

UPDATED FINAL
CACHE CREEK RESOURCES
MANAGEMENT PLAN (CCRMP)
for LOWER CACHE CREEK

Yolo County

Updated December 17, 2019
Amended July 23, 2002
Adopted August 20, 1996

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Updated December 17, 2019 (Board Resolution 19-176)
Amended July 23, 2020 (Board Resolution 02-130)
Adopted August 20, 1996 (Board Resolution 96-132)

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CHAPTER 1.0 – INTRODUCTION

Pursuant to local requirements, the Cache Creek Resources Management Plan (CCRMP) was comprehensively reviewed and updated in 2017. New hydraulic modeling was conducted along Cache Creek using HEC-RAS v.5.0 and topographic data collected in 2011. Biological resources within the program area were comprehensively assessed. Over twenty years of data collected as a part of the program were analyzed for patterns and trends. This information was reported in an update to the 1995 Technical Studies entitled 2017 Technical Studies, which provided information in support of proposed updates, clarifications, and modifications to the program documents.

1.1 HISTORY AND BACKGROUND

Cache Creek has long served as the social and economic heartland of Yolo County. Long before exploration by the French trapper and Spanish soldiers, Cache Creek was one of the main settlement areas for the Patwin tribe, providing a rich environment for water, food, building materials, and recreation. In 1821, when the Spanish first entered the area, they noted a village of about 900 native people situated along the creek in an oak forest. The word Yolo comes from the Patwin "yoloy," which means a place abounding with rushes. These rushes were found in extensive wetlands along the Sacramento River, fed by the waters of Cache Creek.

By 1829, trappers from the Hudson Bay Company had discovered the bountiful nature of what the Spanish referred to as the "Rio de Jesus Maria." Since there was a convenient storage site near the creek for their beaver pelts, they dubbed it "Riviere la Cache," or Cache Creek. This area was one of the first in the Sacramento Valley to be settled by Americans, beginning in the 1840's. Several ranchos were granted to local residents by the Mexican government over the next decade. Soon, agriculture flourished along Cache Creek, especially the raising of livestock. The town of Cacheville (now Yolo) was established in 1857 and the water from Cache Creek was used to power mills and irrigate nearby fields.

Several ditches were constructed to divert water from Cache Creek in the 1850's and 1860's, diversifying the agricultural base of the area by expanding the production of wheat, barley, and alfalfa. In fact, irrigation diversions on Cache Creek are some of the earliest recorded in the state's history. Technological advances in water pumps during the 1880's led to widespread use of groundwater irrigation and the expansion of orchard crops, especially in the Capay Valley. As both surface irrigation and the groundwater pumping improved, agriculture intensified in areas previously dry farmed. The development of efficient land leveling equipment and continual improvements in water delivery systems after World War II created a shift from grain and orchard crops to irrigated field crops, such as sugar beets and tomatoes.

With the booming post-war economy came rapidly growing subdivisions in the urban areas, dam construction, and the building of the interstate highway system. Consequently, the 1950's saw a dramatic increase in the demand for high-quality sand and gravel for use in concrete and in road construction. Due to its unique hydraulic and geologic characteristics, Cache Creek soon proved

to be an important source of construction grade aggregate. In-stream mining expanded to meet the demand and several new gravel operators moved into the area. The amount of sand and gravel removed from the channel rose sharply over the next two decades, generating public interest in the environmental effects caused by mining. Concerned over the noticeable degradation of Cache Creek, Yolo County began to turn its attention towards taking better care of this long neglected and highly valued natural resource.

Aggregate Resources Advisory Committee

Yolo County began working on a regulatory solution for concerns related to aggregate mining in Cache Creek in the mid-1970's. Although much of the debate has centered on the benefits and problems associated with aggregate mining, previous studies have often expanded into other areas of environmental interest. The discussion of managing Cache Creek first began with the formation of the Aggregate Resources Advisory Committee (ARAC) by the Board of Supervisors in 1975. The ARAC described its scope as follows:

Concern that the high quality aggregate resources of Yolo County may be being depleted led to the need to understand the impact of gravel extraction on: sediment transportation, bank erosion, scour, stream channelization and meandering, groundwater recharge, agriculture, land values, air and noise pollution, environmental and aesthetic considerations as well as obtaining an estimate of needs for Yolo County to the year 2025 for aggregate. There is also concern that alternatives for management are recommended.

The ARAC sought the assistance of Woodward Clyde Consultants to provide an objective technical investigation of the conditions on Cache Creek. The primary purpose of the study was to develop a sound basis for establishing a viable management policy. The report focused on two primary environmental impacts associated with the creek: (1) the causes and effects of streambed lowering; and (2) the causes and effects of stream widening. Woodward Clyde concluded that the streambed had been lowered significantly in many areas, largely as a result of gravel extraction, but that several other factors also contributed, including flood control structures (dams, levees, channelization, etc.), the construction of bridges with piers in the channel, and removal of riparian vegetation.

Several of the recommendations described in the Woodward Clyde report were incorporated into the CCRMP, including the construction of sills, check dams, and jetties within the channel to reduce the potential for erosion and the additional protection of bridge structures (although the CCRMP recommends bio-engineering methods, rather than traditional techniques depending on the extensive use of concrete and steel). While recommending that in-channel excavation be significantly reduced, this early report advised that aggregate mining should be encouraged in off-channel pits, as long as such concerns as hydraulics, water, and agricultural land were adequately addressed. Woodward Clyde also suggested that the County undertake further study and regular monitoring of the creek. These concepts have similarly been applied in the policy framework of the CCRMP.

One of the primary recommendations of the ARAC was to update the County surface mining and reclamation ordinances, and require that all in-stream mining operations existing at the time obtain new use permits and reclamation plans consistent with the new ordinances. This was accomplished in 1980. The permits were analyzed in a program-level Environmental Impact Report (EIR), prepared by Environ. In the EIR, Environ also analyzed the County's approach to resource management. They reiterated many of the recommendations made by Woodward Clyde and the ARAC, such as the need for additional study and future monitoring; revision of the recently adopted interim mining and reclamation ordinances; encouragement of off-channel mining; and maximization of net benefits from the aggregate industry (similar to the CCRMP's concept of "net gain"). In addition, Environ recommended that the County re-examine its policy with regard to agriculture lands, to allow for reclamation to other compatible uses, such as groundwater storage and recharge basins, recreation ponds, and fish farming. Most importantly, however, was the ARAC's emphasis on developing a coordinated approach to resolving interrelated resource problems.

Aggregate Technical Advisory Committee

In order to implement the directions of the ARAC, the Board of Supervisors appointed an Aggregate Technical Advisory Committee (AgTAC) in 1979 to develop a Resource Management Plan (RMP) for Cache Creek. A new study was prepared by Wahler Associates in 1982, of sand and gravel deposits along Cache Creek, as well as the upper and lower groundwater basins within the plan area. The Draft Resource Management Plan for the Cache Creek area located between the towns of Yolo and Capay was released by the AgTAC in 1984. The draft plan looked at eleven separate management alternatives, as follows:

1. Eliminate in-channel mining and allow off-channel excavation;
2. Same as Item 1, except dedicate a corridor for the establishment of riparian vegetation;
3. Continue existing permits, as approved, and allow off-channel mining;
4. Repeal existing mining regulations and review in-stream mining on a case-by-case basis;
5. Create a channel of sufficient capacity to convey flood events, with in-channel mining restricted for maintenance and allow off-channel mining;
6. Same as Item 5, except sills would be installed downstream from local bridges to protect the structures against future scour;
7. Same as Item 5, except a low-flow channel would be designed within the floodway to convey smaller flood flows;
8. Same as Item 5, except channel banks would be armored with concrete or riprap;

9. Construct check dams within the channel and mine the materials that would be deposited behind them, as well as permit off-channel excavation;
10. Allow in-stream mining down to a predetermined elevation and prohibit off-channel mining; and
11. Prohibit all mining within the plan area.

After comparing the various benefits and problems of each method of creek management, the AgTAC decided that Alternative No. 5 was the one that would best accomplish the committee's goals, as well as being the most practical and the least expensive to implement. The recommended plan expanded upon this alternative, describing a number of specific actions needed to carry out the development of the flood channel concept. Among the actions to be taken were the design of a floodway using the 100-year storm event, as determined by the U.S. Army Corps of Engineers; the development of criteria to ensure that off-channel pits would not adversely impact groundwater flow or breach during a flood; adoption of new zoning designations to protect mined lands from encroachment by incompatible uses; and incorporation of the classification study of aggregate resources prepared by the State Department of Conservation. The AgTAC also reiterated earlier recommendations to review the compatibility of the County's agricultural zone categories with future mining reclamation, as well as a need to revise the County mining and reclamation ordinances.

A Draft EIR was authorized for the Draft Resource Management Plan by the firm of Dames and Moore in 1989. The document looked at seven different mining alternatives, as follows:

1. Continue existing permits, as proposed, and allow off-channel mining;
2. Rescind the County mining and reclamation ordinances, and allow both in-channel and off-channel mining depths and amounts to be set on an individual basis;
3. Implement the floodway channel concept described in the plan recommended by the AgTAC (Recommendation 5);
4. Implement off-channel wet pit mining, as long as it minimizes groundwater lowering and prevents levee breaches. (Note: This alternative and Item 3 together constituted the recommended AgTAC plan);
5. Allow off-channel mining, but restrict it to depths above the water table;
6. Allow in-stream mining below the maximum allowed depth (the theoretical thalweg); and
7. Prohibit all mining within the study area.

The environmental impacts of each alternative were examined in a general manner, since no specific applications had been submitted to the County for review. Before any further work could be completed; however, the Draft EIR was subjected to significant controversy regarding the adequacy of the project description and the accompanying analysis. As a result, the document was abandoned by the County in 1991.

Over the next two years, a series of public workshops were held by the Community Development Agency in order to develop a consensus project description to form the basis of a new Resource Management Plan. Although substantial progress was made, the effort was ultimately unsuccessful. This effort was later taken up by a subcommittee of the Board of Supervisors, who made their findings in March 1994. These findings formed the foundation for the goals and objectives of the CCRMP.

Cache Creek Area Plan

The Cache Creek Area Plan (CCAP) is comprised of the OCMP and CCRMP. The OCMP is a scientifically based aggregate resource management plan that allowed for off-channel mining adjacent to Cache Creek. It facilitated the development of a sufficient supply of aggregate to meet current and future market needs, while greatly increasing the level of environmental protection and monitoring. It provided a planning area boundary, and restricted mining to certain areas within that boundary for a 50-year period. It identifies specific goals, objectives, and actions to guide mining activities that go well beyond the state-mandated requirements of the State Mining and Reclamation Act (SMARA). The OCMP was adopted on July 30, 1996 (Board Resolution 96-117), and underwent a comprehensive update in 2017.

The CCRMP is a scientifically based river management plan that eliminated in-channel commercial mining, established an "improvement program" for implementing on-going projects to improve channel stability, encouraged restoration along the creek banks pursuant to a carefully developed policy and regulatory framework, and established a framework for future recreation along the Creek. The CCRMP was adopted on August 20, 1996 (Board Resolution 96-132), underwent a focused update on July 23, 2002 (Board Resolution 02-130), and a comprehensive update in 2017. An historic overview of the development of the two plans is provided below.

In June 1994, the Board of Supervisors adopted a framework of goals and objectives for the CCRMP¹. The document was based on the key premise that "the Creek must be viewed as a total system, as opposed to a singular focus on the issue of mining." As a result, the conceptual plan offered a far broader scope than previous efforts. It was composed of seven elements, covering agriculture, aggregate resources, riparian and wildlife resources, water resources, floodway and channel stability, open space and recreation, and the cultural landscape. Specific goals and

¹ The Yolo County Cache Creek Resources Management Plan (CCRMP) was adopted August 20, 1996, with an update on July 23, 2002. In 2002, the BLM released a draft of their Cache Creek Coordinated Resource Management Plan (CCCRMP). The BLM CCCRMP was adopted December 14, 2004. Though similarly named these plans are completely independent.

objectives were adopted for each of the elements, with suggested policies for their implementation.

A work schedule was also approved by the Board in June 1994, outlining the interrelationships between four primary tasks: (1) adoption of a resource management plan to protect and restore the creek; (2) adoption of an off-channel mining plan and implementing ordinances; (3) processing of long-term off-channel mining and reclamation applications; and (4) processing of temporary off-channel mining and reclamation applications to allow operations to continue while the necessary plans are being developed. This schedule was further refined by staff in order to provide a clear guide for both decision-makers and the public throughout the overall planning process.

In addition to adopting the conceptual framework, the Board also directed the preparation of the "*Technical Studies and Recommendations for the Lower Cache Creek Resource Management Plan*" (1995 Technical Studies). The 1995 Technical Studies provided baseline and historical information about the streamway fluvial morphology, groundwater resources, and riparian habitat, so that an accurate assessment could be made of the creek's condition and appropriate management strategies. Constraints and opportunities for activities such as channel stabilization, habitat restoration, flood control, groundwater management, and mining were also identified in the report. The 1995 Technical Studies include an extensive list of recommendations on improving the natural resources of Cache Creek. On October 24, 1995, the Board of Supervisors accepted the 1995 Technical Studies and directed staff to utilize them as the basis for preparing both the CCRMP and OCMP.

Throughout 1995 and the first half of 1996, the CCRMP, Cache Creek Improvement Program (CCIP), OCMP, and various implementing ordinances were drafted. Program EIRs were prepared and certified for both plans and accompanying ordinances. The entire program was adopted the Board of Supervisors in 1996, and subsequently placed by the Board before the voters on the November 1996 ballot against an opposing citizen's initiative. Over 60 percent of the voters supported the CCAP and that same proportion voted against the citizen's initiative. Moreover, the CCAP carried in every supervisorial district. Implementation of the plan began in earnest in 1997.

The entire CCAP program (sometimes referred to as the "gravel program") is now administered through the following local regulations:

- CCRMP implemented by the CCIP (Appendix A) and In Channel Ordinance (Appendix B and County Code Title 10, Chapter 3)
- OCMP implemented by the Off-Channel Surface Mining Ordinance (County Code, Title 10, Chapter 4) and the Surface Mining Reclamation Ordinance (County Code, Title 10, Chapter 5)

- Other important ordinances include (but are not limited to):
 - Gravel Mining Fee Ordinance (County Code, Title 10, Chapter 11)
 - Sand and Gravel Combining Zone County Code, Title 8, Chapter 2, Article 23.1)
 - Sand and Gravel Reserve Combining Zone (County Code, Title 8, Chapter 2, Article 23.8)
 - Development Agreements Ordinance (County Code, Title 8, Chapter 5)
 - Flood Protection Ordinance (County Code Title 8, Chapter 4)

1.2 STUDY AREA

The definition of a waterway is always subject to varied interpretation. Some agencies use the floodplain as the definition, although they may differ on what size event to use, covering everything from a 2-year flood to a 200-year flood. Other jurisdictions define a creek according to its navigability. Still, others look at the extent of riparian vegetation or its suitability for support fish species. The confusion regarding how a creek is defined extends to the literature of channel dynamics. References are made to ordinary high water, active channel, and bank full elevation, all of which may or may not mean the same thing. The CCRMP uses a definition, based on floodplain boundaries and streambank locations that is measurable and allows the plan to focus on the extent of the present creek and improvement of channel stability.

The CCRMP Channel Boundary

The authors of the 1995 Technical Studies, as well as other consultants, recommended that the CCRMP use two measures for determining the extent of the channel. One was the existing channel bank, as shown in recent aerial photographs taken of Cache Creek. The other was the 100-year floodplain boundary. There were several flood boundaries for Cache Creek at the time, developed by the Federal Emergency Management Agency, the U.S. Army Corps of Engineers, and the State Reclamation Board, each of which varied slightly from the others. On the recommendation of the County's technical consultants, the floodplain used to determine the original channel boundary for the CCRMP was the one calculated by the Army Corps of Engineers in the "*Westside Tributaries to Yolo Bypass, California, Draft Reconnaissance Report*" released in June of 1994.

The area within the channel boundary originally encompassed 4,956 acres. As recommended in the Program EIR for the CCRMP, the boundary was modified to eliminate an off-channel mining pit operated by Solano Concrete at the time. In addition, the large floodplains located downstream of County Road 94B were deleted, because it was determined that these farmlands did not have a direct impact on the dynamics of the channel, except to serve as overflow areas during severe flood events. In this downstream reach, the boundary was defined by the channel bank line, as delineated in the 1995 Technical Studies. The revised channel boundary, comprising 2,324 acres, served as the plan area for the CCRMP.

In 2017, as part of the CCAP Update, the CCRMP channel boundary (also referred to as the in-channel area or the active creek channel) and the more narrow CCRMP plan area boundary, were updated to reflect the best available information including 2011 LIDAR topography and two-dimensional hydraulic modeling using this topography, 2015 aerial photography, and the 2012 FEMA regulatory 100-year floodplain (see Figures 1, 2, and 3). As redrawn, the in-channel area totals 5,109 acres and the CCRMP plan area totals 2,266 acres.

Although the CCRMP concentrates on those issues that most directly affect Cache Creek, management of the creek requires a comprehensive approach that recognizes the interrelationships between the creek and its regional setting. The Streamway Influence Zone (see Figure 4) described in the 1995 Technical Studies shows the approximate area subject to these interrelationships, based on the extent of the channel's historical meander migration zone. Because off-channel mining within the Streamway Influence Zone could be especially prone to the effects of erosion and groundwater lowering caused by the creek, appropriate engineering is required to account for potential pit capture and fluctuating water levels.

The Off-Channel Mining Plan

SMARA includes provisions to encourage the production and conservation of minerals to ensure that a sufficient supply will be available for the state's future growth. In order to assist local jurisdictions in the identification of significant aggregate resources near urbanizing areas, the State Geologist is assigned the responsibility of classifying the extent and quality of mineral deposits within metropolitan regions around the state. As a part of this program, the State Department of Conservation (DOC) issued Special Report 156, *"Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Sacramento-Fairfield Production Consumption Region"* in 1988. Included within this report is an analysis of the sand and gravel resources located along Cache Creek. An updated report was released in June 2019 (Special Report 245, *Mineral Land Classification: Concrete Aggregate in the Greater Sacramento Area Production Consumption Region, 2018*). SR 245 consolidates and redefines the regional consumption area. The report provides a revised estimate of remaining available aggregate along Cache Creek that does not appear to factor in the conclusions of the 2017 Technical Studies related to in-channel aggradation or aggregate extraction off-channel since the 1988 report. For these reasons, no changes to County estimates of available aggregate resources have been made in response to this report, as County estimates are believed to be more accurate.

The planning area for the Off-Channel Mining Plan (OCMP) is defined as those areas designated as potentially containing sand and gravel resources (i.e. Mineral Resource Zones), according to Special Report 156, minus the planning area for the CCRMP, as defined above (see Figure 2). The MRZ area includes approximately 28,130 acres in a broad band of varying width along Cache Creek, between the Capay Dam and the town of Yolo. As described in the OCMP, however, only 4,727 acres or less than 17 percent of the total plan area are identified for off-channel mining over the next fifty years.

Cache Creek Area Plan Update - In-Channel Boundary

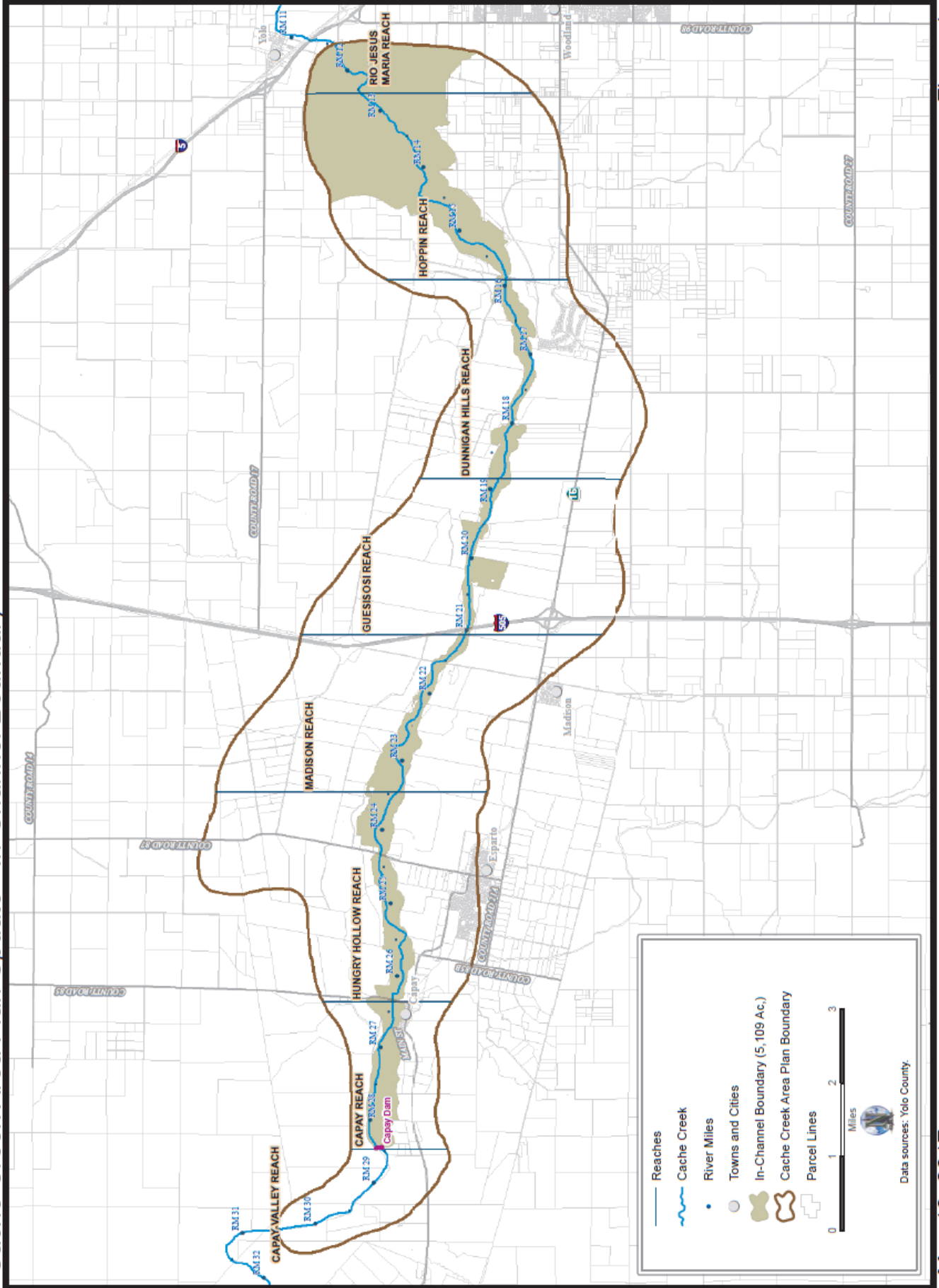


Figure 1

May 10, 2017

Cache Creek Area Plan Update -Cache Creek Resource Management Plan Boundary

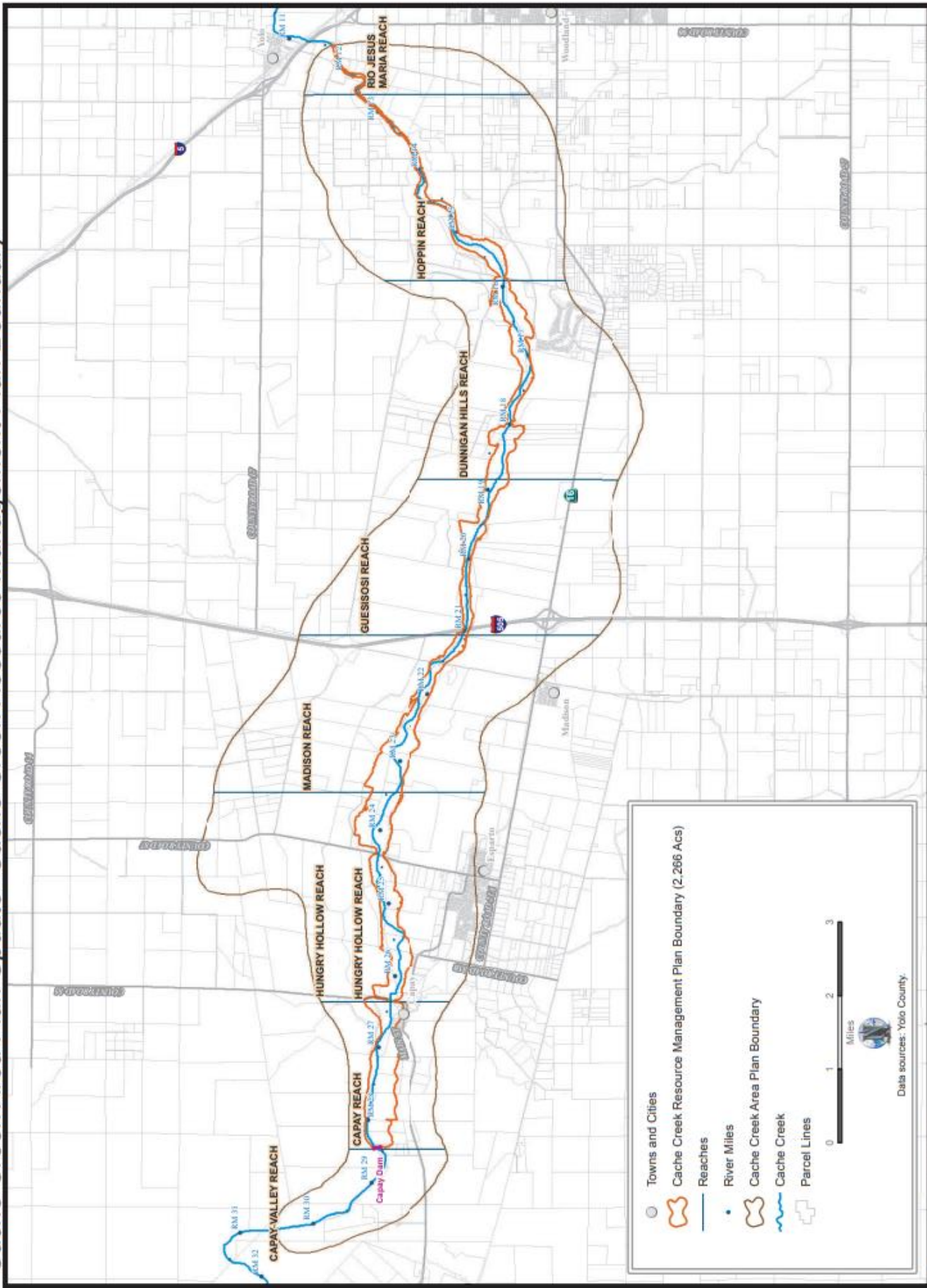


Figure 2

May 10, 2017

Cache Creek Area Plan Update - FEMA 100 Year Flood Zones

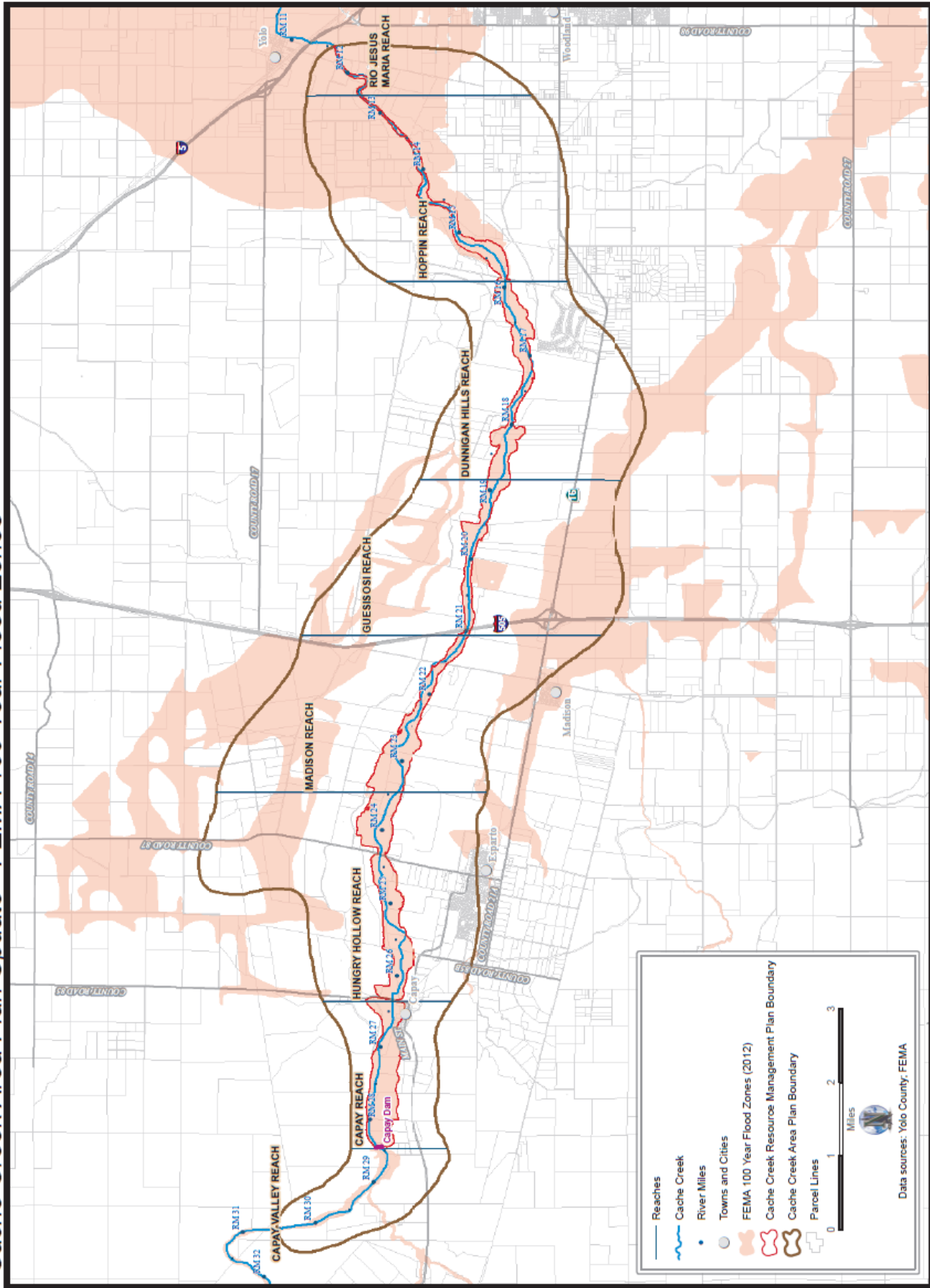


Figure 3

May 10, 2017

Cache Creek Area Plan Update - Streamway Influence Zone

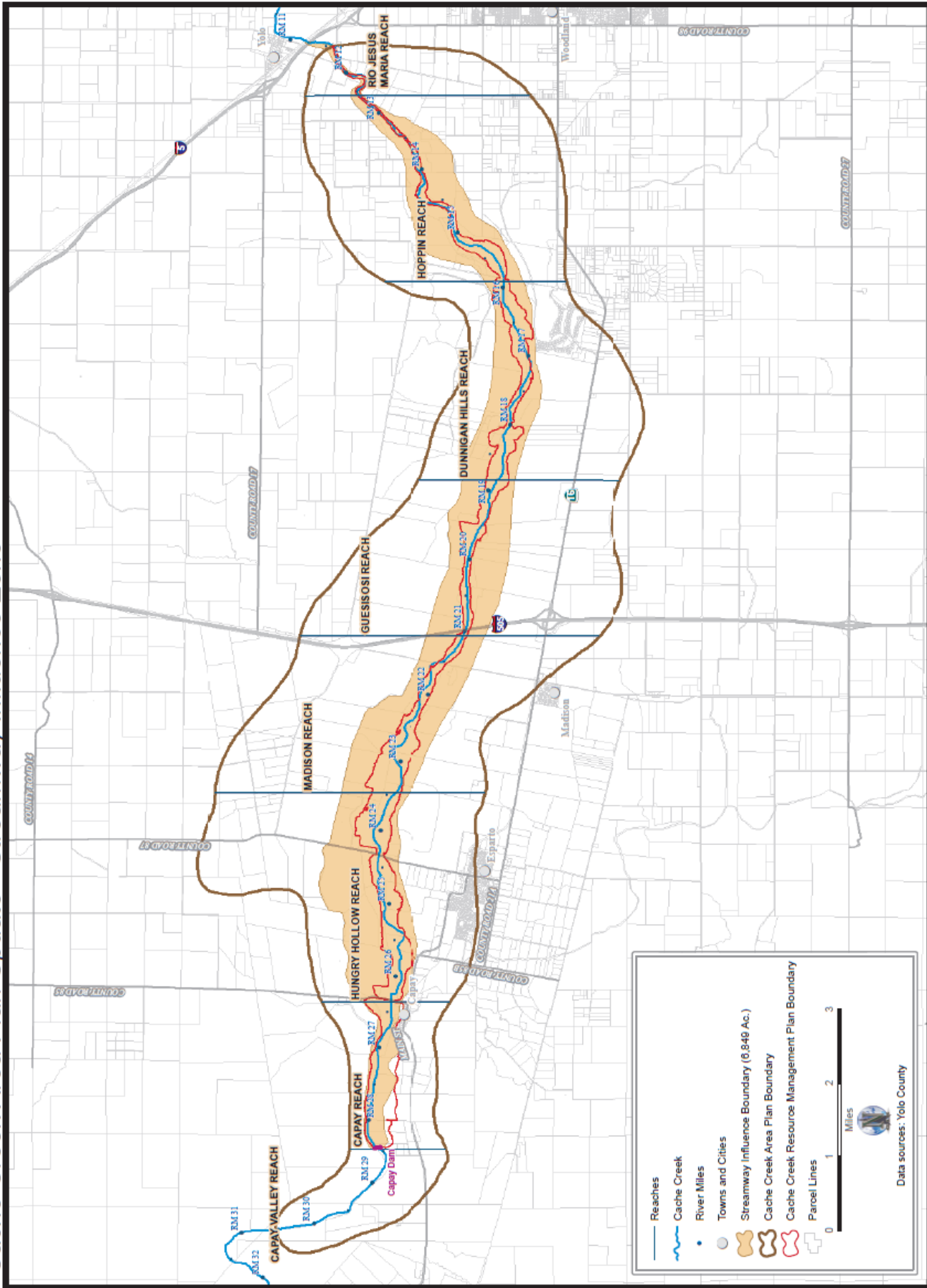


Figure 4

May 10, 2017

Horizon Year

The horizon year for this plan is 2068. Similar to the use of this term in other long-range planning efforts, this reflects how far into the future the plan guidance extends. It also defines the period for consideration of cumulative effects for purposes of environmental impact analysis.

1.3 RELATIONSHIP TO OTHER REGULATIONS AND PLANS

The CCRMP recognizes that management of the creek cannot occur within a vacuum. Implementation of the CCRMP must take into consideration other policies and plans of the County, as well as the applicable requirements of local, state, and federal agencies of jurisdiction. This section briefly describes compliance of the proposed plan with those regulations of primary relevance.

The Surface Mining and Reclamation Act

Two of the primary recommendations of the CCRMP were (1) that the amount of in-stream excavation be significantly reduced from present levels; and (2) that future excavation within the channel be restricted to those "channel smoothing and shaping" activities which reduce erosion and improve flow dynamics. Even though large-scale commercial mining was prohibited with adoption of the plan, it was recognized that sand and gravel would still need to be removed from the channel in order to enhance channel stability. It was envisioned that future channel improvement projects would be directed by the County based on the review of the independent Technical Advisory Committee (TAC).

The California Surface Mining and Reclamation Act (SMARA) establishes a regulatory framework, which requires all new excavations to obtain the following: a mining permit, a reclamation plan describing the methods to be employed in returning the site to a beneficial use once operations have been completed, and financial reassurances that provide funds for guaranteeing that the reclamation work is carried out as approved. Lead agencies are required to annually inspect each mine located within their jurisdiction to monitor permit compliance. In addition, the State Mining and Geology Board has adopted specific standards to ensure that reclamation is performed in a consistent manner.

However, because the activities anticipated under the CCRMP would be performed for the primary purpose of improving channel stability, the Plan originally envisioned that implementation of the CCRMP might not be subject to SMARA. Provisions in SMARA allow exceptions for those activities which would restore land following a flood, or which are a necessary part of a construction project approved by the lead agency for land improvements, or which involve minor surface disturbances of an infrequent nature. These exceptions were identified as consistent with the intent of the CCRMP. In-channel excavation would only be permitted for the purpose of improving channel stability, maintaining flood control, or preventing the erosion of adjoining lands. Aggradation would be encouraged, with the removal of sand and gravel not exceeding the previous year's deposition.

In the fall of 1998, the County requested a ruling from the State Mining and Geology Board regarding whether implementation of the CCRMP/CCIP would be subject to, or exempt from, SMARA. The Board determined that the CCRMP/CCIP did not qualify for an exemption from SMARA due to the amount of sand and gravel expected to be removed over the 30-year horizon of the plan. Subsequent to that action, special legislation was passed to amend SMARA to recognize the CCRMP/CCIP as the functional equivalent of a Reclamation Plan for purposes of SMARA compliance (Assembly Bill 297, H. Thomson, Statutes of 1999). This law had a five-year sunset date, but was subsequently reauthorized every five years. The history of this legislative exemption is as follows: 1) First authorization Chapter 869 of the Statutes of 1999 (AB 297, Thomson), sunset December 31, 2003; 2) Second authorization Chapter 173 of the Statutes of 2004 (AB 1984, Wolk), sunset December 31, 2008; 3) Third authorization Chapter 604 of the Statutes of 2007 (AB 646, Wolk), sunset December 31, 2012; 4) Fourth authorization Chapter 145 of the Statutes of 2011 (SB 133, Wolk), sunset December 31, 2017; 5) Fifth authorization Chapter 235 of Statutes of 2016 (SB 1133, Wolk), sunset removed. On August 29, 2016, Governor Brown signed Senate Bill 1133 (Wolk) which removed the sunset clause and made this statute permanent.

With the amendment of SMARA for the CCRMP, this opened a path for implementation of the CCIP. Individual projects could move forward based on County issuance of Flood Hazard Development Permit and consistency with the CCRMP. Those working in the channel are required to post financial assurances to ensure restoration is performed in accordance with the approved plan. They are also required to be compliant with the In-Channel Ordinance adopted in June 2008.

As discussed earlier, the State Department of Conservation released Special Report 156 in 1988. This report classified the sand and gravel deposits along Cache Creek (including the CCRMP plan area) as being regionally significant mineral resources. Section 2762(a) of SMARA requires that the lead agency (Yolo County) incorporate mineral resource management policies into its general plan within twelve months after receiving a mineral land classification report prepared by the State Geologist. These policies must accomplish the following:

1. Acknowledge the information provided by the State Geologist regarding the extent of mineral resources within the jurisdiction.
2. Coordinate the management of land uses within and surrounding areas of statewide and regional significance to restrict the encroachment of incompatible uses.
3. Emphasize the conservation and development of identified mineral deposits.

In addition, Section 3676 of the State Mining and Geology Board Reclamation Regulations requires that mineral resource management policies incorporate, but not be limited to, the following:

1. A summary of the information provided by the classification study, including, or incorporated by reference, maps of the identified mineral deposits as provided by the State Geologist; and a discussion of state policy as it pertains to mineral resources.
2. Statements of policy as required in Section 2762(a) of SMARA.
3. Implementation measures that:
 - a. Discuss the location of identified mineral deposits and distinguish within those areas between resources which are designated for conservation and those which may be permitted for future extraction.
 - b. Provide appropriate maps to clearly define the extent of identified mineral deposits, including those resources designated for conservation and those, which may be permitted for future extraction.
 - c. Include at least one of the following:
 - i. Adopt appropriate zoning that identifies the presence of identified mineral deposits and restricts the encroachment of incompatible land uses in those resource areas that are to be conserved.
 - ii. Require that a notice describing the presence of identified mineral deposits be recorded on property titles within the affected area.
 - iii. Impose conditions of approval upon incompatible land uses in and around areas, which contain identified mineral deposits, in order to mitigate any significant land use conflicts.

Policies regarding the conservation and development of classified mineral deposits, in accordance with the above requirements, are contained in the OCMP. The CCRMP restricts extraction of material within the Cache Creek channel to those activities, which maintain flood flow capacity; protect existing structures, infrastructure, and/or farmland; minimize bank erosion; implement the Channel Form Template (described further below); enhance creek stability; establish riparian vegetation; and/or result in recreation and open space uses consistent with the Parkway Plan. In addition, in-channel aggregate extraction is limited to the average annual amount deposited since the last prior year of removal. Those aggregate resources remaining within the channel will be conserved and maintained with Open Space zoning to restrict the encroachment of incompatible uses.

Prior to adoption of the CCRMP, review and comment by the State Mining and Geology Board was required, as stated in Section 2762(a) of SMARA. Future amendments to the CCRMP and its policies must also be sent to the State Mining and Geology Board for review and comment, prior to their adoption, to ensure that the above requirements are being met.

Yolo County General Plan

The County of Yolo 2030 Countywide General Plan includes goals, policies and actions that guide Yolo County in ensuring continued productivity and conservation of the County's mineral reserves while balancing the preservation and enhancement of the Cache Creek channel and corridor.

Goal CO-3: Mineral Resources. Protect mineral and natural gas resources to allow for their continued use in the economy.

Policy CO-3.1: Encourage the production and conservation of mineral resources, balanced by the consideration of important social values, including recreation, water, wildlife, agriculture, aesthetics, flood control, and other environmental factors.

Policy CO-3.2: Ensure that mineral extraction and reclamation operations are compatible with land uses both on-site and within the surrounding area, and are performed in a manner that does not adversely affect the environment.

Action CO-A37: Designate and zone lands containing identified mineral deposits to protect them from the encroachment of incompatible land uses so that aggregate resources remain available for the future. (Policy CO-3.1)

Action CO-A39: Encourage the responsible development of aggregate deposits along Cache Creek as significant both to the economy of Yolo County and the region. (Policy CO-3.1)

Action CO-A40: Encourage recycling of aggregate materials and products. (Policy CO-3.1)

Action CO-A41: Regularly review regulations to ensure that they support an economically viable and competitive local aggregate industry. (Policy CO-3.1)

Action CO-A42: Implement the Cache Creek Area Plan to ensure the carefully managed use and conservation of sand and gravel resources, riparian habitat, ground and surface water, and recreational opportunities. (Policy CO-3.1)

Action CO-A43: Monitor updates to the State Mineral Resource classification map and incorporate any needed revisions to the County's zoning and land use map. (Policy CO-3.1)

Action CO-A44: Coordinate individual surface mining reclamation plans so that the development of an expanded riparian corridor along Cache Creek may be achieved. (Policy CO-3.1)

Action CO-A46: Maintain standards and procedures for regulating surface mining and reclamation operations so that potential hazards and adverse environmental effects are reduced or eliminated. (Policy CO-3.1, Policy CO-3.2)

Action CO-A47: Ensure that mined areas are reclaimed to a usable condition that is readily adaptable for alternative land uses, such as agriculture, wildlife habitat, recreation, and groundwater management facilities. (Policy CO-3.1)

Action CO-A48: Regularly update surface mining and reclamation standards to incorporate changes to State requirements, environment conditions, and County priorities. (Policy CO-3.1)

Action CO-A54: Implement the Cache Creek Area Plan. (Policy CO-3.2)

Goal CO-1: Natural Open Space. Provide a diverse, connected and accessible network of open space, to enhance natural resources and their appropriate use.

Policy CO-1.1: Expand and enhance an integrated network of open space to support recreation, natural resources, historic and tribal resources, habitat, water management, aesthetics, and other beneficial uses.

Policy CO-1.2: Develop a connected system of recreational trails to link communities and parks throughout the county.

Policy CO-1.3: Create a network of regional parks and open space corridors that highlight unique resources and recreational opportunities for a variety of users.

Policy CO-1.7: Support efforts by willing landowners and non-profit groups to provide new opportunities for outdoor recreation. (Policy CO-1.29)

Policy CO-1.8: Encourage responsible stewardship of private lands. Promote increased opportunities for public access to waterways and other natural areas.

Policy CO-1.9: Promote the conservation of environmental resources in new and existing park and open space facilities.

Policy CO-1.11: Coordinate the development of recreation areas and public open space with regional trail planning.

Policy CO-1.15: Support efforts to acquire either fee title or easements on additional open space areas adjoining existing protected natural resource areas to increase the size, connectivity, and buffering of existing habitat.

Policy CO-1.23: Increase public access and recreational uses along waterways wherever feasible, particularly Cache Creek, Lower Putah Creek, the Yolo Bypass, and the Sacramento River.

Action CO-A4: Pursuant to the Cache Creek Area Plan, develop a recreation plan for the Cache Creek Parkway including a range of public activities and uses. (Policy CO-1.24)

Action CO-A6: Connect the future Bay Delta Trail system, the future trail system in lower Yolo Bypass, and the future Cache Creek Parkway system, and link those trails to the American River Bikeway system in Sacramento County. (Policy CO-1.1, Policy CO-1.3, Policy CO-1.12, Policy CO-1.19, Policy CO-1.28)

Action CO-A11: Provide recreational uses that are river or creek dependent in locations directly on Cache Creek, Putah Creek, and the Sacramento River. Examples include fishing, canoeing, boating, and nature observation. With the exception of boat launches and docks, more active uses, such as parking, restrooms, and picnic areas, shall be located in areas away from the river and sensitive riparian habitat. (Policy CO-1.1, Policy CO-1.24, Policy CO-1.27, Policy CO-1.28)

Action CO-A12: Cluster recreational improvements at various locations along Cache Creek, Lower Putah Creek, and the Sacramento River, to reduce habitat disturbance and provide efficient and cost-effective management by the County. (Policy CO-1.10)

Action CO-A15: Combine parks and trails with open space and wildlife conservation areas where appropriate. (Policy CO-1.1, Policy CO-1.10)

The CCRMP has been evaluated and determined to be consistent with the various goals and policies of the County General Plan. The CCRMP, together with the OCMP, constitute the Cache Creek Area Plan (CCAP), which provides the policy framework for implementing this program to manage the wide variety of resources associated with the creek, including habitat, water resources, aggregate, agriculture, and recreation.

The County's off-channel surface mining ordinance, reclamation ordinance, and in-channel maintenance ordinance all implement the policy framework. These ordinances include specific performance standards that ensure that the goals and objectives spelled out in the OCMP and CCRMP are achieved. Although each plan was prepared as a stand-alone document, they were adopted as two co-equal parts of the CCAP and have been implemented in concert with one another since adoption.

Cache Creek Area Plan

An "area plan" is a focused planning policy document that is part of a general plan. The CCRMP meets all the requirements of a State land use law to function as an area plan or the channel boundary area defined herein. It addresses all of the elements specified in Section 65302 of the California Code of Regulations, to the extent that the subject of the elements exists in the planning area. As allowed by State law, the degree of specificity and level of detail of the discussion of each such statement reflects local conditions and circumstances. A brief summary of how the General Plan requirements are satisfied is provided below.

Planning Area

By taking in the entire channel area as determined by topographic features and flood flow calculations, and by recognizing the Streamway Influence Zone as defined in the 1995 Technical Studies, the CCRMP addresses all land and resources which bear a relationship to streamway planning along the creek.

Diagrams and Implementation Programs

The Plan contains appropriate diagrams and specific discussion regarding implementation under the CCIP.

Consistency

The Plan has been examined for consistency and found to be both internally consistent and consistent with appropriate federal and State policies and regulations.

Land Use Element Issues

The Plan contains data, analysis, policies, and programs related to the intensity, location, and type of channel maintenance and riparian restoration activities within the planning area. The Plan clearly specifies where and under what circumstances in-stream extraction is allowed, species of plants to be used in habitat restoration, cross-section profiles and standards for reshaping the channel, and the authority and responsibilities of the TAC.

It examines the current distribution of habitat and agricultural land, specifies areas where channel widening/narrowing should occur, as well as average levels of sediment discharge and water levels expected from the creek. It also addresses potential recreational facilities and opportunities associated with creek restoration. A program has been provided to ensure that channel stabilization and maintenance activities do not adversely affect downstream flooding.

Other typical Land Use Element issues such as educational facilities, public buildings and grounds, as well as solid and liquid waste facilities are addressed only in the context of having relevance to the maintenance and stabilization of the creek.

Consistency with the California Surface Mining and Reclamation Act has been addressed in the environmental analysis and found not to be an issue.

Circulation Element Issues

The Plan identifies the location and extent of major thoroughfares, transportation routes, and other local public utilities and facilities in the planning area. The proposed levels of aggregate production from creek maintenance activities would not generate any significant changes in traffic volumes.

Housing Element Issues

The Plan identifies nearby housing for purposes of assessing the potential impact from channel maintenance and recreational activities. Regulations are provided, where appropriate.

Conservation Element Issues

The Plan addresses programs for the conservation, management, and protection of natural resources within the Cache Creek channel, including surface water quality, biological resources, and the erosion of soil resources.

Open Space Element Issues

The Plan includes identification of areas required for the preservation of plant and animal life, including sensitive habitat. The areas within the channel are identified as requiring ongoing monitoring and study. The Plan also contains a program for the protection and enhancement of riparian habitat and the use of biological elements to control erosion and flow velocities. Land within the CCRMP boundary has been designated as Open Space (OS) in the County General Plan.

Scenic resources and cultural resources have been identified in the Plan. The area located within the channel is designated as Open Space in the Plan, in order to preserve it for future habitat and recreational uses. This compliments the OCMP, which designates future recreation nodes that would provide access to areas targeted for future open space and passive recreation.

Noise Element Issues

Noise identified with in-stream excavation and recreational uses has been identified and is regulated in the Plan.

Safety Element Issues

The effects of dam failure, flooding, and channel instability are discussed. Policies and specific regulations to address these concerns are provided, when necessary.

Other

Coastal issues and timber harvesting plans are not relevant to the CCRMP plan area and have not been addressed in the Plan.

Yolo County Mining and Reclamation Ordinances

Commercial in-stream surface mining ended with the adoption of the OCMP and CCRMP in 1996 and the subsequent relinquishment of vested in-stream rights by all operators along Cache Creek. On June 24, 2008, the County Board of Supervisors adopted the CCAP In-Channel Ordinance (Yolo

County Code Title 10, Chapter 3) to regulate in-stream extraction activities that implement the bank stabilization, channel maintenance, and habitat restoration necessary to carry out the CCRMP and CCIP.

The in-stream mining regulations for Yolo County, prior to adoption of the CCRMP and CCIP, allowed excavation within the channel down to the "theoretical thalweg." This was a specific elevation, below which in-stream mining was prohibited. In addition, in-channel mining was prohibited within three hundred feet of any County bridge along Cache Creek and nine hundred feet from any State bridge. These measures were established to protect local bridge structures from being undermined and to minimize streambed lowering.

Conclusions reached in the 1995 Technical Studies recommended that these regulatory mechanisms be revised to take new information and research into account. In place of the theoretical thalweg, a series of reach-specific slopes and sinuosity ratios (comparing the channel width to its length) were adopted, which provide standards for maintenance excavation that would improve the channel flow. Commercial mining was prohibited and the prohibition against working near local bridges was removed to allow for restoration activities including the construction of transitions to improve flow efficiency through these portions of the creek. Additionally, the in-channel boundary was revised to more accurately reflect the active flow of Cache Creek, as defined by the existing channel banks and the 100-year floodplain (as determined by the U.S. Army Corps of Engineers).

The 1996 policy and regulatory changes changed the focus away from aggregate mining within Cache Creek to channel stabilization and flood conveyance capacity management. Restoration under the CCRMP focuses on reestablishing a riparian vegetation corridor along the length of Cache Creek, as well as ensuring a stable channel system that allows for flood flow conveyance and erosion protection. The plan provides guidance on habitat creation and ensures that in-stream restoration is sensitive to channel flow dynamics.

Yolo County Flood Protection Ordinance

The County has no obligation or responsibility under either the CCRMP or CCIP to manage or maintain flood flow conveyance capacity in Cache Creek. However, both the CCRMP and CCIP include monitoring and reporting tasks to provide interested landowners and agencies information relevant to flood management that is derived from the program.

All projects located within the floodplain, as defined by the Federal Emergency Management Agency (FEMA), require review by the County's Floodplain Administrator, to ensure that development, such as grading, fill, construction, etc., does not significantly raise flood levels for surrounding property. This authority applies to all flood zones throughout the County, including those associated with Cache Creek. The Director of Community Services serves as the Floodplain Administrator; however, the Natural Resources Manager (NRM) may be the designee for the Floodplain Administrator, for consideration of Flood Hazard Development Permits within the boundaries of the CCRMP. The scope of the Floodplain Administrator's authority and the

approval process are contained within the County Flood Protection Ordinance (Chapter 4 of Title 8 of the Yolo County Code).

Implementation of the CCRMP is carried out through the CCIP (Appendix A), which establishes a regulatory framework for stabilizing the channel. Central to this approach is the TAC. The TAC is charged with identifying and establishing priorities for channel improvement projects, monitoring various issues related to the hydraulic characteristics of flow in the creek, and reviewing and commenting on proposed projects within the channel area. Channel improvements made pursuant to the CCRMP and CCIP require a Flood Hazard Development Permit. The TAC will review all permit applications for projects within the CCRMP boundary prior to their issuance by the Floodplain Administrator (or designee) and provide recommendations on design, and whether the permit is consistent with the Plan, the implementing ordinances, and other programmatic permits issued by jurisdictional agencies. Thus, the requirements of the CCRMP and CCIP will be implemented through the Flood Hazard Development Permit. Unlike the past, where individual property owners modified the creek independently, with sometimes adverse consequences, the CCIP provides a consistent means for coordinating activities along the channel.

The Cache Creek Improvement Program

The CCIP was developed to implement the goals, objectives, actions, and performance standards of the CCRMP as it relates to the stabilization and maintenance of Cache Creek. It was adopted as a component part of the CCRMP, and generally, where the acronym CCRMP is used it is intended to include the CCIP. The CCIP has three primary components, including the identification of channel stabilization projects, a description of expected channel maintenance activities, and the establishment of a hydrologic monitoring program. Overall management of the CCIP is the responsibility of the County NRM. Scientific analysis of the creek and recommendations will be provided by the TAC, in coordination with the NRM. In addition, an optional Cache Creek Stakeholders Group (CCSG) may be established to provide input on how the creek should be managed. Funding for the CCIP will primarily be provided by the aggregate industry through a per ton surcharge on gravel produced within the County.

In-channel commercial mining is prohibited under the CCIP. Aggregate excavation within the channel may only occur to install or maintain habitat restoration, maintain flood control, protect existing structures, minimize bank erosion, or implement the Channel Form Template.

Under the CCIP, applicants proposing to modify the creek channel within the CCRMP boundary must submit applications to the Community Services Department for a Flood Hazard Development Permit. The permit is reviewed by the TAC, which will provide recommendations to the Floodplain Administrator (or designee) prior to permit approval. The program is supported by programmatic permits from agencies of jurisdiction (e.g., Regional Water Quality Control Board, Army Corps of Engineers, and Department of Fish and Wildlife) for channel shaping and maintenance activities. Flood Hazard Development Permits within the CCRMP boundary must be consistent with the CCIP and CCRMP, comply with appropriate programmatic permits, protect

sensitive biological resources, and ensure that flood risk for downstream communities, such as Woodland, are not worsened.

Channel improvement and maintenance projects must comply with design guidelines, target channel characteristics, and typical cross-section profiles, as described in the CCIP. These reach-specific guidelines incorporate baseline information from the 1995 Technical Studies, and the findings from the 2017 Technical Studies and CCAP Update. These guidelines will be periodically updated according to the information obtained through creek monitoring program. The results of the monitoring program are included in the annual report prepared by the TAC for review by the Board of Supervisors. The annual report also includes program costs, an evaluation of streambed and streambank stability in the CCRMP area, recommended changes in the prioritization of channel improvement projects, and proposed changes in the monitoring program for the following year.

The Off-Channel Mining Plan

The CCRMP is a companion document to the OCMP, which primarily governs the mining of sand and gravel aggregate outside the present channel banks and 100-year floodplain. The two plans, which together comprise the CCAP, recognize that in-channel and off-channel environments are different and require unique approaches that address their varying needs. At the same time, however, the County also recognizes that Cache Creek and its surrounding areas form an integrated system, and that activities that occur in one environment affect the other. Thus, although the planning areas for the two plans are mutually exclusive, both plans include goals and policies that acknowledge the connections between in-channel and off-channel concerns where they occur.

1.4 REQUIRED APPROVALS

The CCRMP is a complex plan and its emphasis on comprehensive and integrated resource management required consideration by the County of several additional actions (described below) for its implementation. These actions provided the County with a regulatory framework for carrying out the various policies described within the CCRMP. Ongoing implementation of the CCRMP requires continuing efforts by the County, including public outreach and education programs, monitoring and technical analysis, negotiation with other agencies of jurisdiction, and coordination with volunteer community groups.

Certification of the Program EIR

Section 15168 of the California Environmental Quality Act (CEQA) provides for the preparation of a Program EIR. A Program EIR may serve as an environmental document for a series of individual projects that are located within the same geographical area, or are sequentially related, or have similar environmental effects. There are several advantages to a Program EIR. It provides a more thorough consideration of potential environmental impacts, especially cumulative effects, and encourages a broader discussion of project alternatives. Program EIRs also reduce redundancies

in the environmental review process, as well as allow for greater County flexibility in dealing with policy issues.

Subsequent projects approved pursuant to the Program EIR still require additional environmental documents. However, Program EIRs allow subsequent environmental documents to focus on issues unique to the site, that were not specifically addressed in the Program EIR. This allows decision-makers and interested parties to concentrate on the primary issues associated with a particular project, without revisiting other issues on which there is general agreement. Although they help to streamline the process, Program EIRs and any subsequent focused project-level EIRs do not restrict public participation. They still require circulation of the documents and a comment period, notification of interested parties, and public hearing.

A Program EIR was certified for the CCRMP in 1996. The Program EIR was written to fulfill the federal National Environmental Protection Act (NEPA) standards, so that the EIR could be used to support the 404 Permit required by the U.S. Army Corps of Engineers for work within the channel, as well as permits for jurisdictional State agencies (e.g., the Regional Water Quality Control Board, the Department of Conservation, and the Department of Fish and Wildlife).

The CCRMP EIR also served as a project-level EIR for the CCIP, in order to enable the subsequent implementation of the specific channel stabilization and maintenance actions required by the program.

Adoption of the Cache Creek Resources Management Plan

The CCRMP and the CCIP, as well as the companion OCMP, are intended to be evolutionary documents that adjust and change in response to new creek conditions. Adoption of the CCRMP in 1996 allowed the County to begin taking the first steps towards managing the resources of Cache Creek in a more balanced and sustainable manner. However, the plan was not seen as a static vision of what the ultimate disposition of the creek will be in the future. Rather, it was expected that the CCRMP would undergo periodic review and updating as additional data is gathered through monitoring and the success of habitat restoration projects and channel stabilization are known. The CCRMP is required to be updated every ten years, at a minimum, in order to allow sufficient time for trends to become evident, yet still be early enough to change any policies that are having an unexpectedly adverse effect on resource management.

Adoption of the Surface Mining and Reclamation Ordinances

In order to simplify the administration of managing the resources along Cache Creek, in-channel management requirements and off-channel mining regulations have been given separate chapters within Title 10 of the County Code: Chapter 3, In-Channel Ordinance; Chapter 4, Off-Channel Surface Mining Ordinance; Chapter 5, Surface Mining Reclamation Ordinance).

In the fall of 1998, the County requested a ruling from the State Mining and Geology Board regarding whether implementation of the CCRMP/CCIP would be subject to or exempt from

SMARA. The Board determined that the CCRMP/CCIP did not qualify for an exemption from SMARA due to the amount of sand and gravel expected to be removed over the 30-year horizon of the plan. Subsequent to that action, special legislation was passed to amend SMARA (PRC Section 2715.5) to recognize the CCRMP/CCIP as the functional equivalent of a Reclamation Plan for purposes of SMARA compliance (Assembly Bill 297, Statutes of 1999). This law had a five-year sunset date, but was subsequently been reauthorized every five years. On August 29, 2016, Governor Brown signed Senate Bill 1133 (Wolk) which removed the sunset clause and made this statute permanent.

In June of 2008 the County's In-Channel Ordinance was adopted to regulate in-stream extraction activities that implement the bank stabilization, channel maintenance, and habitat restoration necessary to carry out the CCRMP and CCIP.

Approval of Zone Changes

In 1996, the area within the CCRMP plan boundary was rezoned to the Open Space (OS) designation. The OS Zone is specifically designed for resource management, including agriculture, groundwater recharge, habitat, recreation, flood control, sand and gravel extraction, and riparian areas. As such, it provides the flexibility needed to meet the various resource needs of Cache Creek.

2002 CCRMP Update and Supplemental EIR

The CCRMP underwent a focused update on July 23, 2002 (Board Resolution 02-130). A Supplemental Program/Project-Level Environmental Impact Report (SEIR) was prepared and certified in 2002 to support proposed modifications and clarifications to the CCRMP and generally inform public agency decision-makers and the public of the environmental effects of the CCRMP and CCIP on Cache Creek since implementation. The SEIR was also determined to be necessary to support the County's request at the time to renew programmatic permits from the State and the US Army Corps of Engineers, pursuant to under Sections 401 and 404 of the federal Clean Water Act and Section 1602 of the State Fish and Wildlife Code.

1.5 ORGANIZATION OF PLAN

The CCRMP contains seven chapters comprised of six elements, each dealing with a specific resource associated with the Cache Creek area. The elements contained within the CCRMP are as follows:

- Chapter 2.0 Floodway and Channel Stability
- Chapter 3.0 Water Resources
- Chapter 4.0 Biological Resources
- Chapter 5.0 Open Space and Recreation
- Chapter 6.0 Aggregate Resources
- Chapter 7.0 Agricultural Resources

Each element begins by briefly describing the past and current status of the resource under consideration. Next is a summary of the general direction proposed by the CCRMP to manage this resource in the future. Following these initial discussions are a series of goals, objectives, actions, and standards that explain how the general direction will be carried out and what measures will be used to ensure its success. Although each element has its own goals and objectives that address management of the specific resource, the plan was written so that these policy statements are mutually supportive and coordinated to minimize conflict.

The CCIP comprises Appendix A.

CHAPTER 2.0 – FLOODWAY AND CHANNEL STABILITY ELEMENT

2.1 INTRODUCTION

Present Conditions

The Cache Creek system is very dynamic. It is shaped by a complex relationship between four primary factors: the amount of water, the amount of sediment in the water (including sand and gravel), the average size of the sediment, and the slope of the channel. If any one of these factors is altered, either naturally or artificially, the other factors will adjust until a new equilibrium is established. If there is too much water and not enough sediment, the river will erode the streambed and adjoining banks in order to obtain more sediment. If the sediment is too large and the slope of the channel too flat, the river will aggrade. Although this relationship may appear simple, flow dynamics are very complex and difficult to analyze and predict. Adjustments are constantly being made in a river system, not only from one flood event to the next, but from smaller flows in between large flood events.

In perennial (year-round) creeks, these adjustments are often made in a slow and steady fashion. Cache Creek is ephemeral. It does not flow year-round naturally or under existing conditions. Further, Cache Creek is an episodic system characterized by brief, intense flows that can cause dramatic changes in creek conditions over relatively short periods of time. These changes may result in an imbalance between the factors described above. Historically, Cache Creek would have adjusted itself to correct for imbalances during the low flows of later spring and early fall, but a number of artificial constraints have been imposed on Cache Creek which prevent it from achieving a balanced condition.

The bridges over Cache Creek were originally designed to accommodate a relatively narrow channel width and often required bank protection measures to prevent excess erosion of channel banks. These bridge crossings confine Cache Creek, resulting in higher flow velocities and increased erosion and scour potential. Flood control improvements along Cache Creek have had an effect as well. Levees constructed throughout the plan area further increase channel confinement and the resulting elevated flow velocities increase erosion and scour potential.

Extensive in-stream mining prior to 1996 also contributed to the destabilization of Cache Creek. The average annual sediment supply to the plan area (measured at Capay) was estimated in the 1995 Technical Studies to be approximately 927,600 tons, of which about 210,000 was estimated to be sand and gravel that settled in Lower Cache Creek, with the remaining 771,600 tons assumed to be fines traveling through the system to the settling basin. The sand and gravel tonnage number was ultimately adopted as a cap on annual in-channel extraction for maintenance purposes, except where excavation was determined to be necessary to widen the channel as part of implementing the Test 3 Run Boundary.

Based on the analysis conducted for the 2017 Technical Studies, between 1996 and 2011, an average of approximately 690,800 tons per year of sediment was actually deposited in the

CCRMP area, of which 156,400 tons is estimated to be sand and gravel and 534,400 is estimated to be fines. This estimate of deposition was calculated by comparing topographic maps of Cache Creek in 1996 and 2011. It differs significantly from the original estimate in that it appears much more fine sediment is depositing in Lower Cache Creek than originally predicted. While it is unclear whether the current rate of deposition will continue into the future, it appears likely that at least some portions of Cache Creek are recovering faster than expected in 1996. Based on this information, the cap for in-channel extraction for maintenance purposes should be increased from 210,000 tons annually on average to 690,800 tons annually on average to reflect actual conditions. In addition, in recognition that the creek may in reality deposit no tonnage in a given year or double the tonnage in another (depending on flow conditions) the cap shall be based on the annual average deposition since the last prior year that extraction occurred, not to exceed 690,800 tons annually.

In addition to the constrictions described above, Cache Creek has periods of natural instability. The upper watershed is narrow and steep. As a result, flood events carry with them a great deal of force that impacts the channel over a short span of time. In addition, the coastal mountains in this area contain areas of highly erosive materials that can provide very large volumes of sediment to the creek. The combination of energetic flood flows and large sediment supplies create the potential for large, rapid changes in Cache Creek.

Continuous long-term simulations of Cache Creek conducted as part of the 1995 Technical Studies indicated that if all in-stream mining were prohibited for 100 years the channel would achieve a substantially more stable configuration but would remain sediment deficient at the bridges. With intervention, such as recommended in the CCIP, however, this repair can be hastened. In fact, since 1996, significant sediment deposition has occurred in the CCRMP area and the sinuosity of the active channel has increased in most of the creek reaches. This geomorphic change has been accompanied by a significant increase in riparian vegetation along the creek. It should be noted, however, that it is not possible to return the creek to the conditions of 100 years ago without making significant changes to other influencing factors, including the elimination and/or relocation of flood control levees, reductions in the amount of water diverted to irrigation, the reconstruction of County and State bridges, and re-establishment of the historical width of the channel, which approaches one mile in some areas. Such extreme requirements are not feasible and do not reflect the reality of multiple public and private land uses and interests in the CCRMP area.

Trying to assign proportional responsibility for the degradation of Cache Creek to each of these influences is difficult. As discussed earlier, creek systems are complex with many interrelated influences that are not easily separated and categorized. Similarly, anticipating how the channel may react to new changes is also uncertain. Nevertheless, as evidenced by the changes in Cache Creek observed since 1996, careful management can continue to help the creek repair itself and further improve its present condition.

CCRMP Vision

At the same time, implementation of the CCRMP has resulted in more natural channel forming processes that have deposited gravel bars and eroded the channel bed and banks in certain areas as Cache Creek adjusts to a rising bottom elevation. Implementation of the Test 3 Run Boundary since 1996 has mostly occurred passively as sediment deposited in the CCRMP area has not been extracted. Significant regrading of the streambed to create a series of terraces and low-flow channel as well as creek bed hardening at bridges, both envisioned under the Test 3 Run Boundary, have not been implemented. However, the net deposition of sand and gravel in the CCRMP area has allowed Cache Creek to operate more like a natural river system. Going forward, findings from the evaluation of channel change since 1996, coupled with the new hydraulic modeling tool developed for the CCRMP area, will guide targeted channel improvements that further reduce channel bottlenecks, minimize erosion, and support riparian restoration.

There were several actions intended to assist Cache Creek in attaining a more stable condition that were inherent in adoption of the CCRMP. One of the most important measures was to significantly reduce the amount of aggregate removed from within the channel. In-stream extractions allowed under the CCRMP cannot exceed the average annual replenishment of sand and gravel (including associated fines) since the last prior year of removal, excluding implementation of channel reshaping pursuant to the Channel Form Template described below. Since 1996, extractions have been far less than annual replenishment, and approximately 10.4 million tons of sand and gravel have aggraded in the CCRMP area. At the same time, the CCRMP has resulted in the reshaping of portions of Cache Creek according to the conceptual design provided in the Test 3 Run Boundary. The Test 3 Run Boundary envisioned re-grading the streambed to create a series of terraces and low-flow channel. These actions stabilize the channel and allow it to operate more like a natural system. In addition, selected banks and levees may be excavated to provide gentle transitions into and out of the channel bottlenecks created by the bridge structures. In some areas, jetties may be constructed to encourage expansion of the banks through sediment deposition and/or the encouragement of riparian vegetation. The overall goal of the Test 3 Run Boundary was to smooth the abrupt width and slope changes that occur along Cache Creek.

Since adoption of the CCRMP in 1996, the County's ability to implement the Test 3 Run Boundary has been limited to those requests by private property owners to undertake projects in or adjacent to Cache Creek for which a FHDP has been required.

For off-channel mining applications, implementation of the Test 3 Run Boundary was been linked to Section 10-4.429(d) of the Mining Ordinance which requires that off-channel excavations be set-back a minimum of 700 feet from the channel bank, unless an engineering analysis can demonstrate that measures incorporated into the project can ensure that a lesser setback will provide similar protection against channel destabilization. The minimum setback under the code is 200 feet from the existing channel bank. Where a setback of less than 700 feet has been allowed, the County has required the applicant to also implement the Test 3 Run Boundary along the creek frontage of their operation.

The Test 3 Run Boundary was intended to be a dynamic tool for management of the active creek boundary, that would be updated and modified as appropriate based on data collected in the field and modeling conducted pursuant to the program. As the program has been administered over time, the County has allowed for “technical corrections” of the boundary to reflect site-specific conditions and engineering. As a part of the 2017 Technical Studies, the Test 3 Run Boundary was evaluated based on 2011 creek topography, over 20 years of recent monitoring data, and the results of new two-dimensional hydraulic modeling of Cache Creek. The result was an update to the Test 3 Run Boundary called the Channel Form Template (see Figure 5). The Channel Form Template replaces the Test 3 Run Boundary, and provides similar guidance for smoothing abrupt channel width transitions.

The CCRMP also envisioned the provision of a regular flow of surface water in Cache Creek through much of the year. While this has not yet been accomplished as of the 2017 plan update, this remains a goal of the plan to be achieved if feasible. This could create a more stable low-flow channel that would support the goals of the Channel Form Template. In addition, increased surface flows would accelerate recovery of native vegetation and benefit native species of wildlife, invertebrates, and fish. Continued engagement with the YCFWCWD will be undertaken to determine the options for increasing surface flows, especially in warmer times of the year.

Cache Creek will continue to be a managed system in order to protect agricultural land, off-channel mining operations, and nearby communities from the effects of floods and erosion. Under the CCIP, the County takes a strong role in providing this management, based on the recommendations of the TAC.

Future in-channel modifications must consider the elevation and slope of the streambed, as well as the width to depth ratio of the channel. In-channel work will continue to generally be guided by specific channel slope standards and typical design cross-sections developed for the creek. Since one of the primary goals of the CCRMP is to allow aggradation of the streambed, channel reshaping activities will preserve the upstream and downstream existing thalweg elevation, unless local channel stability, desired habitat creation, or flood flow capacity requires otherwise. In addition, off-channel mining must continue to consider the potential for the streambank to move, either through erosion related to the rising bottom elevation of Cache Creek or as a result of channel reshaping according to the Channel Form Template or as a result of maintenance extraction of gravel.

Although flood flow conveyance capacity is important, management of the Creek has to consider other values as well. Conditions must be created to allow native riparian vegetation to reestablish, as long as it does not adversely affect streamflow. Growth along the banks is especially encouraged, both for erosion control and to direct the highest flow velocities towards the center of the creek. Streambank transitions and scour reduction measures should continue to be implemented to protect structures along Cache Creek, especially bridges, which represent a major public investment. Groundwater management is also extremely important as compliance with the Sustainable Groundwater Management Act (SGMA) proceeds. The CCRMP encourages

Cache Creek Area Plan Update - Channel Form Template

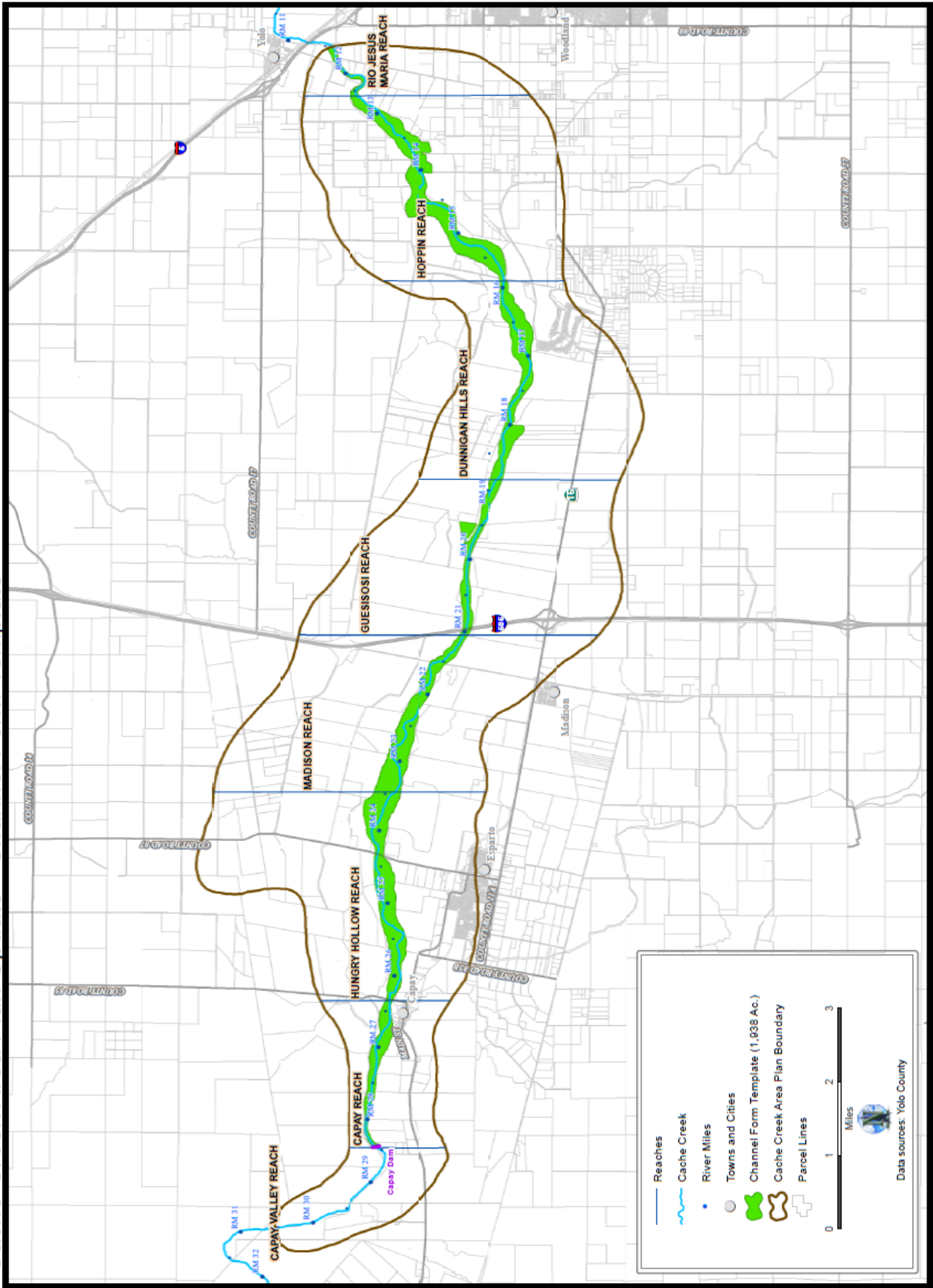


Figure 5

June 1, 2017

coordination with YFCWCD to enhance groundwater recharge, where possible, in order to increase water supply reliability for both urban and agricultural users in the County.

Implementing these programs will require extensive monitoring and analysis. The County will continue to leverage the data collected through annual creek inspections described in Chapter 6 of the CCIP, the on-going water quality monitoring program, and periodic updates to the CCAP. The 2017 Technical Studies resulted in an organized database that should be maintained and added to in the future to guide continued adaptive management. The information in this database is reviewed by the TAC. The TAC is tasked with making recommendations to the County on the types and extent of maintenance activities necessary to maintain and enhance the diverse resources associated with Cache Creek. As a part of this monitoring, the CCRMP is required to be updated a minimum of every ten years. This allows the County regular opportunities to review the success and/or failure of past efforts and to set new goals that reflect changing environmental conditions and social priorities. The first update occurred in 2002 and the second in 2017/2019.

2.2 GOALS

- 2.2-1 Recognize that Cache Creek is a dynamic system that naturally undergoes gradual and sometimes sudden changes during high flow events.
- 2.2-2 Establish a more natural channel floodway capable of conveying floodwaters without damaging essential structures, causing excessive erosion or adversely affecting adjoining land uses.
- 2.2-3 Coordinate land uses and improvements along Cache Creek so that the adverse effects of flooding and erosion are minimized.
- 2.2-4 Ensure that the floodway is maintained to allow other beneficial uses of the channel, including groundwater recharge, recreation, and riparian habitat, without adversely affecting flood flow conveyance capacity.

2.3 OBJECTIVES

- 2.3-1 Support flood management objectives as required to protect the public health and safety.
- 2.3-2 Integrate the CCRMP with other planning efforts to create a comprehensive, multi-agency management plan for the entire Cache Creek watershed.
- 2.3-3 Recommend actions to create a more stable channel configuration with flood flow conveyance capacity that is consistent with regional flood management programs.
- 2.3-4 Protect permanent in-channel improvements (e.g., pipelines, bridges, levees, and dams) from structural failure caused by erosion and scour.

- 2.3-5 In order to allow the creek to aggrade and create a more natural channel system, restrict the amount of aggregate removed from Cache Creek, except where necessary to: increase flood flow capacity; protect existing structures, infrastructure, and/or farmland; minimize bank erosion; implement the Channel Form Template; enhance creek stability; establish riparian vegetation; or for recreation and/or open space uses consistent with the Parkway Plan.
- 2.3-6 Establish monitoring programs for the continued collection of data and information to be used in managing the resources of Cache Creek.
- 2.3-7 Manage Cache Creek so that the needs of the various uses dependent upon the creek, such as flood protection, wildlife, groundwater, structural protection, and drainage, are appropriately balanced.

2.4 ACTIONS

- 2.4-1 Revoke the 1979 In-Channel Mining Boundary, as defined in Section 10-3.303(a) of the Yolo County Mining Ordinance. In its place, adopt a new in-channel area based on present channel banks and the 100-year floodplain, as determined by the U.S. Army Corps of Engineers in the Westside Tributaries Study, whichever is wider. This is a more accurate measure of delineating the boundary between in-channel and off-channel uses. *(Completed in 1996)*
- 2.4-2 Limit the amount of aggregate removed from the channel to the average annual amount of sand and gravel (and associated fines) deposited since the last prior year of removal as estimated by the TAC based on channel topography and bathymetry (not to exceed approximately 690,800 tons annually on average), except where excavation is necessary to widen the channel as a part of implementing the Channel Form Template, or where potential erosion and flood flow conveyance capacity problems exist. The amount and location of in-channel aggregate removal shall be carried out according to the ongoing recommendations of the TAC, with the voluntary cooperation of the landowners involved.

In-channel projects are limited to projects that: maintain flood flow capacity; protect existing structures, infrastructure, and/or farmland; minimize bank erosion; implement the Channel Form Template; enhance creek stability; establish riparian vegetation; and/or result in recreation and open space uses consistent with the Parkway Plan. Landowners are responsible for applying for and financing in-channel projects unless other funding is available.

- 2.4-3 Implement the Channel Form Template described in the 2017 Technical Studies to re-shape the Cache Creek channel based on best available data and hydraulic modeling tools. Continue to collect and analyze channel topography (LiDAR) data, and update the CCRMP hydraulic model with those data. Based on outcomes of these analyses, the TAC can determine the need for streambed and channel alteration projects. Altering the channel

banks and profiles will assist in returning the creek to a form that is more similar to its historical condition. This will result in reduced erosion, increased in-channel recharge, and additional riparian habitat opportunities.

- 2.4-4 Replace the theoretical thalweg, as defined in 10.3-221 of the Yolo County Mining Ordinance, with channel slope, width, depth, and cross-section standards specific to each reach of the creek, based on annual monitoring and periodic engineering analysis of hydraulic and sediment transport conditions. *(Completed in 1996)*

Develop and maintain a hydraulic model of Cache Creek capable of simulating a range of discharges and flood hydrographs up to the 100-year flood and assessing sediment transport patterns. Update this model with new topography, vegetation cover, and other available data sources. *(Note: HEC-2 and HEC-6 were completed by Northwest Hydraulic Consultant in the 1995 Technical Studies; HEC-RAS and HEC-2 were completed by MBK Engineers for the area between CR 94B and I-5 in 2001; HEC-RAS was completed by MBK Engineers for the area between CR 94B and I-5 in 2006.)*

- 2.4-5 Acknowledge the Streamway Influence Zone as the general area of the creek which has historically been subject to meander migration. The Streamway Influence Zone also defines the area where in-stream and off-channel issues overlap and are addressed in both plans. *(This concept lead to Section 10-4.429(d) of the Mining Ordinance.)*
- 2.4-6 Work with other entities, including, but not limited to, the YFCWCD, the U.S. Army Corps of Engineers, the California Department of Water Resources, the Federal Emergency Management Agency, landowners, and regional groups in developing a coordinated solution for managing the watershed of Cache Creek. *(In December of 2010, the TAC identified a primary and alternate Flood Coordinator. The County Office of Emergency Services (OES) designated the position of TAC Flood Coordinator as a Technical Specialist to the County OA EOC during periods of activation.)*
- 2.4-7 Manage activities and development within the floodplain to avoid hazards and adverse impacts on surrounding properties. This shall be accomplished through enforcement of the County Flood Ordinance and ensuring that new development complies with the requirements of Flood Hazard Development Permits. *(This is addressed through the County's requirement for a Flood Hazard Development Permit (FHDP) for any work within the 100-year floodplain of the creek. In correspondence dated July 14, 2005, the Chief Engineer of the State Reclamation Board confirmed that the Reclamation Board's authority is from I-5 downstream and the County's authority extends from I-5 upstream. In 2008, the State Reclamation Board became the Central Valley Flood Protection Board.)*
- 2.4-8 The County shall work with the Yolo County Flood Control and Water Conservation District to explore opportunities for increasing surface flows during spring and summer. Enter into a Memorandum of Understanding with the YFCWCD to provide a regular source of surface water flow in Cache Creek throughout the year, when annual precipitation is

sufficient. The timing and volume of flows should be coordinated with the TAC in order to create a stable low-flow channel and allow for the natural revegetation of the streambed, where appropriate.

- 2.4-9 As part of updating the hydraulic model of the creek channel, obtain funding to install a gage at Capay and work with other jurisdictional agencies (e.g. YFCWCD, USACE, DWR) to establish a gage maintenance program. This will allow the TAC to monitor the amount of streamflow and sediment coming into the plan area and compare the results with data obtained from the gage at Yolo. This information is important in determining how much water is recharged within the plan area, and whether the sediment "budget" is in a net gain or deficit.
- 2.4-10 The County shall manage collection of the information necessary to make informed decisions about the management of Cache Creek, including: regular water and sediment discharge data at Rumsey and Yolo gage sites, water and sediment discharge data at other sites during high flow events, and topographic data showing the erosion, aggradation, and the alignment of the low-flow channel within the creek. A formal integrated data management program should be developed with appropriate user access and consistent management and control.

Monitoring may, at the discretion of the County, be conducted by either consultants or trained volunteers, including landowners, public interest groups, the aggregate industry, and students, as a part of future public education programs associated with Cache Creek. However, the County shall maintain responsibility for the collection of high-quality data.

- 2.4-11 Create a Technical Advisory Committee (TAC) to provide the County with specific expertise and knowledge in implementing the CCRMP and CCIP. The TAC will assist the County in carrying out its responsibilities under this plan, as well as recommending changes to the CCRMP, the CCIP, and implementing ordinances. *(Completed in 1996)*
- 2.4-12 When possible, reshape channel banks immediately upstream and downstream of both County and State bridges to minimize scour and erosion. Work on the creek banks could be accompanied by the construction of check dams or weirs within the channel, downstream of the bridges, to encourage aggradation. The length of smoothed bridge transitions should generally be five times longer than the width of the channel at the bridge site, and shall incorporate guide banks, grade control structures, dikes, berms, vegetation, and other similar measures. Such methods and practices shall incorporate riparian vegetation and increase wildlife habitat values to the extent that the objective of minimizing scour and erosion are not compromised. *(This was anticipated to be a significant effort in the first five years of the program. In 1997, approximately 40,000 tons were removed in-channel near the facilities now operated by CEMEX, and in 1998 approximately 332,423 tons were removed near the Syar facilities, although a portion of this may have come from existing stockpiles.)*

- 2.4-13 Update the CCRMP every ten years. This will allow the plan to be amended on a regular basis so that the results of monitoring programs and reclamation efforts can be taken into account.
- 2.4-14 Rezone those lands within the CCRMP plan boundary to add the Open Space (OS) designation as an integrated zone. This will allow for those excavations necessary to carry out the channel widening envisioned in the 1995 Technical Studies, as well as any regular and/or emergency flood control and bank protection activities, riparian restoration, and other resource management efforts. *(Completed 1996)*
- 2.4-15 Present a request to the State Mining and Geology Board to grant an exemption from the requirements of SMARA for all channel improvement projects approved under the CCIP. If the CCRMP is found to be subject to SMARA, the County shall submit the plan, including the CCIP, to the Department of Conservation for review and comment as the mining and reclamation plan for the study area of the creek. *(The request was rejected by the State Mining and Geology Board in the fall of 1998. The Board determined that the CCRMP did not qualify for an exemption due to the amount of sand and gravel expected to be removed over the 30-year life of the plan. Special legislation was passed to amend SMARA to recognize the CCRMP as the functional equivalent of a Reclamation Plan for purposes of SMARA compliance (PRC Section 2715.5). On August 29, 2016, Governor Brown signed Senate Bill 1133 (Wolk) which made this statute permanent.)*
- 2.4-16 Adopt a County In-Channel Ordinance to prohibit commercial mining within the CCRMP planning area and specify that aggregate extraction within the area shall be limited to activities necessary to complete channel improvement projects. *(Completed in June 2008. See Cache Creek Area Plan In-Channel Ordinance, Section 10-3.101 et seq.)*

CHAPTER 3.0 – WATER RESOURCES ELEMENT

3.1 INTRODUCTION

Present Conditions

Groundwater studies have shown a consistent pattern of interaction between Cache Creek and the local aquifer. Based on the underlying geology of Cache Creek, some reaches are hydrologically considered to be “losing” (i.e., prone to percolation of surface water through the streambed), while others are considered “gaining” (i.e., elevated groundwater seeps upwards into the streambed). The portion of Cache Creek located between the Capay and Esparto Bridges tends to be a losing reach. The reach between the Esparto Bridge and the Dunnigan Hills may either be losing or gaining, depending on the amount of rain. The more rain there is, the higher the groundwater table raises, seeping water into the creek. In a prolonged drought, however, the level of the aquifer drops and the reach loses water. The portion of Cache Creek downstream of the Dunnigan Hills to the town of Yolo is generally a losing reach.

Surface water hydrology in Cache Creek is dependent on winter rainfall; although in some cases, releases from upstream dams can influence base flow in the creek, particularly during the summer irrigation season. Rainfall generally begins in December and peaks in January and February. Depending on number and timing of storms, surface water flows begin to recede in late spring, although gaining reaches and pools will retain water into the summer. By fall, the creek has gone completely dry.

Cache Creek is known to be impaired by mercury originating from historic mining practices upstream. Boron, nitrogen, orthophosphate, and fecal coliforms are also elevated in Cache Creek and likely originate from agricultural sources in the watershed. The CCRMP water quality monitoring program has involved sampling in the creek since 1999, and few spatial or temporal trends are evident. The CCRMP water quality sampling program has identified Gordon Slough as a major contributor of many of the agriculturally originating pollutants detected, most notably fecal coliforms and orthophosphate.

Groundwater elevations in the Cache Creek area have been consistent over the two decades since the start of the CCRMP, exhibiting seasonal trends of depression in the summer/fall due to pumping and recharge in the winter/spring due to rains. Overall, the winter recharge has kept spring groundwater elevations near Cache Creek constant. Two exceptions are during 2009-2010, when groundwater levels were depressed due to dry conditions in 2007-2009, and from 2012 to 2016 due to the effects of the 2012-2014 California drought. Wet conditions in 2011 restored groundwater elevations after the 2009-2010 depression, but the severity of the 2012-2014 drought has meant that rains in the winter of 2015-2016 have not yet recovered pre-drought groundwater elevations.

In 2007, the Water Resources Association of Yolo County, comprised of the jurisdictions and water agencies of Yolo County, adopted an Integrated Regional Water Management Plan

(IRWMP) to look area wide at water supply, water quality, and water resources management. In 2014, significant new legislation known as the Sustainable Groundwater Management Act or SGMA was enacted relevant to groundwater management in California. This legislation established requirements for sustainable management of groundwater at the local level to protect against overdraft, subsidence, and other adverse effects of unsustainable groundwater use. This resulted in the formation of the Yolo Subbasin Groundwater Agency and on-going efforts to develop a Groundwater Sustainability Plan by January 2022.

CCRMP Vision

Studies that preceded adoption of the CCRMP in 1996 demonstrated that lowering of the streambed from prior commercial in-channel mining in Cache Creek did not result in a permanent loss of groundwater storage throughout the aquifer; however, it did result in a decline of groundwater levels of about 10 feet near the channel. This is one of the reasons the CCRMP limits in-stream activities to those that enhance channel stability, establishment of riparian vegetation, and recreation and open space activities as prescribed in the Parkway Plan. Such activities are restricted to no more than the average annual amount of aggregate deposited since the last prior year of removal (not to exceed approximately 690,800 tons on average), excluding the reshaping of the channel bank to comply with the Channel Form Template. Removal of aggregate from the channel may only occur under the direction of the County based on the recommendations of the TAC. It is intended that the streambed will aggrade over time in some areas. In most reaches of Cache Creek within the plan area, the channel can accommodate far more than the necessary flood flow conveyance capacity and can aggrade without adversely affecting this capacity. In areas where the rising streambed does reduce channel capacity sufficiently to encroach on necessary flow conveyance capacity, periodic maintenance may be advisable to restore desired flow conveyance capacity.

The CCRMP also recognizes opportunities to develop a groundwater recharge program as a component of mining reclamation. Recharge can be accomplished by converting some of the formerly mined pits along Cache Creek into groundwater recharge basins. Excavations where the pit floor is above the groundwater table are especially suitable for recharge. Where appropriate, the County will coordinate with the Yolo County Flood Control and Water Conservation District in their efforts to develop a groundwater management program.

Cache Creek is a major conveyance of stormwater and irrigation water. Landowners along the creek should be encouraged to divert upland stormwater runoff flows into sediment basins before the water enters the creek. This action would reduce the peak flows in Cache Creek during storm events because sediment basins would also act as stormwater detention basins. As discussed in the Biological Resources Element, some of the formerly mined pits could be used for this purpose to deposit sediment carried by stormwater runoff into areas that need topsoil (provided it can be demonstrated that soil quality is acceptable), as well as to provide a seasonal source of water for riparian vegetation. At the same time, the stormwater detention/sediment basins would settle out much of the suspended sediment carried by upland stormwater runoff.

3.2 GOALS

- 3.2-1 Improve the gathering and coordination of information about water resources so that effective policy decisions can be made.
- 3.2-2 Promote the conjunctive use of surface and groundwater to maximize the availability of water for a range of uses, including habitat, recreation, agriculture, water storage, flood control, and urban development.
- 3.2-3 Maintain the quality of surface and groundwater so that nearby agricultural productivity and available drinking water supplies are not diminished.
- 3.2-4 Enhance the quality of water resources by stressing prevention and stewardship rather than costly remediation.
- 3.2-5 Provide habitat restoration without increasing the generation of mosquitoes.

3.3 OBJECTIVES

- 3.3-1 Encourage the development of a groundwater recharge program, where appropriate, within the Cache Creek basin. The program may specify use of reclaimed mining pits and open lakes to the greatest extent feasible, while maintaining consistency with the other goals, objectives, actions, and standards of both the CCRMP and OCMP.
- 3.3-2 Use the CCRMP as a basis for developing a comprehensive watershed plan for Cache Creek that eventually integrates the area above Clear Lake to the Yolo Bypass, relying on coordinated interagency management.
- 3.3-3 Eliminate water quality impacts from the use of pesticides, fertilizers, and other soil amendments in the channel. Promote public education programs that encourage the use of innovative methods and practices for enhancing the water quality of Cache Creek through the voluntary cooperation of local landowners.
- 3.3-4 Establish monitoring programs for the continued collection of data and information to be used in managing surface and groundwater resources.
- 3.3-5 Promote the safe use and handling procedures of hazardous materials during creek management activities.
- 3.3-6 Minimize mosquito generating potential in habitat restoration areas.

3.4 ACTIONS

- 3.4-1 Discourage activities that impact the surface water quality of Cache Creek. Although surface mining operations are regulated, other land uses along the creek are not. The County shall work with the U.S.D.A. Natural Resource Conservation Service and the Yolo County Resource Conservation District to promote alternative soil and water management practices that improve local water resources. The County NRM shall initiate contact with resource conservation agencies at least annually.

Pesticides (including herbicides, insecticides, rodenticides, and fungicides) shall be used within the channel boundary only under the direction of a certified pesticide/herbicide applicator. These chemicals shall not be applied prior to forecasted rainfall. Evaluate the potential for herbicides to cause aquatic life toxicity. Use herbicides with low toxicity to aquatic life (fish, zooplankton, algae).

Public access to County-owned land shall be allowed only at limited points within the CCRMP planning area to facilitate the control of potential releases of deleterious materials (including fuel, motor oil, household waste, and debris) that could affect water quality within the Cache Creek channel. Access to private property along the creek should be discouraged through the posting of "No Trespassing" signs.

- 3.4-2 Negotiate cooperative agreements with the YCFCWCD, U.S. Army Corps of Engineers, Regional Water Quality Control Board, Yolo County Resource Conservation District, and U.S. Bureau of Land Management, among others, to extend the provisions of the CCRMP outside of the plan area and incorporate the requirements of other agencies of jurisdiction into the County's planning efforts. Interagency contact shall be initiated by the County NRM at least once per year.
- 3.4-3 Provide for annual (or more frequent ,if necessary) testing of surface water quality of Cache Creek at Capay and Yolo. The sample collection and testing should be conducted in the fall or early winter so that the "first flush" of runoff is evaluated for water quality. The County should, when appropriate, enlist the assistance of other government agencies in carrying out the measurements to reduce costs and provide accurate information. However, the County should not rely on others to complete the monitoring.

Testing should include, but not be limited to, pH, temperature, turbidity, total and fecal coliform, mercury, dissolved oxygen, nitrogen, and orthophosphate. This information will assist in habitat restoration efforts and allow the County to monitor water quality trends within the planning area. The County NRM shall be responsible for the collection, management, and distribution of all water quality data, and should coordinate all data management activities (formatting, storage, quality control) with the appropriate TAC member.

Testing (as described above) should also be conducted near in-channel projects prior to, during, and after construction/completion (i.e., at first high-flow inundation) to detect any potential non-compliance with Regional Water Quality Control Board (RWQCB) Water Quality Objectives.

- 3.4-4 Encourage landowners adjoining Cache Creek to participate in a groundwater monitoring program, so that ongoing groundwater information can be integrated into the Water Resources Information Database (WRID) created since the CCAP was originally adopted in 1996.
- 3.4-5 Deleted.
- 3.4-6 Work with agricultural land owners within the CCRMP boundary to develop agricultural drainage ponds or wetlands to reduce loads of contaminants present in these discharges before they enter Cache Creek.
- 3.4-7 Coordinate all habitat restoration efforts with the Sacramento-Yolo Mosquito and Vector Control District.

CHAPTER 4.0 – BIOLOGICAL RESOURCES ELEMENT

4.1 INTRODUCTION

Present Conditions

In California's Central Valley, intact riparian ecosystems are critically important habitat for numerous native wildlife, fish, and invertebrate species. Riparian forests are particularly valuable for both common and special-status species of birds, mammals, insects, and other species seeking food, shelter, dens, or nesting sites. Riparian areas also provide many important ecosystem services for people including hiking, bird watching, hunting, fishing, education, and carbon sequestration that reduces the effects of climate change.

Prior to the 1850's, Cache Creek was likely bordered by extensive riparian forests composed of cottonwoods, willows, and oaks, spanning a broad vegetated floodplain. Much of the forest was eliminated in the early to mid-1900's, largely as the result of cattle grazing, timber harvesting, clearing of fields for agriculture and homesteads, and water diversion. In-stream mining that began with small operations in the early 1900's, and which grew to industrial-scale operations in subsequent decades, further decreased riparian forests and native vegetation in general.

Based on hand-drawn maps at the scale of the entire CCAP, the 1995 Technical Studies estimated that approximately 125 acres of riparian forest remained along lower Cache Creek within the present-day CCRMP area. A more refined re-analysis of the 1995 vegetation data as part of the 2017 Technical Studies revealed that riparian forest area was substantially underestimated in 1995. The 2017 Technical Studies provided refined estimates that in 1995 there was an estimated 263 acres of riparian forest, 36 acres of oak woodland, 331 acres of willow scrub, and 218 acres of herbaceous vegetation, with significantly more oak woodland present within the OCMP area, outside the CCRMP boundary.

As of 2015, there was an estimated 252 acres of riparian forest, 3 acres of oak woodland, 213 acres of willow scrub, and 475 acres of herbaceous vegetation within the CCRMP area. Changes in these values from 1995 to 2015 represent actual changes in vegetation, in addition to significant differences in methodology used to classify vegetation and estimate acreage between the two time periods. The acreage of riparian forest could have potentially been higher; however, recent brush fires and forest die-back from drought resulted in some degradation and loss of forest habitat from 2010 to 2015.

Herbaceous vegetation has increased significantly to 475 acres in 2015 balanced by a decline in willow scrub to 213 acres. Assuming the area of oak woodland was approximately 2.5 acres in 1995, a slight increase to just under 3 acres has also occurred. The most extensive riparian forests are found in the Dunnigan Hills reach, in which large patches of gallery forests comprised of cottonwoods, willows, oaks, black walnuts, buckeyes, and other species of trees and shrubs. Bands of dense willow/mulefat scrub line the channel, interspersed with patches of wetland herbaceous vegetation. Large patches of riparian forest are also found in the Capay, Guesisosi,

and Hoppin reaches. Herbaceous vegetation has increased significantly along the channel banks in the Dunnigan Hills and Hoppin reaches, primary in the form of dense stands of cattails and tules. Within the Hungry Hollow, Madison and western portion of the Guesisosi reaches, riparian vegetation has begun to recover from previous mining activities, albeit slowly due to gravelly soils, relatively deep groundwater, and lack of surface water. While a slight increase in native vegetation has been observed from 1995 to 2015, most of these areas remain exposed and largely unvegetated, providing only minimal habitat for wildlife and other species.

Numerous threats to remaining native vegetation were identified in the 1995 Technical Studies, including the narrow stream channel, lack of surface water, invasive plant species (tamarisk and giant reed), and lowered groundwater levels. These factors are still present in 2016. The narrow width of the channel increases the velocity of the streamflow, making it more likely that native plant seedlings are scoured away during high flows. The diversion of surface water often occurs during the growing season for riparian vegetation and removes the primary source of water in losing reaches of the creek. Lowered groundwater levels leave tap roots withered and reduces colonization by new native seedlings, especially in riparian forest patches on upper terraces. In addition, the invasion of aggressive non-native species inhibits the recovery of diverse native habitat.

However, additional threats to native vegetation have arisen since 1996, including off-highway vehicle (OHV) use, brush fires, numerous new invasive species, and the lack of active revegetation after fires and invasive species treatment. Rampant OHV use along lower Cache Creek damages or removes native vegetation, potentially promotes invasive species, and likely has negative impacts on wildlife such as nesting birds, reptiles, and amphibians. Fires set by landowners to clear brush in forested areas have spread to encompass entire forest stands, resulting in large-scale damage to riparian forests. Numerous new invasive, non-native species have established along lower Cache Creek since 1996, including Ravenna grass, perennial pepperweed, tree of heaven, non-native thistles, tree tobacco, Himalayan blackberry, edible fig, poison hemlock, barbed goatgrass, and medusahead. These species compete directly with native plants and generally have little value for native wildlife. Finally, the lack of active revegetation with native species after fires and invasive species treatment has allowed many of these invasive species to rapidly increase and spread across the area. It is estimated that over 95 percent of the understory vegetation within the CCRMP is non-native, consisting of naturalized annual grasses and forbs in addition to invasive species noted above. Some patches of arundo, Ravenna grass, and tamarisk (formerly widespread in large, continuous patches) have either persisted along backwater channels or under dense forest canopy or have re-sprouted after being treated in previous years. More recent invasive species, such as perennial pepperweed and Himalayan blackberry, are widespread and often occur in large, homogeneous patches that exclude native vegetation. These species provide only minimal value to native wildlife and invertebrates, while using vast amounts of water and growing dense enough to inhibit channel flows.

Wildlife and invertebrate species are also important components of the biological resources present within the area. The 1995 Technical Studies presented an overview of native species that are known to be present within the CCAP area, as well as those species that could be present

given suitable habitat. Notable species that were present, or potentially present, within the CCRMP area at the time of the 1995 Technical Studies included Swainson's hawk (*Buteo swainsoni*; present), bank swallow (*Riparia riparia*; present), tricolored blackbird (*Aegelaius tricolor*; present), Cooper's hawk (*Accipiter cooperi*; potentially present), yellow warbler (*Stenophaga petechia*; potentially present), Western pond turtle (*Actinemys marmorata*; present), ring-tailed cat (*Bassariscus astutus*; potentially present), Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*; present), Sacramento anthicid beetle (*Anthicus sacramento*; potentially present), as well as numerous common species such as black-tailed deer (*Odocoileus hemionus columbianus*) and common predators, such as bobcats, badgers, coyotes, foxes, and raptors.

As of 2015, notable species observed within the CCRMP area included Swainson's hawk, tricolored blackbird, yellow warbler, golden eagle (*Aquila chrysaetos*), loggerhead shrike (*Lanius ludovicianus*), Northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), bobcat (*Lynx rufus*), mountain lion (*Puma concolor*), nonnative wild pig (*Sus scrofa*), Valley elderberry longhorn beetle, Sacramento hitch (*Lavinia exilicauda*), and Sacramento pikeminnow (*Ptychocheilus grandis*). More than 150 additional common species of snakes, lizards, birds, mammals, invertebrates, and fish also occur across the CCRMP area.

Threats to native wildlife and invertebrates include non-native competitors and predators, such as brown-headed cowbird (*Molothrus ater*), European starling (*Sturnus vulgaris*), bullfrog (*Rana catesbeiana*), and small-mouthed bass (*Micropterus dolomieu*); poaching; rodenticides that can poison native mammalian and avian predators; damage to or loss of habitat due to development, drought, or disturbances including fires and OHV use; establishment and spread of invasive plant species that reduce habitat value; and in some cases noise that can impair ability of nocturnal predators to locate prey.

CCRMP Vision

Although the CCRMP cannot re-establish the diversity and extent of riparian habitat that existed 150 years ago, there is substantial opportunity for improving the degraded situation that occurs today. One long-term goal of the CCRMP is to establish a continuous corridor of native vegetation along lower Cache Creek composed of a mosaic of riparian forests, oak woodland, scrub, and herbaceous habitat, including ephemeral species. Both passive and active restoration efforts will be required to achieve this goal. Passive restoration involves removing barriers to habitat recovery without actually planting native species back on a site. On lower Cache Creek, such barriers include invasive plants that displace native plants, disturbances such as fires and OHV use, lack of summer flows coupled with deep groundwater, and lack of floodplain connection. Active restoration includes elements of passive restoration (e.g., invasive plant removal), but also the deliberate planting of native trees, shrubs, and herbaceous species in order to accelerate habitat recovery. Both passive and active restoration projects within the CCRMP area should have one or more habitat targets (the type of habitat to be restored). Based on existing habitat within the CCAP area, these targets will include riparian forest, oak woodlands, scrub, herbaceous

grasslands and wetlands (Figures 6 through 8 below). It is critical that, for habitat types associated with woody vegetation (riparian forest, oak woodland, and scrub), native understory species (grasses, forbs, sedges, and rushes) are included in the planting palette in order to exclude invasive species, prevent soil erosion, and provide resources for pollinators and other species.

Figure 6 provides representative photographs of riparian forest patches from the CCAP area taken in 2015–2016. Figure 7 provides representative photographs of scrub (left) and oak woodland (right) habitat taken within the CCRMP area from 2015–2016. Figure 8 provides representative photographs of herbaceous habitat taken within the CCAP area from 2015–2016. Upper left to lower right: upland restored grassland dominated by purple needlegrass (*Stipa pulchra*), grassland on lower terrace near channel dominated by creeping wildrye (*Elymus triticoides*), wetland sedge (*Carex* sp.), and a large patch of native sky lupine (*Lupinus nanus*).

This plan identifies a number of recommended sites along Cache Creek for habitat restoration (see Figure 9). Figure 9 identifies priority sites for restoration of riparian forest, oak woodlands, grasslands, and wetlands within the CCAP area. Understory enhancement refers to areas with high-quality woody vegetation but with understory communities dominated by priority invasive species (e.g., perennial pepperweed, Himalayan blackberry). Due to the changing hydrological and geological conditions that exist throughout the plan area, the type and extent of habitat vary from one reach to another. In general, the recommendations may be summarized as follows:

Capay Reach: Due to the high flow velocities and widespread exposure of bedrock within the channel, there is currently little opportunity for in-stream restoration in this reach. However, there are substantial opportunities to restore oak woodlands with native understory communities on upland sites on both the north and south sides of the channel. These areas are largely open sites dominated by nonnative and invasive understory species, although some remnant native oaks, elderberry, and other species are still present. Soils appear to be of sufficient depth and quality to support these habitat types, and the sites are reasonably accessible. Riparian forest restoration should also be undertaken within the formerly large forest patch near the downstream end of the reach on the south side of the channel. This patch burned extensively in 2015, supposedly due to a brush fire spreading out of control, and much of the forest was lost and replaced by dense invasive thistles and other undesirable species. To a lesser extent, some opportunities also exist for riparian forest restoration to expand and connect existing forest patches on upper terraces along the north side of the channel. Efforts should also focus on continuing to treat priority invasive species including arundo, Himalayan blackberry, Ravenna grass, perennial pepperweed, and tamarisk within this reach.

Cache Creek Area Plan Update - Riparian Forest Patches

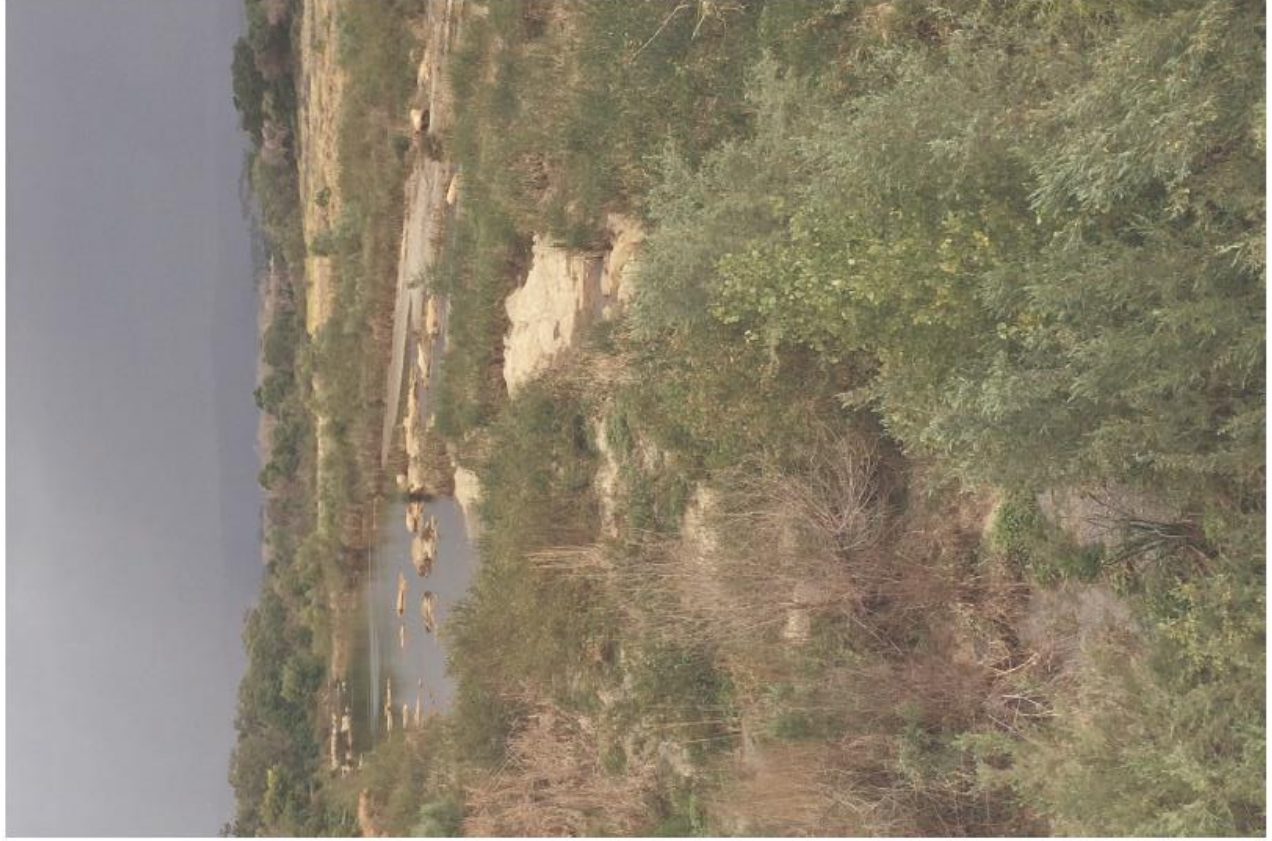


May 10, 2017

Data sources: Yolo County. Photo credit Dr. Andrew Rayburn

Figure 6

Cache Creek Area Plan Update - Scrub and Oak Woodland Habitat



May 10, 2017

Data sources: Yolo County, Photo credit Dr. Andrew Rayburn

Figure 7

Cache Creek Area Plan Update - Herbaceous Habitat

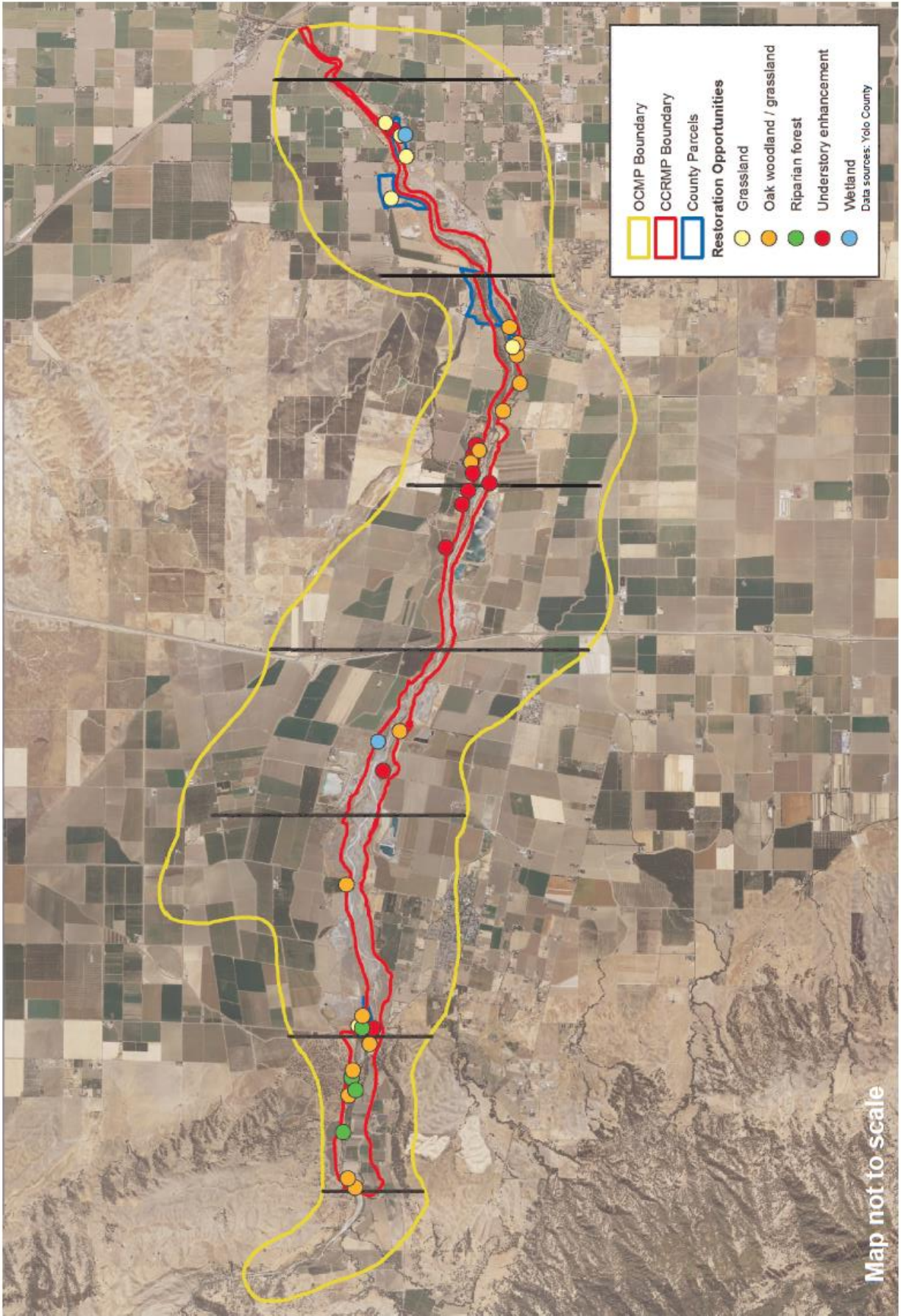


May 10, 2017

Data sources: Yolo County; Photo credit Dr. Andrew Rayburn

Figure 8

Cache Creek Area Plan Update - Priority Restoration Opportunities



May 10, 2017

Figure 9

Hungry Hollow Reach: This reach of the creek is the main area of natural sediment deposition that results in a braided channel. Groundwater levels are lower here than in other portions of the plan area. These two factors tend to discourage extensive restoration unless irrigation is used on an on-going basis. However, this area also forms a significant gap in the desired continuous corridor of native habitat that is the long-term goal of the plan. The exception is the upstream end of this reach, where the Capay Open Space Park is located. On the northern portion of the park, there are opportunities to enhance the existing habitat within the park through grassland, riparian forest, and oak woodland enhancement and restoration. On the portion of the park on the south bank, understory enhancement in the form of invasive species treatment and replanting of native grasses and forbs is recommended. Any restoration work at the Capay Open Space Park will directly support the implementation of the Parkway Plan. Along the meandering low-flow channel, where more water is available, some natural recovery of native woody vegetation has occurred from 1995 to 2015. Although a slow process, this recovery is expected to continue in the future, especially if more surface water becomes available in late spring and throughout the summer. Just upstream of the County Road 87 bridge on the north side of the channel, there are large open areas that would be suitable for oak woodland or native grassland restoration. Although there are relatively fewer priority invasive plants along this reach, monitoring and treatment efforts should continue to prevent spread within this reach and also downstream.

Madison Reach: Within a large patch of woody vegetation on the south bank in the upper third of this reach, removal of invasive species and debris could be paired with planting of native shrubs and understory species to improve habitat. Also, on the south bank but further downstream, oak woodland restoration would be appropriate for a large open area on an upper terrace. In addition, a former mining pit at the midpoint of the reach on the north bank could be restored to a native wetland (e.g., a sedge meadow). Some opportunities may exist to lower, breach, or remove levees to connect formerly mined pits on the north side of the channel. Areas on low terraces with good access to groundwater along this reach could potentially be restored to riparian forest habitat. Woody riparian species could also be planted along the low-flow channel itself, focusing on relatively stable areas in terms of scour and deposition. As in the Hungry Hollow reach, some native revegetation is naturally recovering along the low-flow channel and in other locations. Although not as abundant as in other reaches, continued monitoring and treatment of priority invasive species should also occur in this reach.

Guesisosi Reach: This portion of the creek serves as a transition zone between the sparsely vegetated, braided channel upstream, and the well-vegetated, relatively narrow channel downstream. Substantial natural recovery of native woody vegetation has occurred within this reach, especially on the downstream end. In this portion of the reach, the primary opportunities are to enhance the understory within the existing patches of woody vegetation (e.g., the Hayes “Bow-Tie” property) as well as to monitor and treat priority invasive species.

Dunnigan Hills Reach: This reach already contains several sites that have naturally revegetated, and is generally characterized by well-developed and diverse habitat including substantial patches of high-quality riparian forest and a wetland-forest complex at the Cache Creek Nature

Preserve. Two high-priority restoration opportunities exist within this reach, both of which have the potential to directly support the implementation of the Parkway Plan. First, the Millsap property on the northern side of the channel at the upstream end of the reach is ideal for restoration of a mosaic of oak woodlands interspersed with native grasslands and shrub communities, especially given the substantial effort put into controlling tamarisk and arundo on the site in recent years. The northwest portion of the property is currently a walnut savanna with a non-native understory; this site is unique since it retains the natural microtopography that is presumably the result of not having been plowed in the past. Oak woodland restoration and the establishment of a diverse natural understory on this site could be integrated with the creation of a nature trail and interpretive signage, resulting in a high-value Parkway site that would be open to the public. Other portions of the Millsap property require invasive species treatment and understory enhancement, such as the dense forest patch on the southeast portion of the property that is known to harbor migratory flocks of long-eared owls in some years.

The second priority restoration site is the Wild Wings property on the south side of the channel near the downstream end. The upper portion of the property would greatly benefit from repair and expansion of the existing trail network in addition to interpretive signage, while additional oaks, native shrubs, and native herbaceous species would augment those that survived after past planting efforts. The lower portion of this site is highly compacted with rocky soils, and would likely be suitable for native grassland restoration using species adapted to such harsh conditions (e.g., purple needlegrass, native buckwheat species). In addition, understory enhancement is needed within existing forest patches on both the northern and southern sides of the channel at the upstream end of this reach.

Oak woodland restoration would be appropriate both upstream and downstream of the former Patterson pit, which itself should be retained as a wetland especially given the historical occurrences of tricolored blackbirds on the site. Opportunities for creating further hydrological connections between the creek and both riparian forests and wetlands that have developed on former mining sites should also be explored. Overall, this reach is characterized by abundant priority invasive species, and both monitoring and treatment should continue to be emphasized.

Hoppin Reach: Two priority restoration opportunities are found within this reach. First, most of the Granite Woodland Reiff site adjacent to the CCRMP boundary is suitable for native grassland restoration and potentially some scattered oaks. Large patches of previously planted native grasses are thriving in the northern portion of the site. Second, the Correll and Rodgers properties are composed of a mosaic of different habitat types and have sites appropriate for grassland and wetland restoration in addition to understory enhancement within the large forest patch on the northern edge of the property. Oaks may also establish well in the more open areas targeted for grassland restoration, as may some riparian forest species especially if the lower areas were hydrologically connected to the creek. Otherwise, irrigation might be required to ensure woody species establishment. In general, opportunities should be explored to remove embankments and implement other measures to broaden the active floodplain to accelerate vegetation recovery on former mining sites. Elsewhere within this reach, the primary emphasis should be on monitoring and treating priority invasive species that are widespread across this area.

Rio Jesus Maria Reach: The channel is relatively narrow through this reach, with generally well-developed riparian forest on the upper banks. As noted for other reaches, priority invasive species should be monitored and treated within this reach, and some open areas would benefit from grassland restoration efforts. A portion of the mature forest on the northern side of the channel on the downstream end burned sometime from between 2015 and 2016, and re-planting of oaks and other woody species should be investigated.

One of the foremost considerations in accelerating and maintaining recovery of native vegetation and other biological resources within the CCRMP area is a more available supply of surface water (i.e., maintaining surface flows along the length of lower Cache Creek in the late spring and throughout summer). This may be accomplished by either coordinating revegetation efforts with agricultural drainage, or involving the Yolo County Flood Control and Water Conservation District.

Restoration recommendations for several of the reaches have included proposals to remove levees and connect formerly mined pits to the channel. In locations where this is still feasible as of 2015, this could be accomplished in a series of steps. The first would be to backfill the pit, if necessary, with four to six feet of overburden and topsoil. A number of sources could be used for this material, including sediment runoff from adjoining agricultural fields, waste fines from off-channel aggregate processing, surplus soil from grading projects, and/or backwash from Cache Creek (if a small breach is constructed on the downstream portion of the levee). Once sufficient material had been accumulated, the area should be planted with riparian vegetation and allowed to mature for two or three years. At that time, most of the levee would be removed, leaving a gently sloping transition from the newly revegetated terrace to the more active area of the channel.

Alternatively, a breach could be constructed in the downstream portion of the levee. The revegetated terrace would still be connected to the creek, while the remaining portion of the levee would increase the variety of natural landforms to diversify habitat opportunities. The remaining portion of the levee would be strengthened through riprap and other means to protect it from erosion. By implementing these recommendations incrementally, the vegetation is given enough time to become well established so that it can withstand the forces of large flood events. Providing a dense planting of vegetation along the toe of the streambanks will also stabilize the new banks and reduce erosion, as well as encourage higher flow velocities to remain in the center of the creek.

The continued recovery of riparian habitat along lower Cache Creek will require careful consideration. In some areas, the ability of vegetation to provide erosion control will be encouraged to protect nearby property or structures, while in other areas vegetation will have to be removed when it adversely affects channel flow. Similarly, the elimination of all priority invasive species across the CCRMP is likely an infeasible goal. Strategic investment of limited resources will be required in order to optimize invasive species treatment efforts into the future.

It is anticipated that much of the revegetation efforts along Cache Creek will be undertaken by the Cache Creek Conservancy and other organizations. As such, the County will work closely with

these groups in order to ensure that the various habitat development projects are carried out in a consistent manner and do not conflict with one another, that the projects contribute to the overall functioning of the riparian corridor, and that there is appropriate follow-up, maintenance, and monitoring to ensure success. Standards for developing habitat have been provided to guide revegetation projects and provide a measure of consistency in their implementation. The County will also coordinate with other government agencies, such as the YCFCWCD and the U.S. Army Corps of Engineers, so that a mutually agreed upon and coordinated approach can be implemented. Assistance will be sought to help in monitoring the results of these diverse efforts. Public service organizations and university students with ecological expertise will be approached to perform pro bono plant and wildlife surveys to supplement existing monitoring efforts.

4.2 GOALS

- 4.2-1 Provide for a diverse, native riparian ecosystem within the CCRMP area that is self-sustaining and capable of supporting native wildlife.
- 4.2-2 Create a continuous corridor of riparian, upland, and herbaceous vegetation spanning the CCRMP area
- 4.2-3 Develop high-quality natural habitat that is dominated by native plants.
- 4.2-4 Manage riparian habitat so that it contributes to channel stability.
- 4.2-5 Establish monitoring programs for the continued collection of data and information to be used in measuring the success of revegetation efforts.
- 4.2-6 Integrate climate-smart adaptation strategies to increase resiliency and prepare for future uncertainty.

4.3 OBJECTIVES

- 4.3-1 Conserve and protect existing riparian habitat within the CCRMP area to the greatest extent possible. Where channel maintenance or improvement activities result in the removal of riparian habitat, require disturbed areas to be restored. Where vegetation has been removed within the channel to maintain or improve flood flow conveyance capacity and/or erosion control purposes, restoration shall be done in nearby areas that do not adversely affect flood flow conveyance capacity.
- 4.3-2 Establish conditions to encourage the development of a variety of natural riparian habitat types within the CCRMP area in order to support biological resources associated with Cache Creek .

- 4.3-3 Adopt standards for planning, implementing, and monitoring habitat revegetation and restoration projects in order to ensure consistency, maximize success, and account for future uncertainty due to climate change.
- 4.3-4 Ensure that the establishment of habitat does not significantly divert streamflow or cause excessive erosion or damage to nearby structures and/or property.
- 4.3-5 Encourage the use of alternative methods and practices for erosion control that incorporate riparian vegetation in the design.
- 4.3-6 Coordinate restoration programs with relevant planning efforts of both the County and other private and public agencies. Encourage regional mitigation to occur within the CCAP plan area, consistent with the program and the Parkway Plan. Require mitigation obligations resulting from mining applications to be implemented within the CCAP plan area, consistent with the Parkway Plan.

4.4 ACTIONS

- 4.4-1 Encourage the use of riparian vegetation and other "soft-engineering" methods in bank or channel protection. Methods may include willow spiling (retaining walls constructed of woven willow stems from which trees will sprout); spur dikes to deflect the current away from the bank and create areas for vegetation; and cabling dead trees along the bank to provide both bank stabilization and additional habitat. *(This was incorporated into the CCIP; see various references to bio-technical techniques.)*
- 4.4-2 Remove vegetation when it threatens channel stability. In particular, the growth of invasive species, willow scrub, and other native and nonnative vegetation on mid-channel gravel bars shall be controlled to prevent streamflows from being diverted towards nearby banks. *(This was incorporated into the CCIP under Typical Channel Maintenance Activities.)*
- 4.4-3 Promote the eradication of priority invasive species within the planning area. A list of priority invasive species has been developed by the Cache Creek Conservancy and should be updated as needed. Current priority woody invasive species include edible fig, tamarisk, tree of heaven, and tree tobacco. Current priority herbaceous (non-woody) invasive species include arundo, barbed goatgrass, common teasel, fennel, Himalayan blackberry, medusahead, perennial pepperweed, poison hemlock, purple loosestrife, stinkwort, Italian thistle, milk thistle, yellow flag iris, and yellow starthistle. The annual CCRMP-wide invasive species treatment program (including but not limited to the annual Creek Spray) should continue and expand to include additional priority species and treatment areas within the planning area. Spatial data from baseline invasive species mapping in 2016 and from subsequent monitoring efforts should be used to inform and prioritize invasive species treatment efforts. All treatments should be implemented in accordance with the Migratory Bird Treaty Act, the Yolo HCP/NCCP, and other regulations

as appropriate. Treated areas should be marked using GPS technology and revisited the following growing season to determine if treatments were successful. Dead biomass should be removed from the planning area or burned on site. Comprehensive monitoring should be conducted at least every five years to inform adaptive management and invasive species treatment efforts. *(This was incorporated into the CCIP under Typical Channel Maintenance Activities.)*

- 4.4-4 Coordinate with the Cache Creek Conservancy, the YFCWCD, Yolo Resource Conservation District, the California Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the U.S. Bureau of Land Management, and other appropriate agencies and organizations to ensure that habitat restoration projects within the CCAP plan area, proposed by these and other entities are consistent with the CCRMP and the Parkway Plan. Restoration plans shall complement the preservation and enhancement measures in the Yolo County HCP/NCCP.
- 4.4-5 Establish a series of wildlife reserves (see Figure 9) to provide core areas for maximizing wildlife and fish habitat, to help protect areas of high-quality habitat from future degradation, and to provide source areas and wildlife nurseries from which native plants and wildlife can colonize other reaches of the creek. Wildlife reserves should emphasize the preservation of high-quality existing habitat, areas with high species diversity, areas supporting unique species or biotic communities, and habitat for rare, threatened, and endangered species. *(This is being implemented in partnership between the County and the Yolo Habitat Conservancy pursuant to Resolution 14-126 approved December 2, 2014, and through the development of the Cache Creek Parkway Plan).*
- 4.4-6 Favor projects that establish native woody vegetation over emergent wetlands in appropriate areas within the planning area. Riparian forest and scrub habitats have largely disappeared regionally and are much more difficult to reestablish than are emergent wetland habitats. Emergent wetlands can also be established in a greater range of environmental conditions, whereas riparian woodlands require specific considerations in order to thrive.
- 4.4-7 Solicit the assistance of community groups in carrying out ongoing monitoring programs. Examples may include enlisting the local Audubon Society to perform annual bird counts at specific points along lower Cache Creek; coordinating with UC Davis to create a program whereby students could obtain class credits for performing surveying, vegetation mapping, or bed material counts; and collecting well levels from landowners in the plan area. *(See also CCRMP Action 2.4-10.)*
- 4.4-8 Restore riparian habitat throughout the plan area in order to create a continuous habitat corridor along lower Cache Creek. The CCRMP includes a series of recommended restoration sites located throughout the plan area.

- 4.4-9 Revise the In-Channel Ordinance to provide specific guidelines for design, implementation, and maintenance of riparian habitat. *(Complete)*
- 4.4-10 Through development agreements with mining operations, require integration of in-channel revegetation plans in order to reduce fragmentation by expanding and connecting existing habitat patches, optimize restoration planning, and support future funding proposals. Ensure that elements such as soils, drainage, slopes, and habitat types complement one another in a coordinated effort. Coordinate in-channel habitat areas with proposed wildlife mitigation and "net gain" established as a part of the off-channel mining operations in order to create a larger riparian habitat area. Require consistency with the Parkway Plan.
- 4.4-11 Work with the aggregate industry to achieve multiple benefits, whereby habitat developed as a part of a reclamation plan may be dedicated for preservation to offset development projects elsewhere. Coordinate this effort with implementation of the Parkway Plan and the Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP).
- 4.4-12 Recommended planting procedures and materials, soil amendments and stabilizers, and appropriate species and planting densities for marshland, oak woodland, and riparian woodland restoration efforts should be performance based. Variations from these guidelines shall be acceptable if alternative restoration plans have been prepared by a qualified biologist and reviewed by the TAC, consistent with the policies of the CCRMP.
- 4.4-13 Avoid disturbance to important wildlife habitat features such as nest trees, colonial breeding locations, elderberry shrubs, and essential cover associated with riparian forest and oak woodland habitat. This should include sensitive siting of maintenance access and recreational facilities away from these features in accordance with the Migratory Bird Treaty Act and other applicable regulations. *(This is a required finding of the In-Channel Ordinance in Section 10-3.505(c).)*
- 4.4-14 A biological database search (e.g., California Natural Diversity Data Base) shall be completed prior to implementation of priority projects. The database search shall compile existing information on occurrences of special-status species and areas supporting sensitive natural communities that should be considered for preservation. In addition, the database search shall be supplemented by reconnaissance-level field surveys to confirm the presence or absence of populations of special-status species, location of elderberry shrubs, active bird nests and colonies, and extent of sensitive natural communities along the creek segment. Essential habitat for special-status species and sensitive natural communities shall be protected and enhanced as part of restoration efforts or replaced as part of mitigation plans prepared by a qualified biologist and reviewed by the TAC. Compliance with the Yolo HCP/NCCP will ensure mitigation for activities and species covered under that Plan. *(Clarification regarding compliance with this action has been proposed in Section 10-3.501(c) of the In-Channel Ordinance.)*

- 4.4-15 Coordinate with jurisdictional agencies to establish programmatic permits and agreements to ensure a consistent multi-agency approach to managing the creek. (These permits were first secured in the late 1990's and subsequently renewed.)
- 4.4-16 Modifications to the plan area shall be reviewed and approved by the TAC to ensure that sensitive biological resources are protected and enhanced, that restoration plans are consistent with the policies of the CCRMP, and that various habitat restoration projects are compatible. Actions shall include compliance with the Yolo HCP/NCCP, State Fish and Game Code and the Migratory Bird Treaty Act, and other applicable regulations, plans and programs, as appropriate. *(This was incorporated into the CCIP and In-Channel Ordinance.)*
- 4.4-17 The NRM shall coordinate the Yolo Habitat Conservancy to explore opportunities for broadening the program and its benefits in conjunction with the HCP/NCCP. *(On December 2, 2014, the County Board of Supervisors approved Resolution 14-126 in support of a partnership with the Yolo Habitat Conservancy.)*

CHAPTER 5.0 – OPEN SPACE AND RECREATION ELEMENT

5.1 INTRODUCTION

Present Conditions

As of 2016, the County has several open space properties along lower Cache Creek: Capay Open Space Park (41 acres), Millsap property (17 acres), Wild Wings Park (17 acres), Cache Creek Nature Preserve (123 acres), County Borrow Pit (7 acres), Rodgers Property (30 acres), and Correll Property (39 acres). In the upper reaches of Cache Creek, the County also owns parks near Rumsey and Guinda, and several campgrounds and whitewater rafting areas near Bear Creek. Due to the high proportion of land in private ownership, access to the creek is limited. Present recreational uses are generally limited to canoeing, rafting, hunting, and fishing.

Other recreational facilities within the immediate area include the Esparto Community Park, the Madison Community Park, and the Flier's Club (a private golf course and clubhouse). In addition, there are several private equestrian facilities on the north side of the creek, just west of County Road 94B.

Recently trespass and illegal off-highway vehicle (OHV) activity are significant management issues along lower Cache Creek. OHVs use formerly mined pits and streambanks, creating erosion and damaging riparian vegetation. Trespassing is frequent, including poaching, camping, and loitering along the creek, resulting in graffiti, property damage, noise, and trash. These areas of the creek are typically found in remote locations, away from nearby residences and areas frequented by authorized visitors. The County faces important decisions about how to manage, improve, and integrate the public properties it owns, and new properties that will be dedicated to the County in the future as a result of development agreements with mining operators and implementation of the CCAP program.

Pursuant to the vision and direction articulated below, the County in 2016 started the process of drafting the Cache Creek Parkway Plan which will provide a detailed vision and integrated management plan for: 1) properties currently under public ownership and managed by the County pursuant to the CCAP; 2) properties and trail easements that will be dedicated to the County (or possibly other entities) in the future pursuant to the CCAP; and 3) additional properties accepted or purchased for management pursuant to the CCAP.

CCRMP Vision

The recreation and open space uses discussed in the CCRMP are conceptual in nature, providing some guidelines for implementation and suggesting general areas for access and future projects. The plan recommends that the County pursue an integrated system of trails and recreational areas along Cache Creek, similar to efforts occurring along the San Joaquin and American Rivers, although at a less intensive scale of development. The County has undertaken a more detailed analysis of the recreational needs of Yolo County which will include consideration of any resulting

environmental effects (including land use conflicts) of a regional parkway. Development of the Cache Creek Parkway Plan will allow for community involvement and provide specific proposals as well as projected costs for developing and maintaining a parkway system. It will also be valuable for addressing creek ownership and access issues. In the long run, planning efforts for this portion of Cache Creek should be coordinated with recreational plans developed by the U.S. Bureau of Land Management for the upper watershed.

The CCRMP has resulted in several areas that will provide future recreational use (see Figure 10). They are located at regular intervals of approximately two miles along Cache Creek, in order to function as trailheads or staging areas for a system of bicycle, pedestrian, and/or horse paths. These recreational areas are located on lands included for off-channel mining, where proposed reclamation is to permanent ponds. This ensures that no additional farmland would be lost, while taking advantage of the amenities associated with the bodies of water to be reclaimed through mining. Frontage to County roads and State highways is an important consideration to provide the public with adequate access to the sites and the trail system. The entire CCRMP area was designated as Open Space in the County's General Plan and zoning code in 1996. As specific Parkway sites are dedicated to the County (or brought into the system through other means), the CCRMP recommends that they also be designated as open space, so that subsequent surrounding land uses may account for future park development.

Future recreational sites should be acquired by the County, or other non-profit entity, so that facilities may be appropriately managed for public use. The area supports a variety of resources, including riparian habitat, off-channel mining, flood control and groundwater management facilities, agriculture, and private homes, many of which may not be compatible with intensive recreational uses. Trespassing is already a management issue for existing landowners; therefore, one of the primary goals of the County is to manage future public access, to minimize if not preclude undesirable activities such as vandalism, public disturbance, and unlawful conduct.

In 2016, the County adopted regulations related to Off-Highway Vehicle Use and Operation (codified in Chapter 12 of Title 10 of the County Code) which prohibits the operation of OHVs on the banks or bed of Cache Creek between the hours of 7:00 p.m. and 6:00 a.m.

5.2 GOALS

- 5.2-1 Improve scenic resources within the Cache Creek channel.
- 5.2-2 Establish a variety of outdoor recreational and educational opportunities along Cache Creek for use by the public.
- 5.2-3 Ensure the compatibility of recreational facilities with surrounding land uses and sensitive wildlife habitat, in order to minimize adverse impacts.

5.3 OBJECTIVES

- 5.3-1 Create a continuous corridor of natural open space along the creek and provide for limited access, at specific locations, to recreational and educational uses.
- 5.3-2 Continue to use the "Open Space" designation for areas where resource management and habitat protection is warranted.

5.4 ACTIONS

- 5.4-1 Continue to solicit the dedication of restored habitat areas and/or recreational areas to the County or an appropriate land trust, in order to provide continuous open space along the creek. See also Action 4.4-10. This shall be a consideration in all requests for new or modified mining permits.
- 5.4-2 Develop a future Cache Creek Parkway Plan in consultation with the County Parks Administrator, to provide a range of public activities and uses. Suggested recreational uses may include, but are not limited to hiking, horseback riding, fishing, picnic grounds, boating, educational exhibits, and birdwatching.
- 5.4-3 Identify appropriate locations for future recreational, habitat, and educational uses along Cache Creek, such as those shown in Figure 10. Sites shall be located at regular intervals throughout the plan area. Intensive recreational uses, such as horseback riding, picnicking, and boating shall be located away from designated habitat areas.
- 5.4-4 Designate identified recreational areas as "Open Space" in the CCRMP.
- 5.4-5 Coordinate with the Bureau of Land Management to investigate the eventual linkage of recreational uses located along the upper watershed of Cache Creek to the designated recreational sites located within the plan area. *(The BLM Cache Creek Coordinated Resource Management Plan was adopted in December 2004.)*
- 5.4-6 Design and manage recreational sites so that trespassing, vandalism, and other undesirable activities are discouraged. The County, in consultation with the TAC, and stakeholders, shall develop measures to control human access to sensitive wildlife habitat or other sensitive communities (i.e., wetlands) in the planning area to minimize impacts on these resources. See also Action 4.4-13.
- 5.4-7 Acquire future sites, through purchase or voluntary donation, so that the County can maintain and develop the areas according to the Cache Creek Parkway Plan.

CHAPTER 6.0 – AGGREGATE RESOURCES ELEMENT

6.1 INTRODUCTION

Present Conditions

In-stream surface mining ended with the adoption of the OCMP and CCRMP in 1996 and the subsequent relinquishment of vested in-stream rights by all operators along Cache Creek. Following adoption of the CCAP in 1996, commercial mining in Cache Creek was prohibited. In 1997, approximately 40,000 tons were removed from the facilities now operated by CEMEX and in 1998, approximately 332,423 tons were removed near the Syar facilities, although a portion may have come from existing stockpiles. There has been no in-channel commercial mining since that time. The CCRMP envisioned significant channel shaping in the first five years of the program, especially at bridge transitions, guided by the Test 3 Run Boundary. Annual in-channel maintenance was to occur thereafter, pursuant to the CCRMP and CCIP. On June 24, 2008, the County Board of Supervisors adopted the CCAP In-Channel Ordinance (Yolo County Code Title 10, Chapter 3) to regulate in-stream extraction activities that implement the bank stabilization, channel maintenance, and habitat restoration necessary to carry out the CCRMP and CCIP.

As reported in the 2017 Technical Studies, during the period from 1996 to 2015, Cache Creek has had four significant flow events (annual peak flow of 20,000 cubic feet per second (cfs) or greater): 1997, 1998, 2003, and 2006. Since 2006, conditions have been relatively dry. Sediment deposition in Cache Creek between 1996 and 2011, calculated based on a comparison of topography, has averaged approximately 690,800 tons annually. Compared to predictions made in the 1995 Technical Studies this suggests that the creek is aggrading more quickly than anticipated. While this is good news for the program, it also underscores the importance of maintaining flood flow conveyance capacity in the channel. The ability to undertake maintenance excavation in-channel has been stymied by delays securing reauthorization of regional permits by the U.S. Army Corps and Engineers and U.S. Fish and Wildlife Service since 2009.

CCRMP Vision

The key to future management of Cache Creek lies in the channel maintenance and improvement activities carried out under the CCIP. Implementation of the Channel Form Template, established in the 2017 Technical Studies and incorporated into the CCRMP, will guide the creek to a more stable shape through selected aggregate material removal and grading. The 1995 Technical Studies identified general cross-section templates to guide in-channel excavation so that terraces and a low-flow channel are provided to enhance the stability of the creek. The 2017 Technical Studies confirmed and updated the guidance provided through the CCRMP and CCIP. These activities will help ensure the creek maintains capacity to adequately convey high flows, and will slow flow velocities, which will create more beneficial conditions for the establishment of riparian vegetation. More vegetation will provide more habitat for wildlife, as well as assist in slowing surface water flows which will improve in-channel groundwater recharge. Increased groundwater supplies will lower pumping costs, thereby helping local agriculture. The resulting

improvements overall, will create a more attractive and enjoyable environment for all stakeholders.

It is important that these activities be managed in a way that carries out the stated objectives. To do so requires a cooperative and mutually beneficial partnership between local landowners, aggregate companies, the County, and various other regulating government agencies.

In an effort to streamline the permitting process, the County may file as the applicant for permits to remove in-channel material, pursuant to the CCIP and SMARA Section 2715.5, for the area covered by the CCRMP plan boundary. No mining within the channel would occur without the express consent of the affected landowner. Royalties would be paid to owners of land that was mined, which creates an incentive to pursue the desired in-channel work. This would save individual property owners the time and expense of acquiring all of the various permits necessary to work in the channel, while assuring the County a role in determining how to best manage the above relationships, as well as establishing prearranged procedures for performing repairs and maintenance during an emergency. Gravel operators will enter into these agreements for maintenance of their own properties.

As a part of managing Cache Creek, the County must work with other permitting agencies to ensure that necessary approvals are in place. In order for the CCRMP and CCIP to be implemented the following regional permits are needed: Clean Water Act Section 404 Discharge Permit from the U.S. Army Corps of Engineers; Biological Opinion for federally endangered species from the U.S. Fish and Wildlife Service; Clean Water Act Section 401 Water Quality Certification from the California Water Quality Control Board; Section 1601/1603 Streambed Alteration Agreement from the California Department of Fish and Wildlife; and California Department of Conservation compliance with the Surface Mining and Reclamation Act (SMARA). The County has successfully maintained these approvals since the late 1990's, with the exception of the Section 404 approval. The previously issued regional general permit expired in 2009 and the County has been working with the federal government on reauthorization since that time.

It is important to recognize the cost of doing the actual aggregate removal and channel shaping. The County does not have the funds or the equipment and labor to implement the required tasks, nor do most private landowners. It is the intention of the County to require the aggregate companies to perform this work on their mining properties, and to provide incentives for them to perform this work in cooperation with other property owners. All work would have to comply with applicable regulatory requirements, as well as recommendations made by the TAC. In return, material removed would not be counted against the company's maximum annual production limits. This arrangement would be beneficial for all parties involved and would allow the County to provide close monitoring of in-channel mining, without incurring significant new costs.

6.2 GOALS

- 6.2-1 Use the removal of in-channel aggregate deposits as an opportunity to reclaim, restore, and/or enhance the channel stability and habitat of Cache Creek.
- 6.2-2 Provide for effective and systematic monitoring and reclamation of aggregate removal activities within Cache Creek.

6.3 OBJECTIVES

- 6.3-1 Reduce duplication of effort and conflicting regulatory authorities in order to encourage implementation of appropriate management measures and practices within and adjacent to Cache Creek.
- 6.3-2 Revise existing regulatory measures to more accurately reflect the environmental processes of Cache Creek.
- 6.3-3 Enlist the cooperation of private and public interests to assist in maintenance and channel reshaping efforts.

6.4 ACTIONS

- 6.4-1 Revise the existing ordinances contained in the Yolo County Code to incorporate performance standards to prevent hazards and reduce potential environmental impacts; programs to carry out the policies included within the CCRMP and CCIP; and recent amendments to SMARA, if appropriate. *(Completed in 1996.)*
- 6.4-2 Provide for the relinquishment of existing permits for mining within the active channel before off-channel operations may commence. The reclamation of former in-channel mining areas shall be consistent with and fully implement the CCRMP and CCIP. *(Completed in 1996 through the execution of development agreements with mining operators.)*
- 6.4-3 Pursue joint regulatory efforts with other agencies of jurisdiction in order to streamline and standardize conditions for performing work within the creek. The County shall coordinate with other government agencies that have permit authority over Cache Creek to obtain programmatic permits for the entire length of the creek located within the plan area. This will give the County more local control over management of the creek, while providing certainty for the TAC as to what activities may or may not occur. See also Action 4.4-15.
- 6.4-4 Draft the County In-Channel Ordinance to require that, upon revocation of existing in-channel mining permits, the tonnage of aggregate removed by an aggregate mining operator in the completion of approved channel improvement projects is excluded from

the operator's permitted maximum annual production. These market incentives would ensure that the necessary work would be accomplished at little cost to the County, while generating royalties for the owner of any property where excavation takes place. *(Complete. See Section 10-3.406(d) of the In-Channel Ordinance.)*

- 6.4-5 Provide technical support through the TAC to mining operators, property owners, and government agencies involved with Cache Creek to provide a professional and scientific basis for making decisions regarding the removal of channel deposits that affect property and structures, the construction of flood protection and erosion control measures, and the provision of emergency labor, equipment, and materials during and/or after flood events. *(This was accomplished in 1997 with the formation of the TAC. This support is on-going through the work of the TAC and implementation of the CCIP.)*

- 6.4-6 If the CCRMP and CCIP are determined to come under the provisions of SMARA, the County shall apply for a mining permit that would encompass the area within the CCRMP plan boundary, along the entire 14.5-mile reach of Cache Creek contained within the plan area. This will allow the CCIP to be implemented, without going through lengthy individual permit analyses and incremental environmental reviews. It should be emphasized, however, that the County would not be exercising eminent domain in applying for this permit. *(Complete. See discussion under Action 2.4-15.)*

CHAPTER 7.0 – AGRICULTURAL RESOURCES ELEMENT

7.1 INTRODUCTION

Present Conditions

Although there are no agricultural operations located within the Cache Creek channel, the surrounding region is largely characterized by farmland and related uses. The functioning of both Cache Creek and the adjoining agricultural land are closely intertwined. The rich agricultural soils found throughout the area are deposited by the creek when it was part of a meandering floodplain. Cache Creek has provided surface irrigation water for over 100 years, while the channel serves as a drainage conveyance for tailwater and nearby sloughs. Farmers have also constructed extensive bank improvement measures, building riprap, spur dikes, and levees to protect agricultural land and nearby homes from flooding and erosion.

CCRMP Vision

The Channel Form Template is the conceptual model for reshaping the Cache Creek channel in order to improve streamflow characteristics and reduce erosion and scour. One of the primary purposes of this reshaping effort is to smooth and shape the channel to improve stability and reduce erosion. In some areas, jetties or groins will be constructed to encourage sediment deposition and extend the banks further into the creek. Other areas may require excavation to eliminate peninsulas that interrupt the even flow of the creek. As a result of implementing the Channel Form Template over time, farmland within the template boundaries will be removed for channel widening activities. However, farmland may be expanded in those areas where the bank is extended, reducing or offsetting expected losses. The erosion of streambanks has resulted in substantial loss of crop land in the past. The channel stabilization program proposed under the CCIP will offset the loss of adjoining agricultural land in the future.

The restoration of Cache Creek and agricultural production are not only compatible; there are several instances where each may prove beneficial to the other. As described in earlier elements, implementation of the CCRMP involves careful management of the creek by the County. Two of the primary goals in carrying out this management are to minimize erosion and to allow for aggradation (as long as flood flow conveyance capacity is not substantially affected). A stable channel will result in reduction in the loss of farmland, while a higher streambed will provide more opportunity for groundwater recharge, which should help to offset or lower pumping costs for nearby land owners. In addition, enhancement of habitat for pollinating insects could enhance agricultural production in adjacent fields.

Conversely, there are also a number of things that agriculture can do to help out in the revegetation of Cache Creek. Groups seeking to restore habitat along Cache Creek are encouraged to form partnerships with local farmers to include existing agricultural operations in their revegetation plans. Irrigation tailwater may provide a valuable means of sustaining newly established riparian vegetation during the summer months when in-stream flows are low. These

partnerships should also take into consideration the potential impacts of habitat formation on agricultural production and design projects accordingly so that features such as buffers and weed control measures are incorporated.

7.2 GOALS

- 7.2-1 Protect farmland along Cache Creek from land uses that may conflict with agricultural operations.
- 7.2-2 Develop opportunities where restoration efforts and agriculture can provide mutual benefits.

7.3 OBJECTIVES

- 7.3-1 Ensure the compatibility of planned habitat and the channel floodplain with adjoining agricultural land, so that productivity is not adversely affected.
- 7.3-2 Coordinate with local farmers to employ existing agricultural practices in improving the quality of riparian habitat.
- 7.3-3 Manage Cache Creek to reduce the loss of farmland from erosion and increase the recharge potential of the channel.

7.4 ACTIONS

- 7.4-1 Work with the Yolo Habitat Conservancy to ensure that agricultural operations are not adversely impacted by the development of riparian habitat along Cache Creek.
- 7.4-2 Design and develop habitat restoration projects so that they do not adversely impact the agricultural productivity of nearby farmland.
- 7.4-3 Incorporate agriculturally related features, such as agricultural forage areas and drainage systems, into the design of habitat planning.

ACKNOWLEDGEMENTS

2019 Update

The Cache Creek Area Plan (CCAP) is a rivershed management plan that sets policy for and regulates off-channel surface mining along, as well as in-channel restoration and maintenance within, Lower Cache Creek. The program is based on the concept of adaptive management, and relies on on-going detailed monitoring, analysis, and re-evaluation. A comprehensive ten-year review is mandatory under the program. The 2019 CCAP Update constitutes the second mandatory ten-year program review since the program was put into effect in 1996. The purpose of the Update was to analyze trends and adjust the program to avoid unexpected effects on Cache Creek resources focusing on changing in creek conditions; analysis of collected data; and new regulatory requirements.

2019 Yolo County Board of Supervisors

Don Saylor	District 2 (Chair)
Gary Sandy	District 3 (Vice-Chair)
Oscar Villegas	District 1
Jim Provenza	District 4
Duane Chamberlain	District 5

2019 Yolo County Planning Commission

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Darin Hall	District 1 (Vice-Chair)
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Chuck Dudley	District 3
Amon Muller	District 5
Trini Campbell	At Large
Marcia Gibbs	At Large

2019 Key Members of Staff

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Elisa Sabatini	Manager of Natural Resources
Casey Liebler	Natural Resources Program Coordinator
Stephanie Cormier	Principal Planner
Jeff Anderson	Senior Parks Planner
Ronald Miller	Senior Mining Planner

Project management was provided by Heidi Tschudin of TSCHUDIN CONSULTING GROUP, under contract to the County as an extension of staff.

The primary technical basis for this Update was provided by the *2017 Technical Studies and 20-Year Retrospective for the Cache Creek Area Plan* (March 2017). Andrew Rayburn, CERP, Ph.D., Paul Frank, P.E., CED, and Mark Tompkins, P.E., Ph.D. were the primary authors of this report.

Funding for this project was provided by CEMEX, Granite Construction Company, Syar Industries, and Teichert Aggregates.

1996 Plan

The improvement of nearly fifteen miles of creekway is a tremendous undertaking that will require the participation and cooperation of landowners, aggregate companies, government agencies, public interest groups, consultants, and private citizens. The County must act as a catalyst to mobilize the resources necessary to accomplish the goals outlined in this plan. Programs, policies, and technical assistance should focus on local planning, local implementation, and volunteer monitoring for both individual parcels and the entire watershed. As such, opportunities for encouraging the participation by landowners and residents in planning and carrying out the restoration of Cache Creek are essential to the plan's success. Cache Creek has the capacity to be of enormous benefit to the people of Yolo County, but it will require the combined efforts of the community to realize its full potential. Long years of work have already been expended to produce this plan, and long years of labor lay ahead before we see its completion. Our efforts will be well rewarded, however, by the legacy of a natural streamway and healthy riparian habitat that we leave to future generations.

2002 Yolo County Board of Supervisors

Mike McGowan	District 1
Helen Thompson	District 2
Frank Siefertman	District 3
Mariko Yamada	District 4
Lynnel Pollack	District 5

2002 Yolo County Planning Commission

Amy Cameron	District 1
Jay Gerber	District 2
Aurora Cornejo	District 3
Betty Woo	District 4
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Project management was provided by Heidi Tschudin of TSCHUDIN CONSULTING GROUP, under contract to the County as an extension to staff.

The primary technical basis for this Plan was provided by the *Technical Studies and Recommendations for the Lower Cache Creek Resource Management Plan* (October 1995). A special thanks to the authors of this comprehensive report.

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