, and Table LU-4.3, the preparation and adoption of storm water management plans for communities and hamlets to reduce flood risk, protect soils from erosion, control storm water, and minimize impacts on existing drainage facilities, and develop funding mechanisms as a part of the Community Plan and Hamlet Plan process.	PFS-4.1
<b>Site Improvements:</b> The County shall ensure that new development in UDBs, UABs, Community Plans, Hamlet Plans, Planned Communities, Corridor Areas, and Area Plans includes adequate storm water drainage systems. This includes adequate capture, transport, and detention/retention of storm water.	PFS-4.2
<b>Development Requirements:</b> The County shall encourage project designs that minimize drainage concentrations and impervious coverage, avoid floodplain areas, and where feasible, provide a natural watercourse appearance.	PFS-4.3
<b>Storm water Retention Facilities:</b> The County shall require on-site detention/retention facilities and velocity reducers when necessary to maintain existing (pre-development) storm flows and velocities in natural drainage systems. The County shall encourage the multi-purpose design of these facilities to aid in active groundwater recharge	PFS-4.4
<b>Detention/Retention Basins Design:</b> The County shall require that storm water detention/retention basins be visually unobtrusive and provide a secondary use, such as recreation, when feasible.	PFS-4.5
<b>Agency Coordination:</b> The County shall work with the Army Corps of Engineers and other appropriate agencies to develop storm water detention/retention facilities and recharge facilities that enhance flood protection and improve groundwater recharge.	PFS-4.6
<b>NPDES Enforcement:</b> The County shall continue to monitor and enforce provisions to control non-point source water pollution contained in the U.S. Environmental Protection Agency National Pollution Discharge Elimination System (NPDES) program.	PFS-4.7
<b>Disadvantaged Legacy Communities:</b> Promote the extension, construction or upgrade of public water, sewer, storm water drainage and structural fire protection services to identified Disadvantaged Legacy Communities as depicted in Appendix D - Disadvantaged Unincorporated Communities Assessment Report where feasible, and identify funding mechanisms that could make the extension, construction or upgrade of services and facilities to these communities and hamlets financially feasible.	LU 7.21

## 4.5 PUBLIC OUTREACH AND ENGAGEMENT

*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.*

*Plan includes identification and discussion of public engagement efforts and community participation in Plan development.*

This section describes how community participation was solicited during Plan development, including: (1) public education and public participation opportunities in consideration of major technical and policy issues related to the development and implementation of the Plan; (2) the mechanisms, processes, and milestones that were used to facilitate public participation and communication during development of the Plan; (3) the mechanisms to engage communities in project design and implementation; (4) the strategies used to engage disadvantaged and climate-vulnerable communities, and California Native American tribes within the Plan boundaries, with ongoing tracking of their involvement in the planning process. Activities to further engage stakeholders and the public during Plan planning and project implementation are described in Section 8.

### 4.5.1 Community Participation

*Community participation was provided for in Plan development.*

Tulare County and partner agencies—such as SHE—implemented the following strategies to provide opportunities for stakeholders and the general public to participate in the development of the Plan:

- *Webpage* (<http://www.tularecounty.ca.gov/swrp>): The County maintains a page on its main website with information on the Plan. Information posted on this webpage includes a description of the Plan and projects, upcoming workshops and public meetings, available reports, and other materials. The webpage also includes an electronic form for stakeholders and members of the public to submit comments regarding the Plan and its projects.
- *Public meetings*: During development of the Plan, County staff provided a series of presentations on the Plan, to both inform the public and to solicit public and stakeholder input on the Plan and its projects. These presentations were made at both specialized and existing public meetings in locations throughout the Cottonwood Creek Watershed and included the following:
  - *July 11, 2017, SWRP public meeting* at Stone Corral Elementary School, 15590 Avenue 383, Seville, CA



- *September 14, 2017, SWRP Public Meeting* at Ivanhoe Elementary School, 16030 Avenue 332, Ivanhoe, CA
- *June 6, 2018, SWRP and Kings Basin IRWM Plan Public Meeting* at Tulare County Resource Management Agency, 5961 S. Mooney Blvd., Visalia, CA
- *August 9, 2018, SWRP and Kings Basin IRWM Plan Public Meeting* at Tulare County Resource Management Agency, 5961 S. Mooney Blvd., Visalia, CA
- *September 19, 2018, Kaweah Sub-Basin Management Team Meeting* at Kaweah Delta Water Conservation District Offices, 2975 Farmersville Rd, Farmersville, CA
- *September 20, 2018, Kings River East GSA Board of Directors Meeting* at Dinuba City Council Chambers, 405 E. El Monte Way, Dinuba, CA
- *September 28, 2018, Tulare County Flood Control District Commission* at Tulare County Resource Management Agency, 5961 S. Mooney Blvd., Visalia, CA
- *October 9, 2018, Tulare County Board of Supervisors* at Tulare County Board of Supervisors Chambers, 2800 W. Burrel Ave., Visalia, CA
- *October 30, 2018, Tulare County Flood Control District* at Tulare County Board of Supervisors Chambers, 2800 W. Burrel Ave., Visalia, CA

Public meetings were promoted using email notifications, web postings, fliers, direct mailers to residents, and automated message phone calls in partnership with local school districts. The County worked closely with SHE to disseminate meeting information to residents in rural and disadvantaged communities. To ensure participation from a diverse stakeholder group, specialized public meetings were held in community spaces, such as schools, and Spanish-language interpretation was provided. Public comments provided at the meetings were recorded by County staff and used in the development of the Plan.

- *Public comment on the Plan:* The draft Plan underwent a public comment period where notice of availability of the draft plan was widely disseminated. It was publicized through announcements on the Plan webpage and notification to those on the mailing list described below. The public comment period was also announced at the Tulare County Board of Supervisors meeting on October 9, 2018.
- *Mailing list:* A mailing list for the Plan was developed. Stakeholders and interested members of the public can self-select onto the mailing list through the Plan webpage or on the County's website.
- *Distribution of the Plan:* The public draft Plan was posted on the County's website and distributed to affected agencies, local entities and organizations, and California Native American tribes in the Watershed.

# Section 5

## Quantitative Methods

---

### 5.1 METRICS-BASED ANALYSIS

The Plan uses a metrics-based analysis to quantify, compare, and prioritize projects and their ability to meet the Plan's objectives of reducing flood flows, to improve water quality, augment local water supplies, and to restore habitat in the watershed. As specified in Table 3 of the 2015 Storm Water Resource Plan Guidelines, the flood management benefits that decrease the flood risk, by reducing the runoff rate, are measured in cubic feet per second (cfs), Water quality benefits that provide treatment of runoff are given in percent load reduction. Water supply benefits are given in acre-feet per year (AF/yr), and environmental benefits from habitat restoration are given in acres. Each project identified in the plan meets at least two objectives listed in the 2015 Storm Water Resource Plan Guidelines.

The Plan used a subbasin-wide approach and considered available geospatial information in the creation of a Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS) model that was used to determine the benefits from each project. The performance of each project was examined both independently from the other projects, and together with all projects implemented.

HEC-HMS is designed to simulate the precipitation-runoff processes of dendritic watershed systems. It is designed to be applicable in a wide range of geographic areas for solving a broad range of problems. This includes large river basin water supply and flood hydrology to small urban or natural water runoff. Hydrographs produced by the program can be used directly or in conjunction with other software for studies of water availability, urban drainage, flow forecasting, future urbanization impact, reservoir spillway design, flood damage reduction, floodplain regulation, wetlands hydrology, and systems operation (Scharffenberg 2013).

#### 5.1.1 Water Quality Project Analysis

The Water Quality Project benefits from projects included in the Plan are quantified using an analysis that determines percent load reduction based on the amount of runoff volume captured. A mechanistic growth model is used to estimate the pollutant mass load carried by the runoff using two key assumptions.

First, the model assumes a finite amount of mass available for mobilization in a given storm. The quantity of mobilized mass from the runoff volume due to a 50-year return period was assumed to be the upper limit and all subsequent mass volumes were normalized to this quantity. The 50-year return period was used because the simulated project volume capture for both the 50- and 100-year return period storm were equal.

Second, the model utilized the concept of the “first flush.” The “first flush” concept is defined as “the emission of a greater fraction of constituent mass or higher concentration in the early part of the runoff volume” (Kang, 2005). In order to simulate “first flush” occurrence within each return period, a mechanistic growth model is used to determine the corresponding mass mobilized based on the runoff volumes generated from the hydrologic model. In determining an appropriate growth rate, it was assumed that 80% of the mass available for mobilization would be captured in the first 30% of the runoff volume (Kang, 2005).

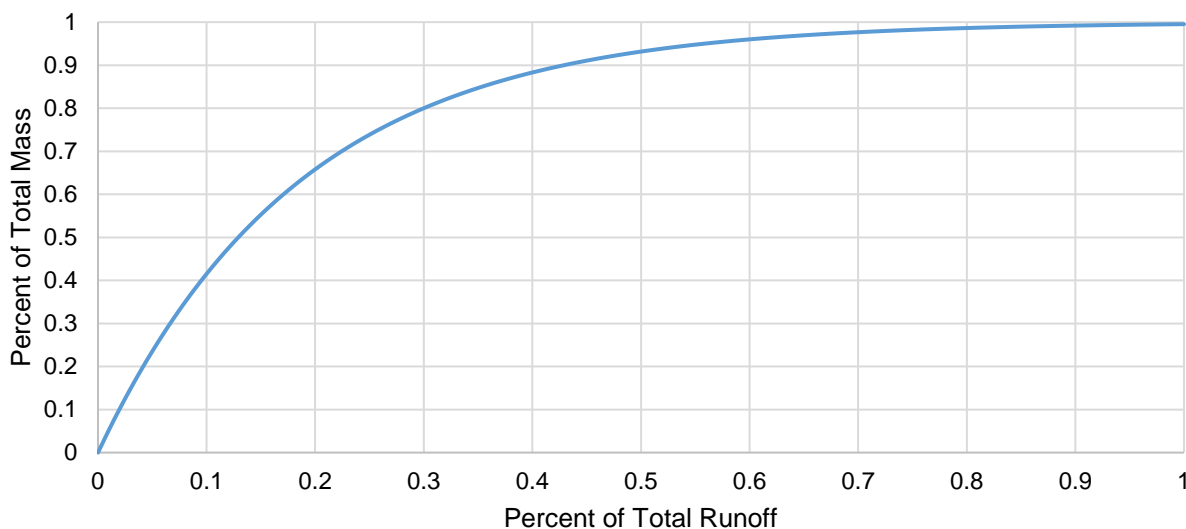
The mechanistic growth model is described by the following equation:

$$\text{Percent of Total Mass} = 1 - \exp(-c[\text{Percent of Total Runoff}])$$

where  $c$  is the growth parameter equal to 5.36. The growth parameter was determined by setting Percent of Total Mass to 80% and Percent of Total Runoff to 30% based on Kang (2005).

Figure 5-1 shows the mechanistic growth model used to determine the normalized mass volume as a function of the normalized runoff volume. Increasing runoff volume yields a greater mobilized mass, however the amount of mass that can ultimately be mobilized is limited by the total mass available, illustrated by the asymptotic behavior of the mechanistic growth model. Estimation of mobilized mass resulting from the runoff captured by the proposed projects provides a method to determine the percent load reduction and consequent receiving water quality benefit. This analysis is repeated to determine the percent load reduction of constituents each project would yield for each modeled return period.

**Figure 5-1**  
**Mechanistic Growth Model for Water Quality Analysis**



Water quality benefits because of these projects, directly impact the sediment and organic matter delivered to Cottonwood Creek. Additional details regarding reduction in delivery in terms of percent load reduction is discussed in Section 6.5.2.

### **5.1.2 Storm Water Capture and Use Project Analysis**

The benefits of Storm Water Capture and Use projects included in the Plan are quantified using a HEC-HMS model to determine the runoff within the Watershed. The analysis includes storms of the 2, 5, 10, 25, 50, and 100-year return period to determine runoff volume. The model of the Watershed includes all projects as represented as accurately as possible, given the available information for detention basin sizing, weir elevations, and existing channel sizes and conditions. The Plan includes projects designed for the capture and infiltration of storm water, others are only for the detention and controlled release of flood flows. The volumes of capture and infiltration are determined in HEC-HMS in AF (AF).

### **5.1.3 Water Supply and Flood Management Project Analysis**

Analysis was performed using HEC-HMS to determine the effectiveness of each project proposed in this plan to provide Flood Management Benefits.

The Water Supply and Flood Management benefits of the projects included in the Plan are quantified using a HEC-HMS model to determine the runoff volume within the Watershed. The analysis includes storms of the 2, 5, 10, 25, 50, and 100-year return period to determine runoff volume. The model of the Watershed includes all projects as represented as accurately as possible, given the available information for detention basin sizing, weir elevations, and existing channel sizes and conditions. Some of the projects included in this Plan are designed for the flood management and reduction of volume and peak flows in the Watershed. The volumes of reduced flows determined in HEC-HMS and are quantified in AF, the reduction in peak flows are determined in HEC-HMS and is quantified in cfs.

### **5.1.4 Environmental and Community Benefit Analysis**

The Environmental and Community Benefits of the projects included in the Plan are quantified in feet of creek channel realigned. Much of the Cottonwood Creek and tributaries are channelized ditches and canals that are used for irrigation or drainage of runoff. Some of the projects include realignment of Cottonwood Creek to mimic the natural meandering stream to help establish riparian habitat.

# Section 6

## Project Identification and Prioritization

---

The Plan identifies four projects within the Watershed (Figure 6-1):

1. JDF Complex Project
2. Yetterm-Button Ditch Flood Control Project (Yetterm)
3. Upper Detention/Retention (UDR) Project
4. Robles Lomas Ranch Detention (Robles) Project

### 6.1 OPPORTUNITIES TO AUGMENT LOCAL WATER SUPPLY

Three of the projects within the Watershed would provide opportunities to augment local water supply through groundwater recharge for beneficial use of storm water.

#### 6.1.1 JDF Complex Project

This project is a multi-part project that includes the development of two retention basins, a flood easement for detention/retention on adjacent agricultural land, a berm on the south portion of the creek through the project area to provide flood protection, and realignment of approximately 8500 feet of the creek bottom to restore a natural meandering creek. The two retention basins will capture storm water for infiltration, they are designed to begin taking water at different return intervals; the groundwater overflow site will take water during large storms and hold the water for infiltration. Table 6-1 shows the amount of captured volume expected for the 2, 5, 10, 25, 50, and 100-year return period storms. It is assumed that all this volume would be captured and infiltrated due to low evaporative losses during the winter time when these storms and flooding events typically occur.

**Table 6-1 – Runoff Volume Captured and Infiltrated at the JDF Complex Project**

Return Period	Groundwater Recharge Area 1 (AF)	Groundwater Recharge Area 2 (AF)	Groundwater Overflow (AF)	Total Volume Captured at JDF (AF)
2-Year	28	0	0	28
5-Year	28	62	0	90
10-Year	28	773	0	801
25-Year	28	773	1,685	2,486
50-Year	28	773	1,960	2,761
100-Year	28	773	1,960	2,761

Key:  
 AF = acre-feet  
 JDF = Juvenile Detention Facility



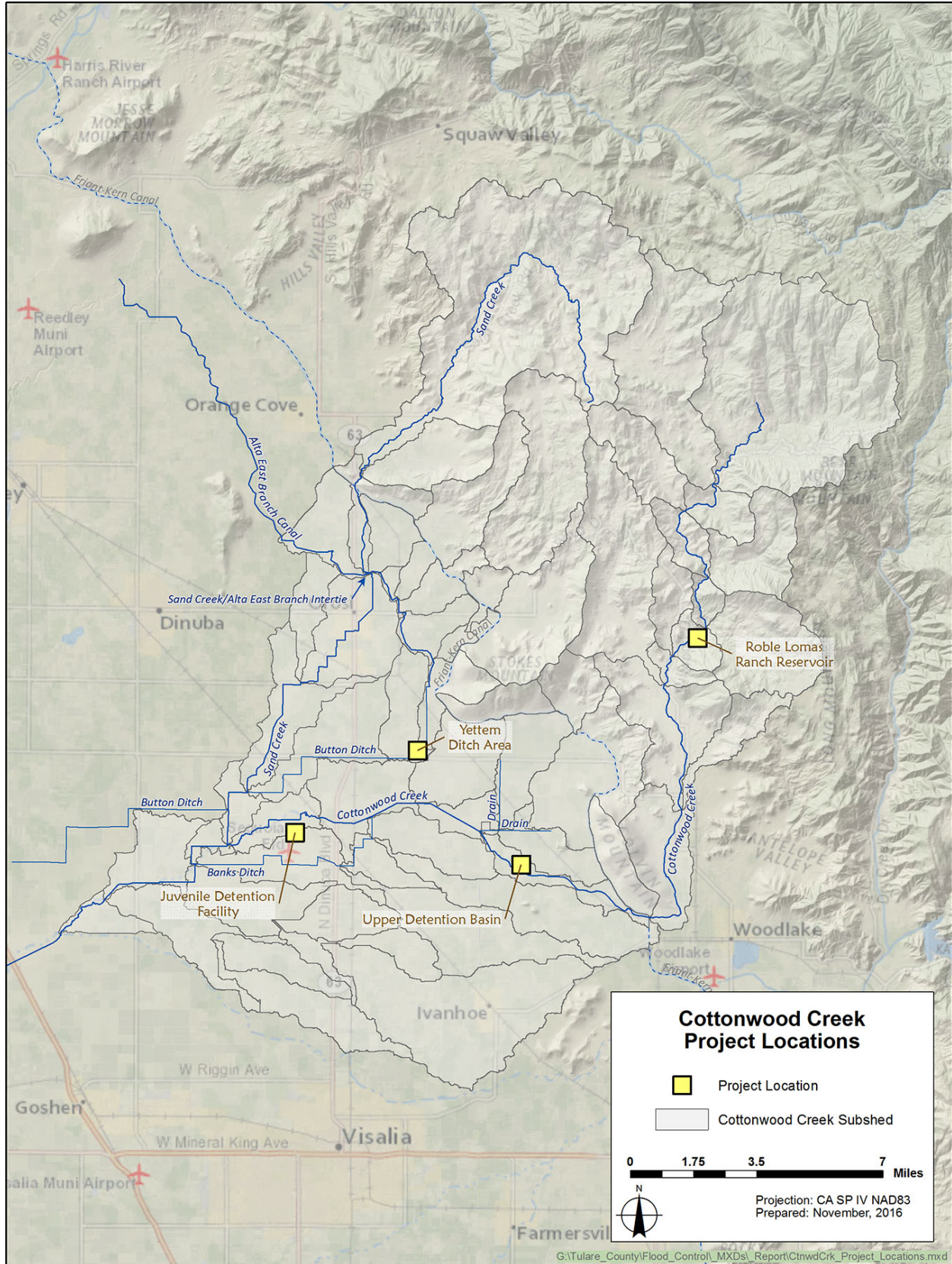


Figure 6-1 Cottonwood Creek Project Locations

There is no substantial historical data record in the Watershed. Therefore, a synthetic 100-year hydrologic period was simulated to determine the annual recapture for each of the detention basins in the JDF project. Table 6-2 shows the estimated annual infiltration for each of the detention basins, and the combined total.

**Table 6-2 – Estimated Annual Infiltration at the JDF Project Site**

	<b>Groundwater Recharge Area 1 (AFY)</b>	<b>Groundwater Recharge Area 2 (AFY)</b>	<b>Groundwater Overflow (AFY)</b>	<b>Total Volume Captured at JDF (AFY)</b>
Annual Average	28	144	126	298

Key:  
 AFY = acre-feet per year  
 JDF = Juvenile Detention Facility

**6.1.2 Yettem-Button Ditch Flood Control Project**

This project is located adjacent to the Button Ditch near the intersection of Road 144 and Avenue 384. This detention basin will temporarily detain high flows and decrease the severity of flooding in the rural community of Yettem. The project would include construction a berm around up to 80 acres of agricultural land that the County has secured a flood easement, to allow the capture of a maximum volume of 80 AF. The Yettem Project is not specifically designed to infiltrate water, but water will infiltrate from the project during the detention period. Table 6-3 shows the estimated annual infiltration of the Yettem Project. It is assumed that all this volume would be captured and infiltrated due to low evaporative losses during the winter time when these storms would occur.

**Table 6-3 – Estimated Annual Infiltration at the Yettem-Button Ditch Flood Control Project Site**

	<b>Total Volume Captured at Yettem Project (AFY)</b>
Annual Average	6

Key:  
 AFY = acre-feet per year

**6.1.3 Upper Detention/Retention Project**

This project is located downstream from the Friant-Kern Canal near the intersection of Road 164 and Avenue 362. This detention/retention basin will temporarily detain high flows in the Cottonwood Creek and decrease flows downstream and will retain a portion for infiltration. The project is located in Type A soils that will facilitate groundwater recharge. The project would include the construction of berms around 300 acres of agricultural land, for which the County will need to secure a flood easement, to allow the capture of a maximum volume of 300 AF of water. The UDR Project is specifically

designed to infiltrate water, as the basin does begin to capture water at the 5-year return period, therefore the basin will frequently have water. Table 6-4 shows the estimated annual infiltration of the UDR Project. It is assumed that all this volume would be captured and infiltrated due to low evaporative losses during the winter time when these storms would occur.

**Table 6-4 – Estimated Annual Infiltration at the UDR Project Site**

	Total Volume Captured at UDR Project (AFY)
Annual Average	47

Key:  
AFY = acre-feet per year

**6.2 OPPORTUNITIES FOR SOURCE CONTROL**

While none of the projects identified in the Plan provide direct opportunities for source control, the identified projects do include the capture and infiltration of first flush storm water flows in one of the detention basins for the JDF Project. The benefits of this project will be quantified in the Section 6.5 Opportunities to Capture, Clean, Store, and Use Storm Water. This project does not include any land use changes, or onsite Best Management Practices (BMPs).

**6.3 PROJECTS THAT REESTABLISH NATURAL WATER DRAINAGE**

While none of the projects identified in the Plan provide direct opportunities to reestablish natural water drainage, the identified projects do provide increased infiltration through the development of detention/retention basins. The benefits of this project were quantified in Section 6.1 Opportunities to Augment Local Water Supply.

**6.4 OPPORTUNITIES TO DEVELOP, RESTORE, OR ENHANCE HABITAT**

The JDF project includes the realignment of nearly 8500 feet of Cottonwood Creek to restore the natural meandering stream. The realignment would include the creation of a 4-foot-wide low flow channel and 10-foot overbanks on each side within the larger creek channel, allowing for the creation of 4.7 acres riparian habitat to be restored. Table 6-5 summarizes the restoration acreages that each project includes.

**Table 6-5 – Acres of Habitat Restoration**

	JDF Project (Acres)	Yettem Detention Project (Acres)	Upper Detention Project (Acres)
Annual Average	4.7	0	0

Key:  
JDF = Juvenile Detention Facility



## 6.5 OPPORTUNITIES TO CAPTURE, CLEAN, STORE, AND USE STORM WATER

### 6.5.1 Flood Management Benefits

All four projects identified in the Plan would detain or capture storm water for flood management purposes. These projects all include detention/retention basins to capture and infiltrate storm water on lands adjacent to creeks and waterways on lands where flood easements have been acquired.

#### 6.5.1.1 JDF Detention Facility – Cottonwood Creek (JDF Complex) Project

The JDF Complex Project is a multi-part project that includes the development of 2 detention basins, a flood easement on adjacent agricultural land, a berm on the south portion of the creek through the project area to provide flood protection, and realignment of approximately 8500 feet of the creek bottom to restore a natural meandering creek. The first detention basin is designed to take water during the first flush of 2-year return storms, and has a total capacity of 28 AF. The second detention basin is an abandoned sand pit that has a total capacity of approximately 770 AF. These detention basins would hold water for infiltration. The flood easement included in this project would store an estimated 1960 AF of volume that would flow over the banks of the creek. Table 6-6 summarizes the decrease in volume, as well as the percent decrease in total runoff volume for the 2, 5, 10, 25, 50, and 100-year return period storms with the JDF Project implemented.

**Table 6-6 – Runoff Volume Decrease for JDF Complex Project**

Return Period	JDF Project Volume Captured (AF)	Percent Runoff Volume Decrease for JDF Project
2-Year	28	14%
5-Year	90	4%
10-Year	801	15%
25-Year	2,486	21%
50-Year	2,761	15%
100-Year	2,761	10%

Key:  
AF = acre-feet  
JDF = Juvenile Detention Facility

In addition to reduction of runoff volume, reduction in peak flow downstream from a project will also have a flood benefit. Table 6-7 summarizes the reduction in peak flows that would occur downstream from the JDF Project.

The peak discharge for certain years may occur due to changes in channel geometry proposed by the project.

**Table 6-7 – Peak Discharge Decrease Downstream from the JDF Complex Project**

Return Period	Baseline Peak Discharge (cfs)	JDF Project Peak Discharge (cfs)	Percent Decrease in Peak Flow for JDF Project
2-Year	331	256	23%
5-Year	2,041	2,095	-3%
10-Year	3,067	3,266	-6%
25-Year	8,717	5,764	34%
50-Year	12,321	10,417	16%
100-Year	16,810	16,002	5%

Key:

cfs = cubic feet per seconds

JDF = Joint Detention Facility

### 6.5.1.2 Yettem-Button Ditch Flood Control Project

The Yettem Project is located adjacent to the Button Ditch near the intersection of Road 144 and Avenue 384. This detention basin will temporarily detain high flows and decrease the severity of flooding in the rural community of Yettem. The project would include construction a berm around up to 80 acres of agricultural land, that the County has secured a flood easement, to allow the capture of a maximum volume of 80 AF. Table 6-8 summarizes the decrease in volume, as well as the percent decrease in total runoff volume for the 2, 5, 10, 25, 50, and 100-year return period storms with the Yettem Project implemented.

**Table 6-8 – Runoff Volume Decrease for Yettem Detention Project**

Return Period	Yettem Project Volume Captured (AF)	Percent Runoff Volume Decrease for Yettem Project
2-Year	0	0%
5-Year	0	0%
10-Year	3.6	0.1%
25-Year	80	0.7%
50-Year	80	0.4%
100-Year	80	0.3%

Key:

AF = acre-feet

In addition to reduction of runoff volume, reduction in peak flow downstream from a project will also have a flood benefit. Table 6-9 summarizes the reduction in peak flows that would occur downstream from the Yettem Project.

**Table 6-9 – Peak Discharge Decrease Downstream from the Yettem Project**

Return Period	Baseline Peak Discharge (cfs)	Yettem Detention Project Peak Discharge (cfs)	Percent Decrease in Peak Flow for Yettem Project
2-Year	0	0	0%
5-Year	295	295	0%
10-Year	754	743	1%
25-Year	1,758	1,656	6%
50-Year	2,446	2,446	0%
100-Year	3,022	3,022	0%

Key:

cfs = cubic feet per second

**6.5.1.3 Upper Detention/Retention Project**

The UDR Project is located downstream from the Friant-Kern Canal near the intersection of Road 164 and Avenue 362. This detention basin will temporarily detain high flows in the Cottonwood Creek and decrease flows downstream. The detention basin is located in Type A soils that will facilitate groundwater recharge. The project

would include the construction of berms around 300 acres of agricultural land, that the County plans to secure a flood easement, to allow the capture of a maximum volume of 300 AF of water. Table 6-10 summarizes the decrease in volume, as well as the percent decrease in total runoff volume for the 2, 5, 10, 25, 50, and 100-year return period storms with the Cottonwood Detention Project implemented.

**Table 6-10 – Runoff Volume Decrease for UDR Project**

Return Period	UDR Project Volume Captured (AF)	Percent Runoff Volume Decrease for UDR Project
2-Year	0	0%
5-Year	18	1%
10-Year	225	4%
25-Year	300	2%
50-Year	300	2%
100-Year	300	1%

Key:

AF = acre-feet

In addition to reduction of runoff volume, reduction in peak flow downstream from a project will also have a flood benefit. Table 6-11 summarizes the reduction in peak flows that would occur downstream from the UDR Project.

**Table 6-11  
Peak Discharge Decrease Downstream from UDR Project**

Return Period	Baseline Peak Discharge (cfs)	UDR Project Peak Discharge (cfs)	Percent Decrease in Peak Flow for UDR Project
2-Year	345	344	0%
5-Year	1,750	1,698	3%
10-Year	2,882	2,574	11%
25-Year	5,308	4,787	10%
50-Year	8,166	7,263	11%
100-Year	11,994	10,742	10%

Key:  
cfs = cubic feet per second

#### **6.5.1.4 Robles Lomas Ranch Detention Project**

The Robles Lomas Ranch Detention (Robles) Project was first identified in the Tulare County Flood Plan (Tulare County 1971). The project includes an approximately 60 feet tall detention dam that would store approximately 5,000 AF. The detention dam would include a single 6-foot diameter culvert that will evacuate the reservoir limiting the releases to less than 1,000 cfs. The detention dam will have a 200 feet long spillway at the top of the roller compacted concrete (RCC) dam that will allow larger storms to pass. The Robles Lomas Ranch detention project will not store water for capture and infiltration but will reduce peak flows downstream in Cottonwood Creek. Table 6-12 shows the decrease in peak discharge downstream from the proposed detention dam. Table 6-13 shows the decrease in peak discharge at the outlet of the Watershed.

**Table 6-12 – Peak Discharge Decrease Downstream from the Robles Project**

Return Period	Baseline Peak Discharge (cfs)	Robles Project Peak Discharge (cfs)	Percent Decrease in Peak Flow for Robles Project
2-Year	351	325	7%
5-Year	1,625	691	58%
10-Year	2,530	833	67%
25-Year	4,254	1,015	76%
50-Year	6,596	4,723	28%
100-Year	9,802	6,526	34%

Key:  
cfs = cubic feet per second

**Table 6-13 – Peak Discharge Decrease Robles Lomas Ranch Project at Watershed Outlet**

Return Period	Baseline Peak Discharge at Watershed Outlet (cfs)	Robles Project Peak Discharge at Watershed Outlet (cfs)	Percent Decrease in Peak Flow for Robles Project at Watershed Outlet
2-Year	311	304	2%
5-Year	1,963	1,511	23%
10-Year	3,161	3,301	-4%
25-Year	8,899	5,543	38%
50-Year	13,449	8,000	41%
100-Year	18,781	13,609	28%

Key:

cfs = cubic feet per second

### 6.5.2 Water Quality Benefits

The volume captured by the three identified projects would result in water quality benefits demonstrated by a percent pollutant mass load reduction to Cottonwood Creek.

#### 6.5.2.1 JDF Detention Facility – Cottonwood Creek (JDF Complex) Project

The JDF Complex Project has features specifically designed for water quality improvement in the Watershed. The 28 acre-foot water quality retention basin is designed to begin taking water during the 2-year return period storm. The storm water retention basin begins taking water during the 5-year storm. These retention basins would have a water quality benefit by diverting a portion of the runoff for a given storm event. Table 6-14 presents the pollutant mass load reduction for the JDF project, quantified using the Water Quality Project Analysis methodology described in previous sections.

**Table 6-14 – Percent Load Reduction for JDF Project**

Return Period	JDF Project Volume Captured (AF)	JDF Project Normalized Volume Captured (AF)	Percent Load Reduction for JDF Project
2-Year	28	0.001	54%
5-Year	90	0.005	21%
10-Year	801	0.043	56%
25-Year	2486	0.132	67%
50-Year	2761	0.147	55%
100-Year	2761	0.147	38%

Key:

AF = AF

JDF = Juvenile Detention Facility

The Yettem Detention Project basin will reduce severity of flooding in addition to improving water quality. This project will reduce agricultural runoff, as the basin is

located in a predominately agricultural setting. Table 6-15 presents the pollutant mass load reduction for the Yettem detention basin.

**Table 6-15 – Percent Load Reduction for Yettem Detention Project**

Return Period	Yettem Project Volume Captured (AF)	Yettem Project Normalized Volume Captured (AF)	Percent Load Reduction for Yettem Project
2-Year	0	0	0%
5-Year	0	0	0%
10-Year	3.6	0.00019	0.4%
25-Year	80	0.00426	3%
50-Year	80	0.00426	2%
100-Year	80	0.00426	1%

Key:

AF = acre-feet

The Upper Detention/Retention Basin decrease flows downstream and will facilitate groundwater recharge. The project would reduce the runoff volume and the resulting mass loading, capturing a maximum of 300 AF of water. Table 6-16 presents the pollutant mass load reduction for the Cottonwood Detention Basin project.

**Table 6-16 – Percent Load Reduction for Upper Detention/Retention Basin**

Return Period	Upper Detention/Retention Project Volume Captured (AF)	Upper Detention/Retention Normalized Project Volume Captured (AF)	Percent Load Reduction for Upper Detention/Retention Project
2-Year	0	0	0%
5-Year	18	0.001	5%
10-Year	225	0.012	21%
25-Year	300	0.016	12%
50-Year	300	0.016	8%
100-Year	300	0.016	5%

Key:

AF = acre-feet

## 6.6 DESIGN CRITERIA AND BMPs FOR NEW DEVELOPMENT AND REDEVELOPMENT

This Plan does not include design criteria and BMPs for new development and redevelopment.

## 6.7 PROJECT PRIORITIZATION USING QUANTITATIVE METHODS

The Plan uses the quantitative analysis and results described above to score and prioritize projects. The Plan ranks the identified projects on a scale of High, Medium and Low for each benefit type, and will prioritize the projects based on this scoring.

For the benefit category of augmenting local water supply Table 6-17 ranks the four projects according to the estimated annual infiltration in AFY for the project.

**Table 6-17 – Project Prioritization for Augmenting Local Water Supply**

Project	Total Project Volume Captured (AFY)	Project Ranking
JDF Complex Project	298	High
Yettem Project	6	Low
Upper Detention Project	47	Medium
Robles Lomas Ranch Project	0	Low

Key:  
 AFY = acre-feet per year  
 JDF = Juvenile Detention Facility

For the benefit category of restoring habitat Table 6-18 ranks the four projects according to the estimated acres of habitat restored for each project.

**Table 6-18 – Project Prioritization for Restoring Habitat**

Project	Habitat Restored (Acres)	Project Ranking
JDF Project	4.7	High
Yettem Project	0	Low
Upper Project	0	Low
Robles Lomas Ranch Project	0	Low

Key:  
 JDF = Juvenile Detention Facility

For the benefit category of flood management Table 6-19 ranks the three projects according to the estimated reduction in total runoff volume for each project in AF.

**Table 6-19 – Project Prioritization for Flood Management Peak Flow Reduction**

Project	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	Project Ranking
JDF Project	23%	-3%	-6%	34%	15%	5%	High
Yettem Project	0%	0%	1%	6%	0%	0%	Low
Upper Project	0%	3%	11%	10%	11%	10%	Medium
Robles Lomas Ranch Project	7%	58%	67%	76%	28%	34%	High

Key:  
 JDF = Juvenile Detention Facility

For the benefit category of water quality Table 6-20 ranks the projects according to the estimated percent load reduction of runoff pollutants.

**Table 6-20 – Project Prioritization for Flood Management Peak Flow Reduction**

Project	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	Project Ranking
JDF Project	54%	21%	56%	67%	55%	38%	High
Yettem Project	0%	0%	0.4%	3%	2%	1%	Low
Upper Project	0%	5%	21%	12%	8%	5%	Medium
Robles Lomas Ranch Project	0%	0%	0%	0%	0%	0%	Low

Key:

JDF = Juvenile Detention Facility

The overall ranking of the project takes into account the scoring for each individual benefit categories. Table 6-21 considers all the benefit categories and includes the final prioritized ranking of projects.

**Table 6-21 Overall Project Prioritization**

Project	Water Supply	Habitat Restoration	Flood Management	Water Quality	Project Ranking
JDF Project	High	High	High	High	1
Yettem Project	Low	Low	Low	Low	4
Upper Project	Medium	Low	Medium	Medium	2
Robles Lomas Ranch Project	Low	Low	High	Low	3

Key:

JDF = Juvenile Detention Facility

## 6.8 APPROACH AND GEOSPATIAL ANALYSIS

All three projects identified in the Plan used a similar approach to quantify benefits. Geospatial analysis was used to develop all the inputs into HEC-HMS to model runoff in the Watershed. Runoff was determined using rainfall totals that are statistically adjusted based on geographic location by the National Weather Service's Hydrometeorological Design Studies Center Precipitation Frequency Data Server. Each project was represented in the HEC-HMS model using its accurate geospatial location. The HEC-HMS model was used to determine flood management benefits, and water supply benefits.

## 6.9 SUMMARY OF BENEFITS

As described in the sections above the projects identified in the Plan are all multi-benefit projects. Each project's benefits have been quantified using a metrics based analysis that uses an integrated and geospatial approach. The only project that does not clearly meet the multi-benefit categories is the Robles Lomas Ranch detention dam project. This project was included in the analysis because of the maximum flood benefits that it would provide in the Watershed.



## Section 7

# Implementation Strategy and Schedule

---

This section describes the funding sources, regulations, and policies to give a holistic view of the current regulatory landscape. It is anticipated that as projects gain more granularity during the conceptual and pre-design process, specific requirements of the Plan will become clearer. Furthermore, coordination amongst entities will help refine project constraints, funding sources, required permits, land acquisition requirements, operations and maintenance needs, resource needs, and applicable regulations to successfully implement these multi-benefit projects. As such, this strategy is a general approach to implementing storm water projects in the Cottonwood Creek area, rather than a detailed capture of all requirements necessary to implement projects. The ongoing monitoring and revision efforts, as well as roles and responsibilities necessary for successful implementation of the Plan, are described.

### 7.1 RESOURCES FOR IMPLEMENTATION

*Plan identifies resources for 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.*

Project planning, approval, and financing are all barriers to project implementation. Lack of funding is often the most significant barrier to plan implementation. The current funding situation, as well as a strategy for addressing the lack of funding, are described in the following subsections. There are many local, State, and Federal funding vehicles for water, green infrastructure, grey water, groundwater, reuse, wastewater, and storm water that are available for public projects.

Leveraging State and Federal financial and technical assistance cannot be accomplished without local financial support. Most State and Federal assistance programs require local cost sharing. The sections below provide the foundational information and collaborative forum efforts among governments in Tulare County for budgetary recommendations, to streamline the implementation and policy considerations for long-term sustainable water management. An initial cost estimate for each of the proposed projects is shown in Table 7-1.

**Table 7-1 Cost Projection of the Plan Projects**

Project	Anticipated Capital Cost
Juvenile Detention Facility (JDF) – Cottonwood Creek Project	\$2,408,619 <sup>1</sup>
Yettem-Button Ditch Flood Control Project (Yettem)	\$430,000 <sup>2</sup>
Upper Detention/Retention (UDR) Project	To be determined in future iteration.
Robles Lomas Ranch Detention (Robles) Project	To be determined in future iteration.

<sup>1</sup>Juvenile Detention Facility – Cottonwood Creek (JDF Complex) Project Proposition 1 Grant Application, <http://tularecounty.ca.gov/SWRP>

<sup>2</sup>Kings Basin IRWMP Project No. 124 – Yettem-Button Ditch Flood Control Project

### Statement of Funding Adequacy

The Plan includes research on various grant opportunities, loan prospects, technical assistance, and emergency support to be proactive in implementing projects—as many funding sources are transient. Funding sources for projects are determined by the project proponent on a case-by-case basis. Due to their conceptual nature, some projects have currently unidentified funding sources, as many require annual appropriation and approval, and the opportunities for potential State and Federal assistance vary. Project proponents will update project information and funding sources when available. Project proponents will coordinate with local, State, and Federal officials to determine the most appropriate funding for each project. In addition, resources for administration and implementation needs will continue to be incorporated into each RMA's annual budget, for staffing and materials associated with storm water and watershed activities.

Initial research has been performed into the adequacy of grants for the identified projects within this plan. Table 7-2 identifies potential project funding opportunities. State and Federal grant opportunities are provided in Tables 7-3 and 7-4, respectively.

**Table 7- 2 Identified Project Funding Opportunities**

Project	Potential Funding Sources
Juvenile Detention Facility (JDF) - Cottonwood Creek Project	California Proposition 1 (2014) Chapter 11 – Flood Protection (\$395M)
	USACE Small Flood Damage Reduction Projects (CAP Section 205)
Yettem-Button Ditch Flood Control Project	California Proposition 1 (2014) Chapter 11 – Flood Protection (\$395M)
	USBR - Drought Response Program
Upper Detention/Retention Project	FEMA - Pre-Disaster Mitigation Program
	USACE Small Flood Damage Reduction Projects (CAP Section 205)
Robles Lomas Ranch Detention Project	FEMA - Pre-Disaster Mitigation Program

Key:

CAP = Continuing Authorities Program

FEMA = Federal Emergency Management Agency

USACE = US Army Corps of Engineers

**Table 7-3 Cottonwood Creek State Funding Opportunities**

Funding Agency/Source	Program Name	Description	Type of Assistance
California Environmental Protection Agency – State Water Board	Drinking Water State Revolving Fund Program	This program assists public water systems in financing the cost of drinking water infrastructure projects needed to achieve or maintain compliance with Safe Drinking Water Act requirements.	Loan
	Proposition 84 Funding for Public Water Systems	This program provides funding for emergency clean water grants (Public Resources Code Section 75021), small community infrastructure improvements for chemical and nitrate contaminants (Public Resources Code Section 75022), or grants to prevent or reduce contamination of groundwater that serves as a source of drinking water (Public Resources Code Section 75025).	Grant
	Clean Water State Revolving Fund Program (CWSRF)	CWSRF program offers low cost financing for a wide variety of water quality projects. The program has significant financial assets and is capable of financing projects from <\$1 million to >\$100 million.	Loan
	Water Recycling Funding Program	Promotes the beneficial use of treated municipal wastewater (water recycling) in order to augment fresh water supplies in California by providing technical and financial assistance to agencies and other stakeholders in support of water recycling projects and research.	Loan/ Technical Assistance
	Storm water Grant Program	Prop 1 (Assembly Bill 1471, Rendon) authorized \$7.545 billion in general obligation bonds for water projects including surface and groundwater storage, ecosystem and watershed protection and restoration, and drinking water protection. The State Water Board will administer Proposition 1 funds for five programs. Of the \$7.545 billion, Proposition 1 (Section 79747) provides \$200 million in grant funds for multi-benefit storm water management projects.	Grant
	Water or Energy Audit Financial Assistance	The purpose of the Water or Energy Audit is to encourage public agencies to take an independent look into their current practices, identify potentially inefficient water or energy use and follow up with a well thought out plan to improve consumption of these valuable resources. The agency is encouraged to study water and energy in the audit but may focus on one or the other. All audits must be related to projects, facilities, or activities that are otherwise eligible for CWSRF funding. Agencies may hire consultants to perform the audit or perform the work with their own staff.	Technical Assistance
California Proposition 1(2014)	Chapter 5 – Drinking Water Quality (\$520M).	To improve access to clean drinking water for disadvantaged communities (\$260M) and help small communities pay for wastewater treatment (\$260M).	Grant
	Chapter 6 – Watershed Protection and Restoration (\$1.5B).	To protect and restore watersheds and other habitat throughout the state.	Grant
	Chapter 7 – Regional Water Management (\$810M).	\$510M for allocations to specific regions throughout the state through the Integrated Regional Water Management program, \$200M for projects and plans to manage runoff from storms in urban areas, and \$100M for water conservation projects and programs.	Grant
	Chapter 8 – Water Storage (\$2.7B).	Funds will go to “public benefits” of projects only. Projects must be in regions connected to the Bay-Delta watershed	Grant
	Chapter 9 – Water Recycling and Desalination (\$725M).	\$100M for contaminant and salt removal projects, and \$625M for water recycling, dedicated distribution infrastructure, pilot projects for new potable reuse and other salt removal technology, and multi-benefit recycled water projects that improve water quality, and technical grant writing assistance for disadvantaged communities.	Grant
	Chapter 10 – Groundwater Sustainability (\$900M).	For groundwater protection and cleanup programs, and development and implementation of groundwater sustainability plans.	Grant
	Chapter 11 – Flood Protection (\$395M).	\$295M to improve levees or respond to flood emergencies specifically in the Delta and \$100M for flood control projects anywhere in the state.	Grant
California Department of Housing and Community Development	Community Development Block Grant	This agency partners with rural cities and counties to improve the lives of their low- and moderate-income residents through the creation and expansion of community and economic development opportunities in support of livable communities.	Loan
California Department of Transportation	Cooperative Implementation Agreements	Cooperative Implementation Agreements between the Department and other responsible parties to conduct work to comply with a Total Maximum Daily Load (TMDL), and a Cooperative Implementation Grant Program funded by the Department and administered by the State Water Board. The grant program will be used to fund capital projects in impaired watersheds in which the Department has been assigned a Waste Load Allocation or otherwise has responsibility for implementation of the TMDL. Cooperative implementation will satisfy some or all of the Department’s obligations under a TMDL, whether or not discharges from the Department’s right of way are controlled or treated (Kontaxis 2017).	Grant
California Infrastructure and Economic Development Bank	Infrastructure State Revolving Fund Program	The Infrastructure State Revolving Fund Program provides financing to public agencies and non-profit corporations sponsored by public agencies for a wide variety of infrastructure and economic development projects (excluding housing).	Loan
Rural Community Assistance Corporation (RCAC)	Environmental Infrastructure Loans	This program helps create, improve or expand the supply of safe drinking water, waste disposal systems and other facilities that serve communities in the rural West. RCAC loan programs provide the early funds small rural communities need to determine feasibility and pay pre-development costs prior to receiving state and federal program funding. RCAC also may provide interim construction financing, as well as intermediate and long-term loans for system improvements.	Loan

DRAFT

## Federal Funding Assistance

Federal funding opportunities include the following and provided for in Table 7-4:

*US Army Corps of Engineers Funding Sources:* The USACE is responsible for planning, designing, building, and operating locks and dams. Other civil engineering projects include flood control, beach nourishment, and dredging for waterway navigation, design and construction of flood protection systems through various federal mandates, environmental regulation, and ecosystem restoration.

*US Department of Agriculture Funding Sources:* The following are several funding sources from the US Department of Agriculture (USDA)

USDA Rural Development is committed to helping improve the economy and quality of life in all of rural America by providing financial programs to support essential public facilities and services such as water and sewer systems, housing, health clinics, emergency service facilities, and electric and telephone service. USDA Rural Development promotes economic development by providing loans to businesses through banks and community-managed lending pools, while also assisting communities with participation in community empowerment programs.

USDA Natural Resources and Environment ensures the health of the land through sustainable management and works to prevent damage to natural resources and the environment, restore the resource base, and promote good land management.

USDA Farm Production and Conservation is the USDA's focal point for the nation's farmers and ranchers and other stewards of private agricultural lands and non-industrial private forest lands. Farm Production and Conservation agencies implement programs designed to mitigate the significant risks of farming through crop insurance services, conservation programs and technical assistance; and commodity, lending, and disaster programs.

*US Environmental Protection Agency Funding Sources:* Nearly half of the USEPA's budget goes into grants to state environmental programs, non-profits, educational institutions, and others. These funds are used to implement a wide variety of projects, from scientific studies that help make decisions to community cleanups. Overall, grants help the USEPA achieve its mission of protecting human health and the environment.

*Federal Emergency Management Agency Funding Sources:* FEMA's mission is to support US citizens and to be the first responders to ensure that citizens and agencies work together to build, sustain, and improve capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.

*Miscellaneous Federal Funding Sources:* A variety of other funding sources are presented, including the US Departments of Commerce, Housing and Urban Development, Interior, Transportation, and Economic Development Administration.

**Table 7-4 Federal Funding Opportunities**

Funding Agency/Source	Program Name	Description	Type of Assistance
U.S. Army Corps of Engineers	Aquatic Ecosystem Restoration Continuing Authorities Program (CAP Section 206)	Work under this authority may carry out aquatic ecosystem restoration projects that will improve the quality of the environment, are in the public interest, and are cost-effective. Additional information about this program: <a href="http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/Section206.pdf">http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/Section206.pdf</a>	Design and Construction Assistance
	Project Modifications for Improvement of the Environment (CAP Section 1135)	Work under this authority provides for modifications in the structures and operations of water resources projects constructed by the USACE to improve the quality of the environment. Additionally, the USACE may undertake restoration projects at locations where an existing USACE project has contributed to the degradation. Additional program information: <a href="http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/1135.pdf">http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/1135.pdf</a>	Design and Construction Assistance
	Small Flood Damage Reduction Projects (CAP Section 205)	Work under this authority provides for local protection from flooding by the construction or improvement of structural flood damage reduction features such as levees, channels, and dams. Non-structural alternatives are also considered and may include measures such as installation of flood warning systems, raising and/or flood proofing of structures, and relocation of flood prone facilities. Additional information about this program: <a href="http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/Section205.pdf">http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/Section205.pdf</a>	Design and Construction Assistance
	Snagging and Clearing for Flood Control (CAP Section 208)	Work under this authority provides for local protection from flooding by channel clearing and excavation, with limited embankment construction by use of materials from the clearing operation only. Additional information about this program: <a href="http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/Section208.pdf">http://www.spk.usace.army.mil/Portals/64/docs/Outreach/Information/Section208.pdf</a>	Design and Construction Assistance
U.S. Department of Agriculture	Conservation Reserve Program	This voluntary program provides agricultural landowners with annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland. The long-term goal of the program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat.	Cost Share
	Agricultural Management Assistance	This program provides cost share assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations.	Cost Share
	Emergency Watershed Protection	This program helps protect lives and property threatened by natural disasters such as floods, hurricanes, tornadoes, droughts, and wildfires. The program provides funding for such work as clearing debris from clogged waterways, restoring vegetation, and stabilizing river banks.	Grant
	Conservation Reserve Enhancement Program	This voluntary land retirement program that helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water.	Grant
U.S. Department of Agriculture (USDA) – Natural Resources	Agricultural Easement Conservation Program	This program provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits. Under the Wetlands Reserve Easements component, the NRCS helps to restore, protect and enhance enrolled wetlands.	Grant/Technical Assistance

Funding Agency/Source	Program Name	Description	Type of Assistance
Conservation Service (NRCS)	Regional Conservation Partnership Program	This program provides an opportunity for partners to scope a 5-year project in partnership with NRCS to enhance and accelerate conservation efforts, innovation and locally-driven solutions. Partnering organizations design, promote, implement, and evaluate the project outcomes in partnership with NRCS programs.	Technical Assistance
	Watershed and Flood Prevention Operations Program	This program works to prevent erosion, floodwater, and sediment damage; to further the conservation, development, utilization, and disposal of water; and to further the conservation and proper utilization of land in authorized watersheds.	Grant/Technical Assistance
U.S. Department of Agriculture – Rural Development	Special Evaluation Assistance for Rural Communities and Households	This program helps very small, financially distressed rural communities with predevelopment feasibility studies, design assistance, and technical assistance on proposed water and waste disposal projects.	Technical Assistance
	Water and Waste Disposal Guaranteed Loan Program	This program helps private lenders provide affordable financing to qualified borrowers to improve access to clean, reliable water and waste disposal systems for households and businesses in rural areas. This is achieved through bolstering existing private credit structure through the guarantee of quality loans. Guarantees up to 90% available to eligible lenders.	Loan
	Water & Waste Disposal Revolving Loan Funds	This program assists communities with water and wastewater systems. Qualified private non-profit organizations will receive grant funds to establish a lending program for eligible entities. This grant program is to serve a rural area with a population not more than 10,000.	Grant
U.S. Department of Agriculture – Rural Development	Water & Waste Disposal Predevelopment Planning Grants	This program assists low-income communities with initial planning and development of an application for USDA Rural Development Water and Waste Disposal direct loan/grant and loan guarantee programs.	Loan/Grant
	Emergency Community Water Assistance Grants	This grant program is designed to assist rural communities that have experienced a significant decline in quantity or quality of drinking water due to an emergency, or in which such decline is considered imminent, to obtain or maintain adequate quantities of water that meets the standards set by the Safe Drinking Water Act.	Grant
U.S. Environmental Protection Agency	Source Reduction Assistance Grant Program	This program awards support pollution prevention through source reduction and resource conservation work. As authorized under the statutory authorities for this grant program, proposals must carry out project activities using one or more of the following methods of surveys, studies, research, investigation, experimentation, education, training and/or demonstrations.	Grant
	Clean Water State Revolving Fund	This program provides a permanent source of low-cost financing for a wide range of water quality infrastructure projects. These projects include municipal wastewater treatment and collection, nonpoint source pollution controls, decentralized wastewater treatment systems, green infrastructure, water efficiency, and estuary management.	Loan
	Urban Waters Small Grants	This program has an emphasis on engaging communities with environmental justice concerns. The objective of the Urban Waters Small Grants is to fund projects that will foster a comprehensive understanding of local urban water issues, identify and address these issues at the local level, and educate and empower the community. In particular, the Urban Waters Small Grants seek to help restore and protect urban water quality and revitalize adjacent neighborhoods by engaging communities in activities that increase their connection to, understanding of, and stewardship of local urban waterways.	Grant



Funding Agency/Source	Program Name	Description	Type of Assistance
	Wetlands Program Development Grants	These grants Wetland Program Development Grants are intended to encourage comprehensive wetlands program development by promoting 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.	Grant
	Nonpoint Source Implementation Grants (319 Program)	Under Section 319, states, territories and tribes receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects and monitoring to assess the success of specific nonpoint source implementation projects.	Grant
U.S. Federal Emergency Management Agency	Pre-Disaster Mitigation Program	This program is designed to assist States, U.S. Territories, Federally-recognized tribes, and local communities in implementing a sustained pre-disaster natural hazard mitigation program. The goal is to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding in future disasters.	Grant/Technical Assistance
	Flood Mitigation Assistance Program (FMA)	This program is authorized by Section 1366 of the National Flood Insurance Act of 1968, with the goal of reducing or eliminating claims under the National Flood Insurance Program. FMA provides funding to States, Territories, federally-recognized tribes and local communities for projects and planning that reduces or eliminates long-term risk of flood damage to structures insured under the NFIP. FMA funding is also available for management costs.	Grant/Technical Assistance
U.S. Department of Commerce Economic Development Administration	Investments for Public Works and Economic Adjustment Assistance Programs	Empowers distressed communities to revitalize, expand, and upgrade their physical infrastructure, and generate or retain long-term, private sector jobs and investment.	Technical Assistance
	Community Development Block Grant	This program is a flexible program that provides communities with resources to address a wide range of unique community development needs.	Grant
U.S. Department of the Interior, Bureau of Reclamation	Drought Response Program	Reclamation's Drought Response Program supports a proactive approach to drought. It will provide assistance to water users for drought contingency planning, including consideration of climate change information and to take actions that will build long-term resiliency to drought.	Technical Assistance
	Title XVI Water Reclamation & Reuse Program	Though this 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. Title XVI includes funding for feasibility studies and research, and the construction of water recycling projects on a project specific basis, in partnership with local governmental entities.	Technical Assistance
U.S. Economic Development Administration	Planning Program and Local Technical Assistance Program	Through its Planning Program and Local Technical Assistance Program, this administration assists eligible recipients in developing economic development plans and studies designed to build capacity and guide the economic prosperity and resiliency of an area or region.	Technical Assistance
<p>Key:                      CRP = Conservation Reserve Program                      FEMA = Federal Emergency Management Agency                      FMA = Flood Mitigation Assistance Program                      NFIP = National Flood Insurance Program                      NRCS = Nature Resources Conservation Service                      Reclamation = United States Department of the Interior, Bureau of Reclamation                      USACE = United State Army Corps of Engineer                      USDA = United State Department of Agriculture                      USEPA = United States Environmental Protect Agency</p>			






## 7.2 PROJECT AND PROGRAM IMPLEMENTATION

*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.*

Storm water management is currently going through a change in California due to the increased awareness of storm water-related environmental challenges, and opportunities to be part of long-term solutions to water conflict and scarcity statewide. While early regulatory efforts focused on controlling pollutants and implementing BMPs, current regulatory decisions also emphasize holistic strategies that will result in multiple community benefits while concurrently managing pollution. With the focus on storm water as a resource, newer low-impact development and green infrastructure techniques are now capitalizing on opportunities to capture storm water runoff, and to use it for local landscape and agricultural irrigation, and groundwater recharge. The Plan supports this paradigm shift in the way water is managed in California, therefore the Plan will only accept projects that are of multi-benefit.

The Plan will use a metric-based approach to maximize water supply, water quality, flood management, environmental, and community benefits in the watersheds to be consistent with the Storm Water Resource Plan Guidelines (Water Code Section 10560 et seq.). These benefits categories are described in Table 7-5. Each project and program added will address at least two or more main benefits, as shown below, and as many feasible additional benefits.

**Table 7-5 Cottonwood Creek Storm Water Resource Plan Multi-Benefit Categories**

Benefit Category	Criteria
Water Quality 	Increased filtration and/or treatment of runoff
	Nonpoint source pollution control
	Reestablished natural water drainage and treatment
Water Supply 	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
	Increased urban green space
	Reestablishment of the natural hydrograph
	Energy footprint
Community 	Public education
	Community involvement
	Recreational benefit
	Employment opportunities provided

### 7.3 DATA COLLECTION AND DECISION SUPPORT TOOLS

*The Plan identifies the development of appropriate decision support tools and the data necessary to use the decision support tools.*

Managing water resources data at a watershed scale, in a consistent manner and providing access to this information to the entities identified herein, is critical to successful implementation of the Plan. Properly managed data will help the RMA, project implementers, stakeholders, interested parties, elected officials, and the public understand water quantity and quality issues; assess and develop additional potential projects as solutions, and to implement projects efficiently.

The RMA developed a cost analysis tool using Autocase for Sites (<https://autocase.com/>) with information on all current projects identified in the Plan. The responsibility for providing project data is on the entity collecting it (i.e., project leads). Any entity can contribute potential projects and update data for the County for consideration, to incorporate into the tool to track costs associated with the multi-benefits associated with each project. This tool will be managed by the County and updated annually, or as needed by the County RMA. While only the RMA will have access to the tool, the information contained in the tool will be published on a regular basis as part of the accomplishment summary.

### 7.4 IMPLEMENTATION STRATEGY

Successful implementation of the Plan depends on clearly defined roles and responsibilities of the RMA, project-specific implementing entities, stakeholders, interested parties, elected officials, and the public. Responsibilities of key entities are described in this section.

The primary purpose of the RMA will be to provide oversight of the Plan and make related decisions, resolve any issues presented by the participating entities, provide guidance and direction on next steps and recommended actions (as appropriate), and to engage with stakeholders and interested parties. The RMA will continue to assist with the following:

1. *The RMA, per direction of the District, will be the lead entity responsible for administration, monitoring, and reporting of the Plan. The RMA will also be responsible for coordinating local storm water control measures, such as BMP projects, surface water storage projects and flood control projects.*
2. *The local GSAs (Kings River East, East Kaweah, and Greater Kaweah), will be responsible for administration, monitoring, and reporting of the groundwater augmentation portion of their chosen Plan projects, commensurate with responsibilities provided by SGMA.*
3. *IRWM Plan Groups (Kings and Kaweah River Basins), will be responsible for administration, monitoring, and reporting of the Plan elements regarding the overall water resources management within their respective planning area.*

Plan representatives will continue to be management-level officials with authority to commit their respective entities to a course of action.

The focus of each role listed above differs, to best integrate the strengths of each respective agency. As discussed in Section 2, the Plan is tailored to address the unique conditions of Tulare County, which is a mostly rural agricultural setting in the Central Valley. Although each Plan agency team member will oversee different aspects of the Plan, close coordination will continue to occur to promote successful plan implementation.

#### **7.4.1 Timeline for Integration with Existing Plans**

*Timeline for submitting Plan into existing plans, as applicable;*

The JDF Complex and Yettem Projects contained within the Plan are included in the Kings Basin IRWM Plan. Other projects identified within the Plan need to undergo further analysis before being included in the Kaweah River Basin IRWM Plan.

#### **7.4.2 Implementation Actions**

*Specific actions by which the Plan will be implemented*

The Plan uses an outcomes-based approach. This approach means that the RMA will measure the implementation of this plan against the overarching purpose, rather than meeting specific numeric limits. Education and awareness about the direction of the Plan in Tulare County is required for successful implementation. Monitoring of performance measures will take place at two levels: the Plan performance as a whole and individual project implementation. The Plan will be measured against the following implementation performance measures:

- Make progress towards meeting Plan objectives
- Provide additional funding for projects in the Cottonwood Creek area
- Enhance the water quality and water availability in the Cottonwood Creek area
- Educate the public about the how local water supplies are impacted by daily activities
- Create a dialogue with all entities implementing storm water programs on Cottonwood Creek, and collaborate to pursue funding opportunities

Implementation of projects will be measured against the following performance measures:

- Meet schedule, budget, and technical specifications identified in Cottonwood Creek Plan
- Realize multi-benefits in the Cottonwood Creek area

- Conduct active public outreach in project design and construction

The Autocase for Sites tool will serve as one method to track performance measures in combination with other project monitoring efforts. These activities will provide ongoing analysis and information management as to the performance of Plan implementation. Future updates to the Plan will also summarize the performance of the plan to date.

### 7.4.3 Responsible Parties

*All entities responsible for project implementation*

**Project-Specific Implementing Entities:** The project-specific implementing entities are those responsible for project implementation and any associated activities. The RMA will serve as the lead implementing agency and, where appropriate, work in coordination with other entities, such as GSAs, engaged consistent with their respective jurisdictional responsibilities. The RMA will continue to engage with these other entities on the Plan. Participation will not be mandatory, and each entity will make its own decisions on project implementation and any associated activities. Partnerships may be formed to support funding and implementation.

**Stakeholders and Interested Parties:** Stakeholders and interested parties will be actively engaged in updating and implementing the Plan. Potential stakeholders and interested parties include local ratepayers, developers, locally regulated commercial and industrial stakeholders, public utility districts and NGOs. They will continue to be provided with updates by the RMA on Plan progress and opportunities to comment. Some Plan meetings will be open for stakeholder and interested parties' involvement, and the County will post information and materials on its website as well as send email notifications as needed. Participation will continue to be voluntary and open to any entity or individual expressing interest.

**Elected Officials and Public:** Elected officials (e.g., board of directors, board of supervisors) and the public, including DAC members, will be informed of updates on Plan progress. Public presentations associated with the Plan will occur on an annual basis, or as-needed, before the District. Information for these meetings will be posted by the County on its website, as well as through email notifications as needed. Participation will continue to be voluntary and open to any entity or individual expressing interest. Additional information on Plan public engagement activities is provided in Section 8.

### 7.4.4 Project Tracking Procedures

*Procedures to track status of each project; Plan describes how implementation performance measures will be tracked.*

The JDF Complex and Yetteem Projects are currently in the planning and construction phase of their project lifecycles, respectively. The UDB Project and the Robles Project are in the conceptual phase. The stages of development as identified in the project planning sheet are listed below:

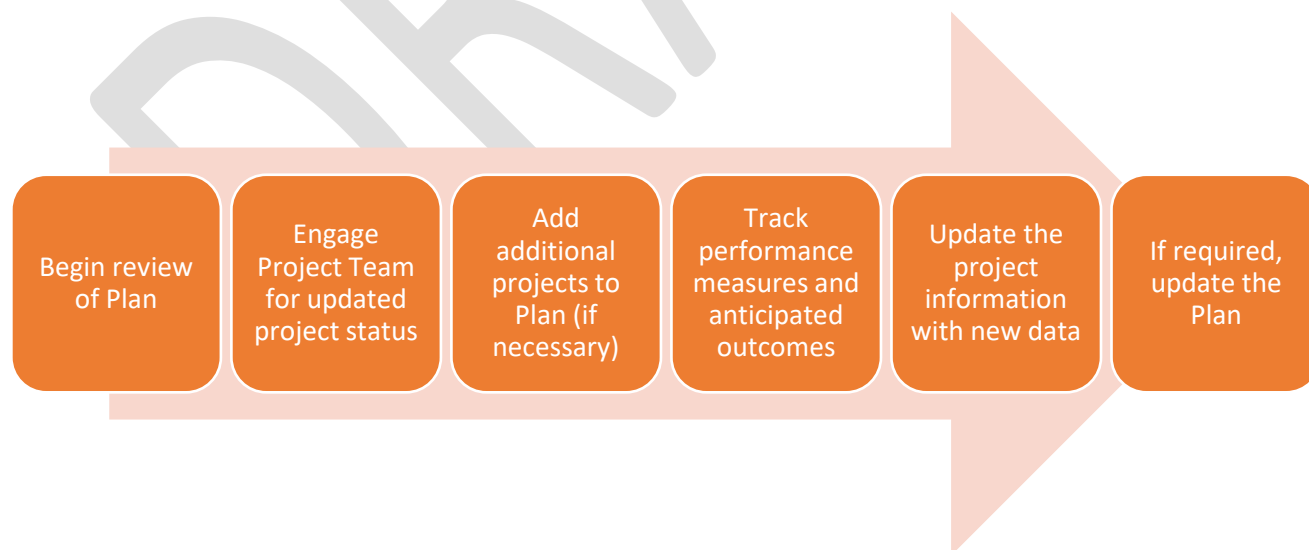
1. Conceptual development
2. Planning
3. Pre-Design
4. Design
5. Construction
6. Commissioning
7. Operations and maintenance

When a project is in one of the last three stages, the amount of funding for which it is eligible becomes limited. The project proponent should evaluate all sources, amounts, timing, and requirements as they vary depending on the lifecycle stage of a project.

The Plan currently identifies multi-benefit projects that exemplify the management of storm water quality and water resources in structural projects. In the future, non-structural projects may involve public outreach, education, and demonstration facilities that may be identified through collaboration with GSAs. Implementing these varied and diverse projects has unique challenges. The Plan encourages collaboration amongst public and private entities to most efficiently and effectively implement projects and to maximize benefits to the Cottonwood Creek area. It also encourages grouping of projects into larger projects or programs to meet more of the benefit categories, increase eligibility for funding, and to increase efficiency of implementation.

Tracking the status of the Plan will occur annually, or on an as-needed basis. The cyclic revision patterns of the Plan are presented in Figure 7-1 below.

**Figure 7-1. Iterative Cottonwood Creek Storm Water Resource Plan Amendment Process**



Key: Plan = Cottonwood Creek Storm Water Resource Plan

### 7.4.5 Planned Project Timeline

*Timelines for all active or planned projects*

A master project schedule is presented in Table 7-6. The intent of the master project schedule is to provide an opportunity to discuss the scheduling of projects. The implementation schedule will continue to be contingent upon receiving funding for the projects listed.

DRAFT



**Table 7-6. Funding Contingent Plan Project Schedule**

Project <sup>1</sup>	Conceptual Development		Planning		Pre-Design		Design		Construction		Commissioning		Operations and Maintenance	
	Start Date	End Date	Start Date	End Date	Start Date	End Date	Start Date	End Date	Start Date	End Date	Start Date	End Date	Start Date	End Date
Juvenile Detention Facility (JDF) – Cottonwood Creek Project	Complete	Complete	Complete	Complete	Complete	Complete								Ongoing
Yettem-Button Ditch Flood Control Project (Yettem)	Complete	Complete	April 2022	October 2022	October 2022	January 2023	March 2023	September 2023	April 2024	December 2025	January 2026	February 2026	February 2026	Ongoing
Upper Detention/Retention (UDR) Project	Complete	Complete	July 2020	January 2021	February 2021	May 2021	July 2021	January-2022	July 2022	March 2024	April 2024	May 2024	May 2024	Ongoing
Robles Lomas Ranch Detention (Robles) Project	Complete	Complete	October 2019	March-2020	April 2020	July 2020	September 2020	March 2021	October 2021	June 2023	July 2023	August 2023	August 2023	Ongoing

<sup>1</sup>Project schedule subject to revision based on available funding.

### **7.4.6 Adaptive Management Procedure**

#### *Procedures for ongoing review, updates, and adaptive management of the Plan*

The County expects that Plan implementation will involve regular monitoring and evaluation efforts to keep tabs on project implementation progress and to use available information to guide future changes in the Plan. The RMA also expects that monitoring and evaluating activities would occur throughout each year of implementation, with the project list reviewed annually and project description forms updated as needed by entities implementing specific projects. The evaluation of the need for a comprehensive update of the Plan will occur every five years, or sooner if significant changes occur with the projects and budget, or if regulatory compliance requires change. Initiation and completion of implementation and update activities will be contingent on the availability of sufficient funding.

#### **7.4.6.1 Activities, Process, and Schedule**

The anticipated activities, process, and schedule for implementing, monitoring, evaluating, and updating the Plan are presented in Table 7-7 in the form of a Responsibility Assignment Matrix chart. The categories for this chart are as follows:

Responsible: Entity who performs an activity or does the work.

Accountable: Entity who is ultimately accountable and has yes/no/veto authority.

Consulted: Entity that needs to provide feedback and contribute to the activity.

Informed: Entity that needs to know of a decision or action.

**Table 7-7. Anticipated Cottonwood Creek Storm Water Resource Plan Implementation and Update Activities**

Activity	Frequency	Tulare County Flood Control District	County or GSAs (Kings River East, East Kaweah, Greater Kaweah)	Stakeholders and Interested Parties	Elected Officials and Public
<b>Tracking Cottonwood Creek Plan Progress.</b> The RMA will review any changes/progress, determine the need for new/revised actions, and update the status of existing actions and add new actions.	Annually (or as needed)	R, A <sup>2</sup>	I	C	I
<b>Project Prioritization and Budgetary Considerations.</b> The RMA will meet annually to: (1) discuss evolving needs in the region and issues to be addressed with the Plan; (2) identify funding needs and sources for the following year's activities; and (3) develop a plan to pursue identified funds.	Annually (or as needed)	R,A <sup>2</sup>	C	I	I
<b>Project Development, Approval, and Implementation.</b> Development and initiation of projects will be the responsibility of the project proponent(s), meaning the individual entity or group of entities.	As needed	C	R, A	C	I
<b>Plan Update Need Evaluation.</b> Every 5 years, the RMA will assess the need for and prepare an updated Plan.	Every 5 years (or as necessary)	R, A	C	C	I
<b>Communication and Outreach.</b> The RMA and project proponents will do the following:					
<b>Cottonwood Creek Storm water Resources Plan.</b> This effort will include website updates and email communications to keep interested stakeholders informed of meetings, new materials, and other information related to the Plan and its implementation.	As needed	R, A	C	I	I
<b>Projects.</b> Each individual County will be responsible for apprising its ratepayers and the public of any actions initiated and related progress/results.	As needed	C	R, A	C	I
<b>Coordination with Other Regional/Statewide Ongoing Efforts.</b> Coordination and information sharing with other ongoing efforts will be beneficial to both the Plan and other efforts It is anticipated that this will occur on an as-needed basis.	As needed	R	I	I	I

7.4.6.1.1 Triggers to Reassess the Cottonwood Creek Storm Water Resource Plan

Although the RMA intends to regularly revisit the Plan and its performance, and to assess the need for five-year updates, there may be events or occurrences that have

substantial effects on storm water management and that trigger an update of the Plan (or a portion thereof) outside of that cycle. These triggers may include, but are not limited to:

- State and Federal regulations or requirements that often change, as well as new ones that go into effect.
- Unanticipated changes resulting from natural disasters, infrastructure failures, or other events may require reassessment of projects.

#### 7.4.7 Permitting

*A strategy and timeline for obtaining necessary Federal, State, and local permits.*

As funding is identified for projects, one of the first tasks will be identifying necessary permits as part of the design phase of the project. Depending on the type of project, the necessary permits will vary, and sufficient time must be allocated to meet the overall project implementation schedules shown in Table 7-6. For project implementation, project proponents are responsible for being compliant with applicable laws, regulations, and permit conditions (e.g., transportation encroachment, utility, and building permits).

Currently, one project in the Plan has obtained funding for implementation. Identified required permits are shown below in Table 7-8.

**Table 7-8 Identified Project Permits**

Project	Identified Permits
Juvenile Detention Facility (JDF) – Cottonwood Creek Project	EIR
	Nationwide Permit 27
	Clean Water Act Section 404 Permit
	Clean Water Action Section 201 Permit
	Fish and Game code Section 1602 Permit
Yettem-Button Ditch Flood Control Project	The Programmatic EIR (CEQA) was completed and adopted by the Tulare County Board of Supervisors by Resolution No. 2014-0789 on November 4, 2014. All permits are in hand.
Upper Detention/Retention Project	To be determined during CEQA/NEPA Analysis
Robles Lomas Ranch Detention Project	To be determined during CEQA/NEPA Analysis

Key:

CEQA = California Environmental Quality Act

EIR = Environmental Impact Report

NEPA = National Environmental Policy Act

## 7.5 INCORPORATION WITH IRWM PLAN

*The Plan will be submitted, upon development, to the applicable integrated regional water management (IRWM) group for incorporation into the IRWM plan.*

At the time of this Plan, two of the four identified projects have been screened, reviewed and included in an IRWMP. These projects include the JDF Complex and Yettem Projects. Each have been incorporated in the Kings Basin IRWM Plan 2018 Update. While the Yettem project is fully located within the Kings Basin boundary, the JDF Complex Project is in an area where the boundaries of the Kings and Kaweah River Basin IRWM Groups overlap. To address this overlap, the RMA will submit this Plan to the Kaweah River Basin IRWM Plan for future incorporation. This submittal will additionally initiate evaluation of the Upper Detention Basin project, which was identified through modeling activities implemented to inform this Plan.

Future storm water projects added to the Plan will be coordinated and incorporated within the applicable IRWM plan.

DRAFT

---

## Section 8

# Education, Outreach, and Public Participation

---

Consistent with California Water Code §10562(b)(4), the RMA intends to provide opportunities for public and key stakeholder education, outreach, and participation during implementation of and future updates to this Plan. This section identifies watershed-based storm water management efforts that maximize engagement with the public, relevant agencies, nonprofit organizations, nongovernmental organizations, and disadvantaged or climate-vulnerable communities within the plan boundaries during implementation and plan revision.

### 8.1 COMMUNITY PARTICIPATION

*Community participation is provided for in the Plan implementation.*

Community participation during Plan implementation will consist of watershed-based and site-specific communication and engagement activities conducted through existing venues and communication tactics. These activities are outlined in the following sections.

#### 8.1.1 Watershed-based Participation

As described in Section 4, watershed-based storm water management, and related water resource management efforts, in the Plan area is provided by the District, Kings Basin IRWM Group, Kaweah River Basin IRWM Group, and local agencies engaged in the development of sustainable groundwater management actions. These organizations serve as important outlets for coordination, collaboration, communication, and public participation in storm water management activities identified in this Plan. Open to the public, these gatherings are attended by a broad cross section of key regional stakeholders including landowners, members of disadvantaged communities, non-profit organizations, public and private water providers; and local, State, and Federal regulatory agencies. These groups and their contribution to community participation during Plan implementation are as follows:

##### ***Tulare County Flood Control District***

Role: Implementing Agency

Meetings of the Tulare County Flood Control Commission are public, and they are held once per month, unless otherwise rescheduled. The public and other stakeholders are encouraged to attend commission meetings to participate in Plan implementation, and for identification of additional projects that achieve watershed-based storm water management objectives. Members of the public and other interested parties can also

suggest storm water management projects via an on-line intake Flood Control Project Request form maintained on the District's website at <http://tularecounty.ca.gov/SWRP>.

### ***Kings Basin IRWM Group***

Role: Coordinating Agency

The Kings Basin IRWM Group will serve as a key partner for implementation and future modification of this Plan. Kings Basin IRWM Group meetings are open to the public and held monthly. The public and other interested parties will be encouraged to participate in these meetings during Plan implementation.

### ***Kaweah River Basin IRWM Group***

Role: Coordinating Agency

Progress on Plan implementation and its revision will be performed during publicly held meetings of the Kaweah River Basin IRWM Group. The public and other interested parties will be encouraged to participate in these meetings during Plan implementation.

### ***Groundwater Sustainability Agencies***

Role: Coordinating Agencies

As the land-use authority that's subject to SGMA, the County maintains an important role in development of regional GSPs. The County serves on the board of directors of the Greater Kaweah GSA, East Kaweah GSA, Kings River East GSA, and Mid-Kaweah GSA. In addition, the County is also an active participant in technical and community-based committees formed to develop the GSP. These committee and board forums provide further involvement opportunities for the public and other interested parties to receive information related to implementation of this Plan, and to provide recommendations for revisions to the Plan.

#### **8.1.2 Site-Specific Participation**

Site-specific participation is intended to solicit public participation as feedback to individual projects identified in the Plan, or to receive community recommendations for new projects to incorporate in future planning processes. This participation is accomplished through existing coordination with committees, boards, and community groups active in the Plan area. Groups frequently coordinated with by County staff are included in Table 4-1.

#### **8.1.3 Other Communication Activities**

The following activities will be considered to encourage on-going communication and engagement activities throughout Plan implementation and revision.



*Mailing List:* The County maintains a Plan interested-parties database for distribution of Plan implementation information. Interested parties can have their name and contact information added to the list by visiting <http://tularecounty.ca.gov/SWRP>.

*Website:* The County will continue to maintain the Storm Water Resource Management page within the RMA portal. This page will be periodically modified during plan implementation and encourage on-going public and agency involvement. The website is located at: <http://tularecounty.ca.gov/SWRP>.

## **8.2 IMPLEMENTATION OF TECHNICAL AND POLICY ISSUES**

*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.*

The public and other interested parties will be encouraged to provide input on major technical and policy issues during meetings held with implementing and coordinating agencies as described in Section 8.1. During these meetings, the public and other interested parties can discuss and provide input on technical and policy issues associated with Plan implementation, and they can provide input on topics to be incorporated into future versions of the Plan.

## **8.3 MECHANISMS TO FACILITATE PUBLIC PARTICIPATION**

*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.*

To facilitate public participation in implementation of the Plan, and to aid the eventual revision of the Plan, the County intends to partner with the implementing and coordinating agencies as described in Section 8.1. This approach recognizes the changing setting in watershed-based storm water management activities as associated with State legislation linked to IRWM and SGMA. As mentioned in 8.1, the public will be encouraged to provide input and feedback during implementation as part of the full context of each agency's progress to implement their respective plans. Mechanisms are anticipated to include committee workshops and presentations to governing boards.

A substantive milestone in revision of the plan is anticipated to be the formal adoption and implementation of GSPs by the three GSAs in the Watershed. The format of this will be dependent on the extent to which GSAs identify projects that depend on watershed-based storm water management actions within the Cottonwood Creek Watershed.

---

## 8.4 PROJECT DESIGN ENGAGEMENT

*Plan describes mechanisms to engage communities in project design and implementation.*

Identified projects in this Plan that advance to implementation will be performed in accordance with applicable local, State, and Federal regulations, as appropriate, in coordination with the public and other interested parties. The mechanism for this engagement is anticipated to include the following tasks:

**Project Scoping:** The County will host a public scoping meeting during a session of the Tulare County Flood Control Commission. This will include a review of the project purpose and objective, disclosure of the range of projects considered and their priority consistent with the Plan, and other applicable topics. The public and other interested parties will be encouraged to provide verbal comments or formal written comments.

**Agency Coordination:** As applicable, the County will schedule and host project coordination meetings with agencies with jurisdictional or regulatory oversight of the project. These may include municipal and industrial water purveyors, utility districts, GSAs, irrigation districts, and flood control operators.

**Public Comment Report:** Subsequent to project scoping, the County will compile an administrative record received during public comments and provide written responses. This report will be provided to the Tulare County Flood Control Commission for their review and consideration.

**Project Implementation Reports:** Managers of Plan projects authorized for implementation by the Tulare County Flood Control Commission will provide periodic progress summaries during commission meetings. The public and other interested parties will be encouraged to provide input at this time.

## 8.5 AUDIENCE IDENTIFICATION

*Plan identifies specific audiences including local ratepayers, developers, locally regulated commercial and industrial stakeholders, nonprofit organizations, and the general public.*

The Watershed is an unincorporated region of Tulare County. The socio-economic structure of the Plan area is diverse; with a blend of small communities, rural homes, commercial/industrial operations, and agricultural operations. Industrial and commercial sectors are limited, and they are primarily associated with the agricultural economy. Each community within the watershed has been identified as a DAC or a SDAC (see Section 8.6, and Figure 8-2 Cottonwood Creek Disadvantaged Communities).

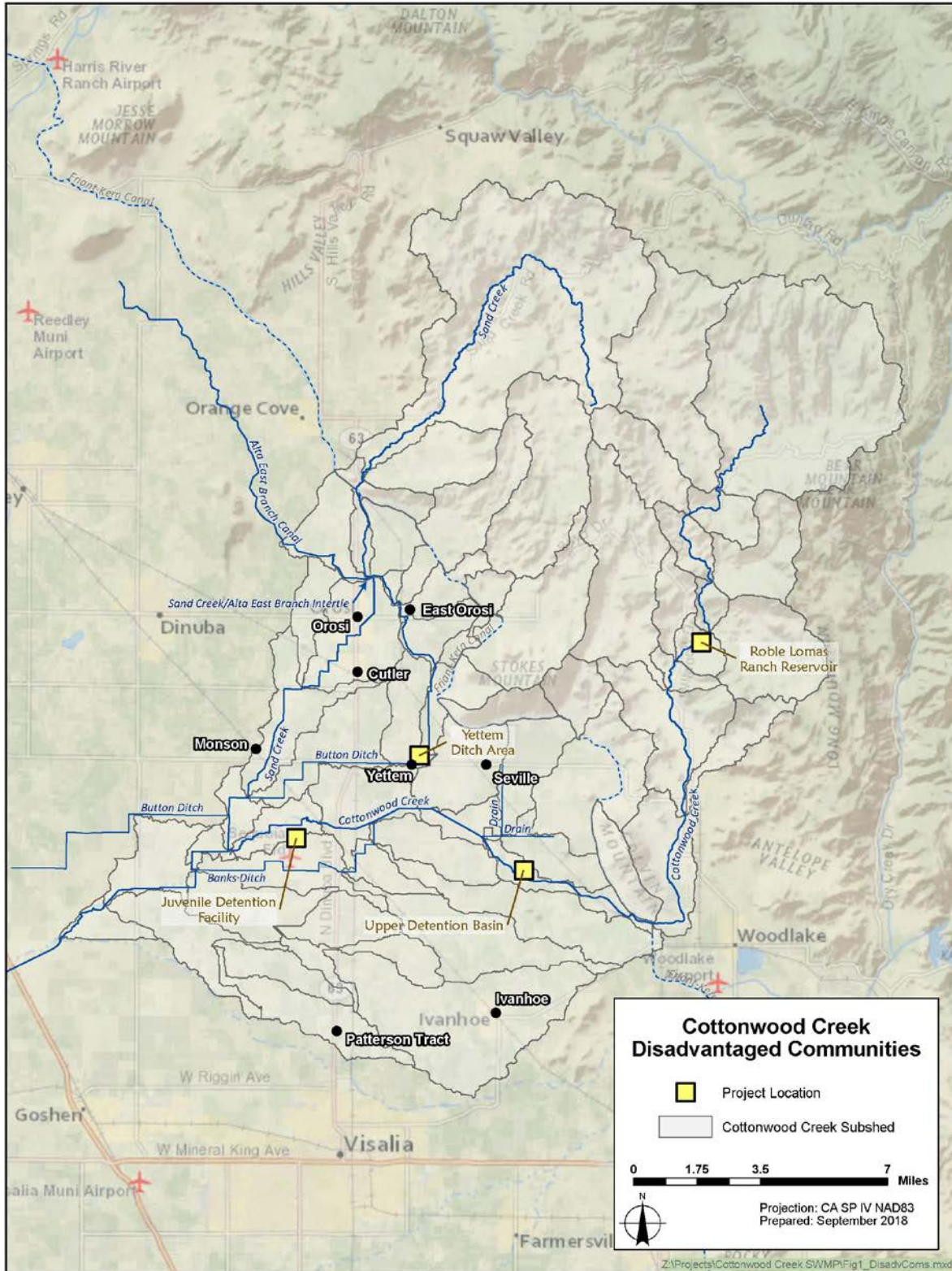


Figure 8-2 Cottonwood Creek Disadvantaged Communities

Audience identification activities performed to-date were achieved through partnerships with organizations that serve as stakeholder conveners for water resource management initiatives. These organizations are listed in Sections 8.1.1 and 8.1.2.

Future audience identification will be focused on support for implementation of projects identified in this plan and stakeholder identification at a sub-watershed level. This sub-watershed organization includes the four distinct sub-watersheds within the Cottonwood Creek Watershed as displayed in Figure 2-1 Cottonwood Creek Watershed. These sub-watersheds will be assessed for their audience composition that considers socio-economic status, land use, and other demographic factors. This assessment will assist the County in framing outreach and project identification activities that reflect local objectives of residents and businesses within each of the four sub-watersheds. This assessment is anticipated to include coordination and consultation with local agencies (See Section 8.1.2), regional GSAs, and disadvantaged community advocacy groups, including the Community Water Center, Leadership Counsel for Justice and Accountability, and SHE. These organizations have been valuable partners with the County for outreach to disadvantaged communities and are viewed as trusted advisors. For example, Tulare County partnered with SHE and the Community Water Center to develop the Disadvantaged Community Water Study for the Tulare Lake Basin through a Proposition 84 grant (administered Nov. 2010 through Nov. 2014).

## **8.6 DISADVANTAGED AND CLIMATE-VULNERABLE COMMUNITIES**

*Plan describes strategies to engage disadvantaged and climate vulnerable communities within the Plan boundaries and ongoing tracking of their involvement in the planning process.*

DWR defines a DAC as a community with an annual median household income (MHI) that is less than 80 percent of the statewide annual median household income (MHI), and a SDAC as less than 60 percent of the annual statewide MHI. As shown in Table 8-1, all of the communities in the Cottonwood Creek region are designated as either a DAC or SDAC. These areas include the City of Woodlake; the unincorporated communities of Cutler, East Orosi, Ivanhoe, Orosi, and Sultana; the hamlets of Monson, Seville, and Yettem; and the Patterson Tract, an area viewed as a neighborhood within the Urban Area Boundaries of the City of Visalia<sup>5</sup>.

Key state legislative guidance, to identify and engage disadvantaged and climate-vulnerable communities within the plan boundaries, includes Assembly Bill 2722 and

---

<sup>5</sup> 2030 Tulare County General Plan, SB 244 Disadvantaged Communities Assessment Report (2015)

Senate Bill 1000. This legislation utilized the California Communities Environmental Health Screening (CalEnviroScreen) Tool developed by the California Environmental Protection Agency. CalEnviroScreen is a mapping tool that helps identify California communities most affected by sources of pollution, and areas where people are especially vulnerable to pollution’s impact. The tool uses environmental, health, and socioeconomic information to produce scores for every census tract in the state. It applies scores so that different communities can be compared. An area with a high score is one that experiences a much higher pollution burden than areas with low scores. Scores for the communities within the Plan area—represented as a percentile of the state—are provided by US Census Tract in Table 8-1.

**Table 8-2 DAC/SDAC Communities in Cottonwood Creek**

City/Community	Annual MHI <sup>1</sup>	DAC/SDAC Designation <sup>2</sup>	Cottonwood Creek Zone	CalEnviroScreen 3.0 Census Tract and Percentile
Cutler	\$29,655	SDAC	Secondary	Census Tract 6107000600: 75-80%
East Orosi	\$32,313	SDAC	Secondary	Census Tract 6107000202: 80-85%
Ivanhoe	\$31,611	SDAC	Primary	Census Tract: 6107000800: 70 to 75%
Monson	\$46,250	DAC	Secondary	Census Tract: 6107000301: 75-80%
Orosi	\$33,293	SDAC	Secondary	Census Tract 6107000201: 85-90%
Patterson Tract	\$39,006	DAC	Secondary	Census Tract: 6107000900: 85-90%
Seville	\$23,000	SDAC	Primary	Census Tract 6107000600: 75-80% Census Tract 6107000800: 70-75%
Yetter	\$33,239 <sup>3</sup>	SDAC <sup>3</sup>	Primary	Census Tract 6107000600: 75-80%
Key: DAC = disadvantaged community MHI = median household income SDAC = severely disadvantaged community				
Notes: <sup>1</sup> MHI data from 2012 – 2016 U.S. Census Bureau American Community Survey Five-Year Estimates for Census Designated Place. <sup>2</sup> DAC/SDAC designation based on 2012 – 2016 U.S. Census Bureau American Community Survey Five-Year Estimates. Annual California Statewide MHI for 2012 – 2016 was \$63,783. DACs are communities with less than 80 percent of the annual MHI. SDACs are communities with less than 60 percent annual MHI. <sup>3</sup> MHI data from 2012-2016 U.S. Census Bureau American Community Survey Five-Year Estimates for Disadvantage Communities Tract. No data available as Census Designated Place.				

Communication and coordination with these groups, for Plan design engagement purposes, is best achieved through presentations at existing community meetings and in collaboration with regional disadvantaged community advocacy groups. These

advocacy groups are non-profit organizations established to assist disadvantaged communities with, among other things, engagement with public agencies on a wide range of environmental justice challenges. Engagements with local and regional advocacy groups were conducted through several regional resource-management planning efforts established in response to state laws and regulations. These efforts include meetings of the Tulare County Flood Control Commission, the Kings Basin IRWMP, the Kaweah River Basin IRWMP, and board and committee meetings of regional GSAs. Local advocacy groups frequently engaged in these planning efforts as active participants including: Community Water Center (CWC), SHE, and the Leadership Counsel for Justice and Accountability (LCJA).

Participation of these advocacy groups and disadvantaged community members is tracked through attendance records at public meetings, summaries of public meetings, and written comments provided to County staff that are applicable to the Plan.

### **8.7 IDENTIFICATION OF ENVIRONMENTAL INJUSTICE NEEDS**

*Plan describes efforts to identify and address environmental injustice needs and issues within the watershed.*

California was one of the first states in the nation to codify environmental justice in statute. Government Code § 65040.12 defines environmental justice to mean the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation and enforcement of environmental laws, regulations, and policies. Beyond the fair treatment called for in the code, leaders in the environmental justice movement strive to include individuals disproportionately impacted by pollution and other climate vulnerabilities in their decision-making processes. The aim is to lift the unfair burden of pollution from those most vulnerable to its impact.

Projects identified in this Plan seek to address, in part, public safety threats to disadvantaged communities from flood; and to contribute to the replenishment of groundwater resources that these communities depend on for drinking water. The Yettem Detention Basins, for example, would become the first component of a storm drainage system for the hamlet of Yettem<sup>6</sup>. County efforts to identify environmental injustice needs within the Plan area are conducted as part of engagement activities with disadvantaged and climate -vulnerable communities as described in Section 8.6.

While there are no Federally recognized Native American tribe reservations within the Plan boundaries, the County recognizes that California Native Americans' prehistoric, historic, archaeological, cultural, and sacred places are essential elements in tribal

---

<sup>6</sup> Tulare County Housing Element – Action Program 9 Existing Infrastructure



cultural traditions, heritages, and identities. Consistent with the goals, objectives, and requirements of Assembly Bill 52; the County submitted a Tribal Consultation List request to the Native American Heritage Commission (NAHC) on Sept. 24, 2018. This request to the NAHC included a general description of the Plan and map identifying the watershed boundaries. Results of this NAHC request are not yet available.

**8.8 SCHEDULE FOR PUBLIC ENGAGEMENT AND EDUCATION**

*Plan includes a schedule for initial public engagement and education.*

Multiple public engagement and education opportunities will be provided during Plan implementation. These activities are listed in Table 8-3.

**Table 8-3. Public Engagement and Education Schedule**

Activity	Frequency	Location
Project Website Management: <ul style="list-style-type: none"> <li>• Project implementation</li> <li>• Meeting notices</li> <li>• Meeting summaries</li> <li>• Project recommendation form</li> </ul>	Updates as required	<a href="http://www.tularecounty.ca.gov/swrp">http://www.tularecounty.ca.gov/swrp</a>
Plan Implementation Report	Annually, in the 4 <sup>th</sup> quarter	Tulare County Flood Control Commission
GSA Coordination/Consultation	Monthly, as needed	East Kaweah GSA Greater Kaweah GSA Kings River East GSA
IRWM Coordination/Consultation	Monthly, as needed	Kings Basin Water Authority Kaweah River Basin Integrated Regional Water Management

Key:  
 GSA = groundwater sustainability agency  
 IRWM = integrated regional water management



## Section 9 References

---

- California Regional Water Quality Control Board Central Valley Region. (2015). Water Quality Control Plan for the Tulare Lake Basin, Second Edition.
- County of Tulare Resource Management Agency. (2014), Cottonwood Creek Integrated Resources Management Program Draft Program Environmental Impact Report.
- Kang, Joohyon, University of California Los Angeles. (2005). Modeling First Flush and Particle Destabilization: Implications for Design and Operation of Storm water BMPs.
- Scharffenberg, William A., U.S Army Corps of Engineers Hydrologic Engineering Center. (2013), Hydrologic Modeling System HEC-HMS User's Manual. December.
- Stein, E. D., Tiefenthaler, L. L., & Schiff, K. C. (2008). Comparison of storm water pollutant loading by land use type. Southern California Coastal Water Research Project 2008 Annual Report, 15-27.
- Tulare County Flood Control District (1971), Flood Control Master Plan for the County of Tulare, California. June.
- Kings Basin Water Authority (2018), Kings Basin Integrated Water Resource Plan, Project 126: Juvenile Detention Facility – Cottonwood Creek (JDF Complex).
- Kings Basin Water Authority (2018), Kings Basin Integrated Water Resource Plan, Project 124: Yетtem-Button Ditch Flood Control Project.

---

**Section 10**  
**Appendix A – SWRP Checklist and Self-**  
**Certification**

---

**Appendix A: Checklist and Self-Certification**

<b>Watershed Identification</b> <b>(Guidelines Section VI.A)</b>		
Y	Plan identifies watershed and subwatershed(s) for storm water resource planning	10565 (c) 10562 (b)(1)
<p><u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 2.1 Watersheds and Subwatersheds; Page 2-1 and Figure 2-1; Prepared by Tulare County; November 2016</i></p>		
Y	Plan is developed on a watershed basis, using boundaries as delineated by USGS, CalWater, USGS Hydrologic Unit designations, or an applicable regional water management group, and includes a description and boundary map of each watershed and sub-watershed applicable to the Plan.	
<p><u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 2.1 Watersheds and Subwatersheds; Page 2-1 and Figure 2-1; Prepared by Tulare County; November 2016</i></p>		
	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;	
<p><u>References:</u></p>		
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 boundarie, etc.; preferably provided in a geographic information systm shape file);	
<p><u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 2.2 Political and Service Area Boundaries; Page 2-1 and Figure 2-3; Prepared by Tulare County; November 2016</i></p>		
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)	
<p><u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 2.3 Water Quality Priorities; Page 2-6 and Page 2-7; Prepared by Tulare County; November 2016</i></p>		
Y	Plan describes the general quality and identification of surface and groundwater resources within the watershed (preferably provided in a geographic information system shape file);	
<p><u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 2.4 Surface Water and Groundwater Resources; Page 2-7 and Figure 2-2; Prepared by Tulare County; November 2016</i></p>		

## Appendix A: Checklist and Self-Certification

	Plan describes the local entity or entities that provide potable water supplies and the estimated volume of potable water provided by the water suppliers;
<u>References:</u>	
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;
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 2.1 Surface Water and Groundwater Resources; Page 2-1 and Figure 2-2; Prepared by Tulare County; November 2016</i>	
	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).
<u>References:</u>	

**Appendix A: Checklist and Self-Certification**

<b>Water Quality Compliance</b> <b>(Guidelines Section V)</b>		
Y	Plan identifies activities that generate to the pollution of stormwater or dry weather runoff, or that impair the effective beneficial use of storm water or dry weather runoff.	10562(d)(7)
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 3.1 Land Use and Activities; Page 3-1 through Page 3-2; Prepared by Tulare County; November 2016</i>		
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)
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 3.2 TMDL and NPDES Compliance; Page 3-2; Prepared by Tulare County; November 2016</i>		
Y	Plan identifies applicable permits and describes how it meets all applicable waste discharge permit requirements	10562(b)(6)
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 3.3 Waste Discharge Permit Compliance; Page 3-2 and Page 3-3; Prepared by Tulare County; November 2016</i>		

<b>Organization, Coordination, Collaboration</b> <b>(Guidelines Section VI.B)</b>		
Y	Local agencies and nongovernmental organizations were consulted in Plan	10565(a)
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 4.1 Local Agency Coordination; Page 4-1; Prepared by Tulare County; September 2018</i>		
Y	Community Participation was provided for in Plan development	10562(b)(4)
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 4.5 Public Outreach and Engagement; Page 4-12; Prepared by Tulare County; September 2018</i>		
Y	Plan includes description of the existing integrated regional water management group(s) implementing an integrated regional water management plan.	
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 4.3 Integrated Regional Water Management Groups; Page 4-6, and Figure 4-2 Cottonwood Creek IRWMP Boundaries; Page 4-9; Prepared by Tulare County; September 2018</i>		

**Appendix A: Checklist and Self-Certification**

<b>Organization, Coordination, Collaboration (cont.)</b> <b>(Guidelines Section VI.B)</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.
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 4.4 Public Outreach and Engagement; Page 4-10; Section 4.1.2.3 Groundwater Sustainability Agencies; Page 4-4; Figure 4-1. Cottonwood Creek Groundwater Sustainability Agency</i>	
Y	Plan includes identification of nonprofit organizations working on storm water and dry weather resource planning or management in the watershed.
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 4.2 Non-Governmental Organizations; Page 4-10; Section 8.6 Disadvantaged and Climate-Vulnerable Communities; Page 8-1; Prepared by Tulare County; September 2018</i>	
Y	Plan includes identification and discussion of public engagement efforts and community participation in Plan development.
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 4.5 Public Outreach and Engagement; Page 4-12; Prepared by Tulare County; September 2018</i>	
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
<u>References:</u> <i>Cottonwood Creek Storm Water Resources Plan; Section 4.1 Local Agencies, Page 4-1; Prepared by Tulare County; September 2018</i>	
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.
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 4.4.2 Regulatory Agencies; Page 4-10; Prepared by Tulare County; September 2018</i>	
Y	Plan describes the relationship of the Plan to other existing planning documents, ordinances, and programs established by local agencies.
<u>References:</u> <i>Cottonwood Creek Storm Water Resources Plan; Section 4.4.2 Relationship with Other Planning Documents, Page 4-10;</i>	

**Appendix A: Checklist and Self-Certification**

	(If applicable)Plan explains why individual agency participation in various isolated efforts is appropriate.
<u>References:</u>	
<b>Quantitative Methods</b> <b>(Guidelines Section VI.B)</b>	
Y	<b>For all analyses:</b> 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.
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 5.1 Metrics-Based Analysis; Page 5-1 through Page 5-3; Prepared by Tulare County; November 2016</i>	
	<b>For water quality project analysis (section VI.C.2.a):</b> 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 resources (as described in Guidelines section VI.C.2.a).
<u>References:</u>	
Y	<b>For storm water capture and use project analysis (section VI.C.2.b):</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.
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 5.1.2 Storm Water Capture and Use Project Analysis; Page 5-3; Prepared by Tulare County; November 2016</i>	
Y	<b>For water supply and flood management project analysis (section VI.C.2.c):</b> Plan includes an analysis of how each project and program will maximize and/or augment water supply.
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 5.1.3 Water Supply and Flood Management Project Analysis; Page 5-3; Prepared by Tulare County; November 2016</i>	
Y	<b>For environmental and community benefit analysis (section VI.C.2.d):</b> Plan includes a narrative of how each project and program will benefit the environment and/or community, with some type of quantitative measurement.
<u>References:</u>	

**Appendix A: Checklist and Self-Certification**

*Cottonwood Creek Storm Water Resource Plan; Section 5.1.4 Environmental and Community Benefit Analysis; Page 5-3;  
Prepared by Tulare County; November 2016*

**Quantitative Methods (cont.)**

**(Guidelines Section VI.B)**

**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:

**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:

*Cottonwood Creek Storm Water Resource Plan; Section 6.1 Opportunities to Augment Local Water Supply; Page 6-1;  
Prepared by Tulare County; November 2016*

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

10562(d)(2)

References:

*Cottonwood Creek Storm Water Resource Plan; Section 6.2 Opportunities for Source Control; Page 6-4; Prepared by Tulare County; November 2016*

Y

Plan identifies projects that reestablish natural water drainage treatment and infiltration systems, or mimic natural system functions to the maximum extent

10562(d)(3)

References:

*Cottonwood Creek Storm Water Resource Plan; Section 6.3 Projects that Reestablish Natural Water Drainage; Page 6-4;  
Prepared by Tulare County; November 2016*

Y

Plan identifies opportunities to develop, restore, or enhance habitat and open space through storm water and dry weather runoff management, including

10562(d)(4)

References:



**Appendix A: Checklist and Self-Certification**

*Cottonwood Creek Storm Water Resource Plan; Section 6.4 Opportunities to Develop, Restore, or Enhance Habitat; Page 6-4; Prepared by Tulare County; November 2016*

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	10562(d)(5) 10562(b)(8)
---	--	----------------------------

References:  
*Cottonwood Creek Storm Water Resource Plan; Section 6.4 Opportunities to Develop, Restore, or Enhance Habitat; Page 6-4; Prepared by Tulare County; November 2016*

**Identification and Prioritization of Projects (cont.)**  
**(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	10562(d)(6)
---	---	-------------

References:  
*Cottonwood Creek Storm Water Resource Plan; Section 6.6 Design Criteria and BMPs for New Development and Redevelopment; Page 6-10; Prepared by Tulare County; November 2016*

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	10562(d)(6)
---	---	-------------

References:  
*Cottonwood Creek Storm Water Resource Plan; Section 5 Quantitative Methods; Page 5-1 through Page 5-3; Prepared by Tulare County; November 2016*

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:  
*Cottonwood Creek Storm Water Resource Plan; Section 6 Project Identification and Prioritization; Page 6-1 through Page 6-12; Prepared by Tulare County; November 2016*

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:

**Appendix A: Checklist and Self-Certification**

*Cottonwood Creek Storm Water Resource Plan; Section 6 Project Identification and Prioritization; Page 6-1 through Page 6-12; Prepared by Tulare County; November 2016*

**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.	
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 7.1 Resources for Implementation; Page 7-1; Prepared by Tulare County; September 2018</i>		
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	10562(d)(8)
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 7.2 Project and Program Implementation; Page 7-9; Prepared by Tulare County; September 2018</i>		
Y	The Plan identifies the development of appropriate decision support tools and the data necessary to use the decision support tools.	10562(d)(8)
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 7.3 Data Collection and Decision Support Tools; Page 7-10; Prepared by Tulare County; September 2018</i>		

**Appendix A: Checklist and Self-Certification**

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.	
	<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 7.4 Implementation Strategy; Page 7-10; Prepared by Tulare County; September 2018</i>	
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	10562(b)(7)
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 7.5 Incorporation with IRWM Plan; Page 7-19; Prepared by Tulare County; September 2018</i>		

**Implementation Strategy and Schedule (cont)**

**(Guidelines Section VI.E)**

Y	Plan describes how implementation performance measures will be tracked	
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 7.5 Incorporation with IRWM Plan; Page 7-18; Prepared by Tulare County; September 2018</i>		

**Education, Outreach, Public Participation**

**(Guidelines Section VI.F)**

Y	Outreach and Scoping: Community participation is provided for in Plan implementation.	10562(b)(4)
<u>References:</u> <i>Cottonwood Creek Storm Water Resource Plan; Section 8.1 Education, Outreach, and Public Participation; Page 8-1; Prepared by Tulare County; September 2018</i>		
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.	
<u>References:</u>		

**Appendix A: Checklist and Self-Certification**

*Cottonwood Creek Storm Water Resource Plan; Section 8.2 Implementation of Technical and Policy Issues; Page 8-3; Prepared by Tulare County; September 2018*

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:

*Cottonwood Creek Storm Water Resource Plan; Section 8.3 Mechanisms to Facilitate Public Participation; Page 8-3; Prepared by Tulare County; September 2018*

Y	Plan describes mechanisms to engage communities in project design and implementation
---	--

References:

*Cottonwood Creek Storm Water Resource Plan; Section 8.4 Project Design Engagement; Page 8-1; Prepared by Tulare County; September 2018*

Y	Plan identifies specific audiences including local ratepayers, developers, locally regulated commercial and industrial stakeholders, nonprofit organizations, and the general public.
---	---

References:

*Cottonwood Creek Storm Water Resource Plan; Section 8.5 Audience Identification; Page 8-4; Prepared by Tulare County; September 2018*

**Education, Outreach, Public Participation (cont.)**

**(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:

*Cottonwood Creek Storm Water Resource Plan; Section 8.6 Disadvantaged and Climate Vulnerable Communities; Page 8-6; Prepared by Tulare County; September 2018*

Y	Plan describes efforts to identify and address environmental injustice needs and issues within the watershed.
---	---

References:

*Cottonwood Creek Storm Water Resource Plan; Section 8.7 Identification of Environmental Injustice Needs; Page 8-8; Prepared by Tulare County; September 2018*

Y	Plan includes a schedule for initial public engagement and education.
---	---

References:

*Cottonwood Creek Storm Water Resource Plan; Section 8.8 Schedule for Public Engagement and Education; Page 8-9; Prepared by Tulare County; September 2018*

**Appendix A: Checklist and Self-Certification**

**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

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

