FILED

DEC 24 2019

BY Julie Bachtold
DEPUTY CLERK OF THE BOARD

Attachment B

RESOLUTION NO. 19-176

RESOLUTION OF THE YOLO COUNTY BOARD OF SUPERVISORS ADOPTING THE CACHE CREEK AREA PLAN (CCAP) UPDATE; AMENDING THE YOLO COUNTY GENERAL PLAN; AMENDING THE OFF-CHANNEL MINING PLAN (OCMP); AMENDING THE CACHE CREEK RESOURCE MANAGEMEN PLAN (CCRMP); AMENDING THE CACHE CREEK IMPROVEMENT PROGRAM (CCIP); AND ADOPTING THE CEQA MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

WHEREAS, the Cache Creek Area Plan (CCAP) comprised of the Off-Channel Mining Plan (OCMP) and the Cache Creek Resources Management Plan (CCRMP)/Cache Creek Improvement Program (CCIP) was originally adopted by the Yolo County Board of Supervisors in 1996 with subsequent amendments to the CCRMP in 2002, and the CCIP in 2011; and

WHEREAS, pursuant to Action 2.4-6 of the OCMP, Action 2.4-13 of the CCRMP, and Section 10-4.426 of the County Mining Ordinance, the CCAP program including individual mining permits, are to be reviewed and updated every ten-years; and

WHEREAS, the County initiated the process of undertaking the CCAP Update in 2015 with approval by the Board of Supervisors of a comprehensive work plan, update of the CCAP Technical Studies in 2017, release of the first draft of proposed changes to the CCAP and commencement the EIR analysis in 2017, release of revised proposed changes to the CCAP in 2018, and completion and release of the Final EIR in 2019; and

WHEREAS, County staff held duly noticed public workshops, meetings, and hearings on CCAP Update on the following dates: Public Workshop and Open House April 11, 2016; Planning Commission June 11, 2015 and June 8, 2017; CCAP Technical Advisory Committee June 13, 2017; Cache Creek Conservancy July 13, 2017; Planning Commission June 13, 2019; Planning Commission November 14, 2019; Board of Supervisors September 15, 2015 and December 17, 2019; and

WHEREAS, the proposed CCAP Update changes have been available online for public review since September 2018 and whereas the Final EIR has been available for public review since august 2019; and

WHEREAS, on November 14, 2019, the Planning Commission held a duly noticed special public hearing and following staff presentation, public testimony, review of all documentary evidence, and Commission deliberation, voted unanimously (7:0) to recommend certification of the Final EIR and approval of the proposed CCAP Update to the Board of Supervisors; and

WHEREAS, on December 17, 2019, the Board of Supervisor held a duly noticed public hearing and based on the staff presentation, recommendation of the Planning Commission, public testimony, review of all documentary evidence, and Board deliberation, the Board now finds it proper to approve the CCAP Update including all actions identified herein as necessary in support of this decision; and

WHEREAS, on December 17, 2019, the Board of Supervisors approved Resolution No. 19-175 Certifying the Environmental Impact Report for the CCAP Update, adopting CEQA Findings of Fact, and adopting a Statement of Overriding Considerations.

NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors of the County of Yolo as follows:

1. The foregoing recitals are true and correct.

2. The Board of Supervisors finds that the actions as set forth in this Resolution are in the public interest and necessary to public health, safety, and welfare.

3. The Board of Supervisors hereby determines that specific text changes to the General Plan are not necessary to acknowledge adoption of this update to the Cache Creek Area Plan.

4. The Board of Supervisors hereby amends the Yolo County General Plan to correct General Plan Table LU-6 to identify both the Sand and Gravel Reserve (SGR) and Sand and Gravel (SG) overlay zones as consistent zone designations within the Agriculture General Plan land use designation (see Exhibit 1);

5.. The Board of Supervisors hereby amends the Off-Channel Mining Program (OCMP) as shown in Exhibit 2.

6. The Boards of Supervisors hereby amends the Cache Creek Resources Management Plan (CCRMP) as shown in Exhibit 3.

7. The Board of Supervisors hereby amends the Cache Creek Improvement Program (CCIP) as shown in Exhibit 4.

8. Pursuant to Public Resources Code Section 21081.6, and Sections 15091(d) and 15097 of the CEQA Guidelines, the Board of Supervisors hereby adopts the CEQA Mitigation Monitoring and Reporting Program (MMRP) provided in Exhibit 5. The MMRP is designed to ensure that, during all phases of implementation of the project, Yolo County, and any other responsible parties where feasible, implement the adopted mitigation measures.

The County has taken the approach of integrating all identified mitigation measures into the CCAP Update as policies or regulations. As such the CCAP Update is considered "self-mitigating", and the only action required for full implementation of the MMRP is adoption of the CCAP Update.

Pursuant to Section 15091(d) of the CEQA Guidelines, all feasible mitigation measures that avoid or substantially lessen the significant effects of the project have been made a part of the project and are fully enforceable by the Board of Supervisors.

9. The CCAP Update does not infringe on any vested rights and shall apply to all approved, amended, and new creek restoration projects and aggregate mining projects.

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Passed and Adopted this **17th** day of **December** 2019, by the following vote:

AYES: **Sandy, Provenza, Chamberlain, Villegas, Saylor.**
NOES: **None.**
ABSENT: **None.**
ABSTAIN: **None.**

Don Saylor, Chair
Yolo County Board of Supervisors

ATTEST:
Julie Dachtler, Deputy Clerk
Board of Supervisors

By _____
Deputy (Seal)

APPROVED AS TO FORM:
Philip J. Pogledich, County Counsel

By _____
Eric May, Senior Deputy County Counsel

Attachments:
Exhibit 1 - General Plan Amendment, Table LU-6
Exhibit 2 - Off-Channel Mining Plan Amendments
Exhibit 3 - Cache Creek Resources Management Plan Amendments
Exhibit 4 - Cache Creek Improvement Program Amendments
Exhibit 5 - CEQA Mitigation Monitoring and Reporting Program

TABLE LU-6 **Zoning/General Plan Consistency**

General Plan Land Use Designation	General Plan Symbol	Zone Designation	Zone Symbol
Residential Land Use Designations			
Residential Rural	RR	Residential Rural – 2 acre Residential Rural – 5 acre	RR-2 RR-5
Residential Low	RL	Low Density Residential	R-L
Residential Medium	RM	Medium Density Residential	R-M
Residential High	RH	High Density Residential	R-H
Commercial Land Use Designations			
Commercial Local	CL	Local Commercial Downtown Mixed Use	C-L DMX
Commercial General	CG	General Commercial Downtown Mixed Use Highway Service Commercial	C-G DMX C-H
Industrial Land Use Designations			
Industrial	IN	Light Industrial Heavy Industrial Office Park Research and Development	I-L I-H OPRD
Other Land Use Designations			
Agriculture	AG	Agricultural Intensive Agricultural Extensive Agricultural Commercial Agricultural Industrial Agricultural Residential Sand and Gravel Overlay Sand and Gravel Reserve Overlay	A-N A-E A-C A-I A-R SG-O SGR-O
Open Space	OS	Public Open Space	POS
Parks and Recreation	PR	Parks and Recreation	P-R
Public/Quasi-Public	PQ	Public/Quasi-Public	PQP
Specific Plan	SP	Specific Plan	S-P
Overlay Land Use Designations			
Natural Heritage Overlay	NHO	Natural Heritage Overlay	NH-O
Agricultural District Overlay	ADO	Agricultural District Overlay	AD-O
Delta Protection Overlay	DPO	Delta Protection Overlay	DP-O
Mineral Resource Overlay	MRO	Sand and Gravel Overlay Sand and Gravel Reserve Overlay	SG-O SGR-O
Tribal Trust Overlay	TTO	Tribal Trust Overlay	TT-O

Note: The following zone overlays may be combined with any residential, commercial, industrial, or agriculture land use designation:

B Special Building Overlay
A-O Airport Overlay
PD Planned Development Overlay

Exhibit 2 to Attachment B

~~*FINAL*~~*DRAFT REVISED*
OFF-CHANNEL MINING PLAN (OCMP)
for LOWER CACHE CREEK

Yolo County

Updated _____, 2019
Adopted July 30, 1996

~~*FINAL*~~*DRAFT REVISED*

OFF-CHANNEL MINING PLAN
for LOWER CACHE CREEK

Yolo County

Updated 2019 (Board Resolution x.x)

Adopted July 30, 1996 (Board Resolution 96-117)

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NOTE TO READER: Figures and cover will be replaced with new clean updated graphics. Photographs will be added and the plan will be reformatted to make it more attractive and user friendly.

CHAPTER 1.0 INTRODUCTION

~~On June 14, 1994, the Yolo County Board of Supervisors adopted goals and objectives for the Off-Channel Mining Plan (OCMP) and Cache Creek Resources Management Plan (CCRMP). In doing so, the Board recognized that although mining is an important consideration, the creek is integrally bound to the environmental and social resources of the County, including drainage/flood protection, water supply and conveyance, wildlife habitat, recreation, and agricultural productivity. As such, development of these plans is based on the key assumption that the creek must be viewed as an integrated system, with an emphasis on the management of all of Cache Creek's resources, rather than a singular focus on the issue of mining. The OCMP and CCRMP establish a number of goals to assist in this overall management, balancing issues and concerns within the overriding vision of enhancing the variety of resource needs for the region.~~

~~The OCMP presents a comprehensive and integrated planning framework for regulating and protecting the Cache Creek area, based on fact and science. The plan assumes that there is a place in Yolo County for gravel mining, while placing emphasis on habitat restoration. Commercial in-stream mining would be stopped, and the foundation would be laid for creating public recreation opportunities along the creek. It also allows for a future groundwater recharge and storage program that will help to reverse the historic overdraft of the aquifer by agricultural and urban uses. The OCMP provides a balanced approach to managing the environment of Cache Creek, and generates the resources necessary to make this vision a reality.~~

Pursuant to local requirements, the Off-Channel Mining Plan (OCMP) was comprehensively reviewed and updated in 2017. New hydraulic and topographic 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 a regional source for aggregate. Mining within the creek dates back to the early 1900's~~at least the turn of the century~~, when sand and gravel were removed and shipped by rail to be used in the reconstruction of San Francisco after the devastating 1906 earthquake. Many of the early excavations were small and scattered along a wide expanse, meeting both local needs as well as large public projects such as the Golden Gate Bridge. With the post-World War II economic boom in the 1950s, however, the scale and intensity of mining began to increase. The building of airports, schools, hospitals, highways, dams, and residential suburbs created a strong need for concrete and other construction materials. The production of sand and gravel in Cache Creek has continued to escalate over the past several decades, responding to the robust growth of both California and the Sacramento metropolitan region.

Aggregate Resources Advisory Committee

Yolo County has been actively involved in studying and attempting to resolve surface mining issues along Cache Creek for over two decades. Concerns over the environmental impacts of in-stream mining led to the formation by the Board of Supervisors of the Aggregate Resources Advisory Committee (ARAC) in 1975. The ARAC commissioned Woodward-Clyde Consultants to prepare a report, analyzing the potential relationships between adverse environmental conditions and the aggregate excavations operating along Cache Creek. The study was released in 1977, and made several suggestions regarding future management of the creek, including: require use permits for all mines operating at the time; establish a maximum depth of excavation; encourage the development of off-channel mining; allow for the channel to be widened in appropriate areas; emphasize erosion control measures; and improve monitoring. It was recommended that these issues be evaluated in the context of County adopted aggregate resources management policies.

In response to the recommendations made by the ARAC, and as required by the State Surface Mining and Reclamation Act (SMARA) enacted in 1976, the Board of Supervisors adopted in-channel mining and reclamation ordinances. The ordinances, adopted in 1979, required all surface mining operations to apply for use permits and reclamation plans. This was accomplished the following year, with the approval of eight permits/reclamation plans and certification of an Environmental Impact Report (EIR) (prepared by Environ) which analyzed the impacts of mining along the creek~~stream~~. The EIR concurred with the ARAC's recommendation for the development of a broad-based aggregate resource management program. In addition, Environ made several other suggestions, including: allow for the development of off-channel mining; protect mineral resources against encroachment; permit mining within the A-P (Agricultural Preserve) Zone; consider reclaimed uses other than agriculture in the A-P Zone, such as groundwater storage and/or recharge; revise the interim ordinances; and gather more data about the creek.

Aggregate Technical Advisory Committee

The Aggregate Technical Advisory Committee (AgTAC) was formed by the Board of Supervisors in 1979 to develop a Resource Management Plan (RMP) for the Cache Creek area. A draft RMP was submitted in 1984, containing eleven alternative scenarios for the future of the creek. The recommended plan outlined the creation of an engineered floodway to ensure that there would be sufficient capacity to safely accommodate 100-year flood events. In-stream mining would be minimized to maintenance levels, while aggregate mining would take place in deep, off-channel pits. Improvements and maintenance of the creek were to be managed by a separate public or private agency. Finally, AgTAC reiterated support for revising the mining and reclamation ordinances, as well as a review of the compatibility of the A-P Zone requirements with off-channel mining.

A draft Program Environmental Impact Report was prepared by Dames and Moore in 1989, examining the alternatives discussed in the draft AgTAC plan. Before any recommendations could be adopted, however, the draft EIR was subjected to significant controversy regarding the adequacy of its 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 County~~Community Development Agency~~ in order to develop a specific project description to form the basis of a Resource Management Plan. This effort was later taken up by a subcommittee of the Board of Supervisors, who made their findings in March of 1994.

Cache Creek Area ~~Resources Management~~ 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 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 August 20, 1996 (Board Resolution 96-132), underwent a focused update 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 of 1994, the Board of Supervisors adopted a conceptual framework of goals and objectives for the ~~Off-Channel Mining Plan (~~OCMP~~)~~ and Cache Creek Resources Management Plan (CCRMP)[1]. A work schedule was also approved by the Board, describing 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.

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 provide baseline and historical information about the streamway fluvial morphology, groundwater resources, and riparian habitat, so that an accurate assessment could~~can~~ be made of the creek's ~~present~~ condition and appropriate management strategies. Constraints and opportunities for activities such as mining, flood control, channel stabilization, groundwater management, and habitat restoration were also

[1] The Yolo County Cache Creek Resources Management Plan (CCRMP) was adopted August 20, 1996 with an update 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.

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 OCMP and the CCRMP.

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 PLANNING AREA

Over timethe past several decades, California's supply of aggregate has become increasingly limited. The highways and roads, universities, public transit systems, dams, and homes that have been built throughout the state have generated a strong demand for construction materials over the past several decades. At the same time, however, increasing urbanization in other areas of the state has also threatened the continued extraction of sand and gravel. In some instances, neighborhoods, industries, and parks have been built over valuable mineral deposits. More frequently, urban development has moved closer to existing mine sites, forcing them to shut down or curtail their operations due to the nuisances and environmental impacts associated with the resulting land use conflicts.

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 (SR) 156, "Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Sacramento-Fairfield Production-Consumption Region" in 1988. ~~(Note: In 2017 staff at DOC began an update to this special report).~~ 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 OCMP is defined as the area contained within the Mineral Resource Zones (MRZs) delineated by DOC~~the Department of Conservation~~ as potentially containing mineral aggregate resources, minus the planning area for the CCRMP. ~~in-channel area to be regulated under the Cache Creek Resource Management Plan.~~ The planning area for the CCRMP, is equal to the active in-channel area of the creek system, as defined by the delineated~~present~~ channel bank line or the regulatory 100-year flood elevation, ~~described in the Westside Tributaries Study prepared by the U.S. Army Corps of Engineers,~~ whichever is wider, modified as described in the CCRMP. The planning area for the CCRMP~~in channel area~~ encompasses approximately 2,266~~4,956~~ acres. Subtracting this area from the 28,130 acres included in the State MRZs (see following section), leaves a total of approximately 25,864~~23,174~~ acre within the planning area of the OCMP. The area ~~requested for~~ permited ~~ting~~ for excavation as of 2017 ~~over the next 30 years accounts for~~ totals 1,900 ~~2,123~~ acres[2] of the total. Since the mineral resource zones classified in Special Report 156 form the basis for planning area of the OCMP, it is important to describe how these boundaries were developed, and the extent of the aggregate resources that they contain.

Mineral Resource Classification

The aggregate deposits within the Sacramento-Fairfield region were formed through the deposition of large volumes of sand, gravels, and cobbles from mountain streams. As these streams enter the flat Sacramento Valley from the adjoining mountain ranges, the abrupt change in slope causes the heavy aggregate to fall out and form alluvial fan deposits. The extent of these deposits were determined using a wide range of information, including: geologic maps, engineering test results, aerial photos, data from the mining industry, interviews, well and drilling records, and field investigations. From this information, the areas along Cache Creek were divided by the DOC~~Department of Conservation~~ into one of four Mineral Resource Zones (MRZ). These zones are used by the State to define areas containing valuable deposits. Once all Mineral Resource Zones have been identified, then the local jurisdiction must take each of the mineral resource zones into account when making land use decisions, including the discouragement of

[2] Cemex 586 acres, Granite Capay 312 acres, Granite Esparto 313 acres, Syar 248 acres, Teichert Esparto 148 acres, Teichert Woodland 252 acres, Teichert Schwarzgruber 41 acres.

uses that would inhibit harvesting, and consideration of the importance of the mineral to the market region as a whole. The guidelines for establishing these MRZs are as follows:

> MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. This zone is applied where, based upon economic principles and geologic data, it is determined that the likelihood for the occurrence of significant mineral deposits is slight or nonexistent.
>
> MRZ-2: Areas where adequate information indicates that significant mineral deposits are present, or where it is determined that a high likelihood for their presence exists. In addition, there are two economic requirements that must be met if land is to be classified as MRZ-2: (1) the deposit must be composed of material that is suitable as a marketable commodity; and (2) the deposit must meet a threshold value (gross selling price) equal to at least $5,000,000 (1978 dollars).
>
> MRZ-3: Areas containing mineral deposits, the significance of which cannot be evaluated from available data.
>
> MRZ-4: Areas where available information is inadequate for assignment to any other Mineral Resource Zone.

Mineral Resource Zone~~s~~ acreage within the OCMP plan area is~~are~~ as follows: the MRZ-1 is 1,458 acres; the MRZ-2 is 18,452 acres; and the MRZ-3 is 8,220 acres.

The aggregate resources along Cache Creek contain large concentrations of a high grade sand and gravel called "Portland Cement Concrete" or PCC. Much of this material has not been identified as PCC-grade ~~(Portland Cement Concrete)~~ through formal engineering tests. Where MRZ-2 mineral resources have not been tested, they are believed to be of PCC quality because the materials are of a similar age and composition, and were deposited under similar geologic conditions as those aggregates which have been proved to be of PCC-grade. The use of extrapolation was done only when the unproven deposit extended from a formation where PCC-grade aggregate has been produced.

The Greater Sacramento~~-Fairfield~~ Production-Consumption Region

Aggregate is a low-value, high-bulk commodity. The relatively inexpensive cost of production, combined with the heavy weight and bulk of the material, means that transportation represents a major component in the price charged for sand and gravel. The shipping costs of aggregate can account for as much as 50 percent of the price of the delivered product. Because transportation costs are critical in determining the price of sand and gravel, the economic feasibility of developing deposits is evaluated on a regional basis.

The CCAP area was previously included within ~~T~~the former Sacramento-Fairfield Production-Consumption (P-C) Region which encompasse~~d~~s~~s~~ portions of El Dorado, Placer, Sacramento, Solano, and Yolo Counties; the greater Sacramento metropolitan area; the Cities of Fairfield, Vacaville, Davis, and Woodland; and the Cache Creek aggregate resource area ~~(see Figure 1)~~. SR

254 has consolidated six former P-C regions, including the CCAP, into one large market region identified as the Greater Sacramento Area (GSA) P-C Region (see Figure 1). The CCAP area is identified as one of only two net producers of aggregate within that region, with the Yuba/Marysville area identified as the other. ~~The classification study originally focused on the Sacramento metropolitan region. It was assumed that the Sacramento market was largely self-sufficient, relying on the extensive deposits located along the American River. As information became available, however, it was determined that a significant portion of Sacramento's aggregate needs (about 8 percent) were being met by the deposits along Cache Creek. As a result, Cache Creek and the American River were designated as the two primary production districts in the region. The market distribution patterns were then analyzed, in order to determine the extent of the area in which sand and gravel from these two production districts were being sold. Finally, the production-consumption (P-C) boundary was established, defining the extent of the local market, including all existing and projected urban areas with populations over 10,000 people within the region.~~

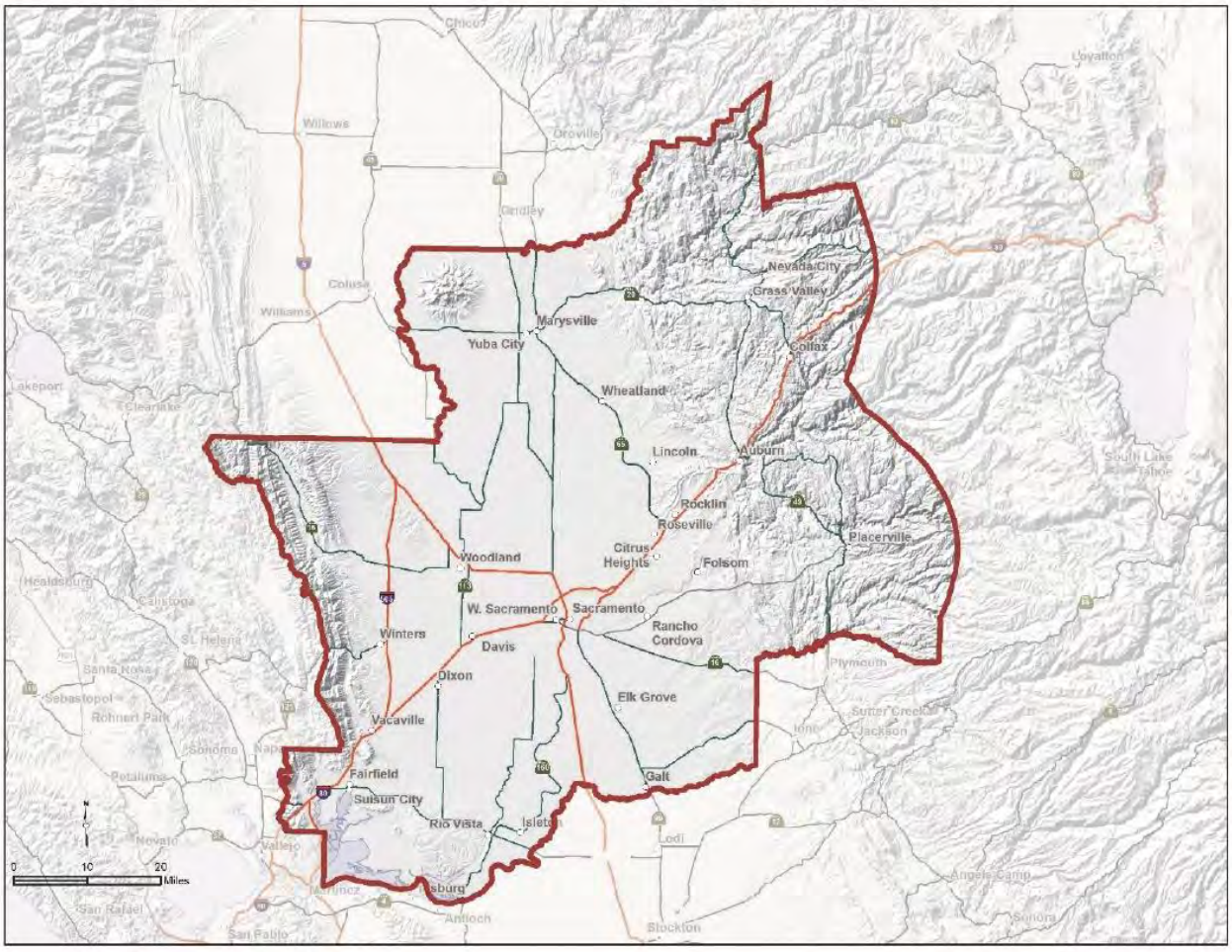


Figure 1. Boundary of Greater Sacramento Area P-C Region (SR 245, October 2018)

Estimated Cache Creek Aggregate Resources

The 1988 classification study provided an estimate of the amount of sand and gravel deposited along Cache Creek. This estimate was based on information collected in 1982, which focus~~s~~ed on the MRZ-2 area. The 2019 classification study does not appear to reflect off-channel and in-channel tonnage information known to the County and therefore, the following estimates may differ from the estimates provided in the 2019 DOC report. The Yolo County MRZ-2 area extends along Cache Creek from upstream of the Capay Dam to the town of Yolo (see Figure 2). For the purposes of the classification study, this area was divided into four sectors and sixteen subsectors, in order to make the ensuing calculations easier to manage and more accurate. The mineral resource zone was further defined by excluding setbacks from roads, canals, pipelines, etc. The resulting MRZ-2 area encompasses approximately 18,452~~7217,200~~ acres (a little under 29~~27~~ square miles).

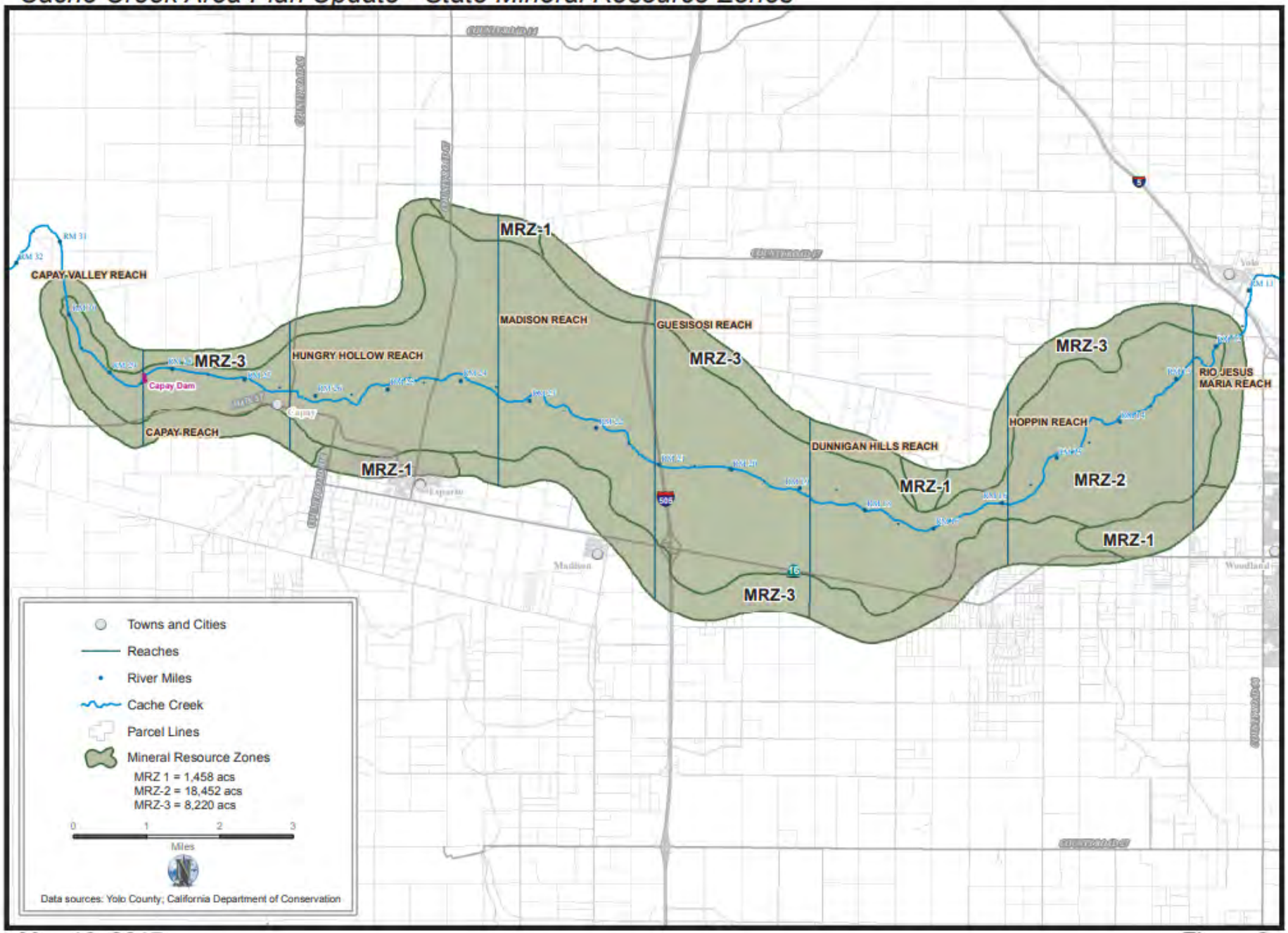
~~As of November 1982, the total PCC aggregate resources located within the mineral resource zone along Cache Creek were estimated at 838 million tons. Since in-stream excavation below the theoretical thalweg has not been permitted within Cache Creek, an additional 111 million tons within the 1979 channel boundary that lie below the theoretical thalweg were not included in the estimate. Since 1982, approximately 31 million tons have been excavated from local mining operations, leaving resources of nearly~~ In 1996, when the OCMP was adopted, approximately ~~807 million tons (~~918 million tons ~~including those deposits located below the theoretical thalweg)~~of PCC aggregate reserves were remaining in the Cache Creek mineral resource zone. Since approval of the OCMP, approximately 176 million tons[3] have been authorized for extraction in seven approved mining permits leaving approximately 742 million tons in reserves. Although portions of this 742~~807~~ million tons may not be economical to mine at the present time, markets and technologies change. ~~Thus,~~ SMARA encourages the protection of these deposits to ensure their future availability.

Alternative Sources of Aggregate

~~In comparison to Cache Creek, the deposits along the American River and Morrison Creek are much smaller, comprising about 6,300 acres (roughly 10 square miles), with 1982 estimated aggregate resources of some 257 million tons lying along the two watercourses. Another 4,000 acres containing 136 million tons (1982 estimate) lie within lands dedicated to the American River Parkway and were therefore excluded.~~ Based on DOC analysis of aggregate reserves in the region, which was last conducted in the 1980's, other sources of aggregate resources include the American River and Morrison Creek. These reserves were considerably smaller than the Cache Creek reserves (less than half) and have been mined subsequent to the last DOC special report. An estimate of current remaining reserves outside of Cache Creek at the time of this update are not known, however DOC staff have started an update of the 1980's research.

[3] Cemex 32.17 million tons, Granite Capay 32.26 million tons, Granite Esparto 30.00 million tons, Syar 33.30 million tons, Teichert Esparto 25.88 million tons, Teichert Woodland 17.88 million tons, Teichert Schwarzgruber 4.65 million tons

Cache Creek Area Plan Update - State Mineral Resource Zones



May 10, 2017

Figure 2

~~Other sources may also be located within the P-C region, in areas designated as MRZ-3.~~ There are other sources of aggregate that have not been ~~These potential deposits were not~~ tested or evaluated by the DOC~~Department of Conservation~~ and their utility has not been established~~is not known at this time. No estimates of the mineral reserves in these other aggregate sources were made by the State in its 1988 classification report.~~ These~~Such~~ other sources of aggregate material include:

1. Dredger tailings found east of Yuba City and Marysville.

2. Alluvium underlying Mather Air Force Base in Sacramento.

3. Sand and gravel beneath downtown and southern Sacramento.

4. Alluvial deposits and tailings found within and surrounding Folsom.

5. Future in-channel deposits.

The Yuba City/Marysville area is located 40 miles north of Woodland. As discussed earlier, transportation costs account for much of the price of sand and gravel. In this region, hauling the product such a distance results in a significant~~57 percent~~ increase in cost, that~~us~~ makes~~ing~~ this source economically infeasible for local use. The Mather Air Force Base, South Sacramento, and Folsom sources are located within areas that are already urbanized or are expected to develop in the near future. The Folsom Dam has restricted the amount of aggregate that reaches the American River, and mining within the American River Parkway is restricted to existing operations. In-channel deposits, therefore, within the parkway are not expected to provide a significant amount of aggregates in the future. As discussed in the CCRMP, ~~future~~ commercial mining within Cache Creek ~~will be~~is prohibited, and marketable aggregate that is derived from excavation performed for channel stability purposes will not be sufficient to meet regional needs.

As an alternative to sand and gravel, it is possible to take hard rock and crush it to PCC-grade specifications. Suitable deposits of rock may be found in two places within the P-C region: (1) a wide band in the foothills extending from Folsom to Placerville, east of Sacramento; and (2) smaller pockets located in the hills to the north and west of Fairfield. It should be noted, however, that the additional expenses involved in crushing rock prevent it from being economically competitive with PCC-grade alluvial deposits at this time. Furthermore, none of the alternative sources mentioned above are located within Yolo County.

Planning Area for OCMP and CCRMP~~The Cache Creek Resources Management Plan~~

The planning area for the OCMP is defined as the area contained within the Mineral Resource Zones (28,130 acres), minus the planning~~in-channel~~ area regulated under the CCRMP (2,266 acres), or a total of 25,864 acres (see Figure 4). Within the OCMP planning area, 1,900 acres are currently approved for excavation which is a subset of the 2,464-acre total for all approved mine sites (area zoned Sand and Gravel Overlay or SGO), 1,001 acres are zoned currently to allow for future mining (Sand and Gravel Reserve Overlay or SGRO), and another 1,188 acres are proposed to be rezoned for future mining, as described below. The planning area for the CCRMP is equal to the active in-channel area of the creek system, as defined by the delineated~~present~~ channel bank line or the 100-year flood elevation, ~~described in the Westside Tributaries Study prepared by the U.S. Army Corps of Engineers,~~ whichever is wider ~~(see Figure 3)~~ modified as described in the CCRMP. The in-channel area encompasses 5,109~~around 4,956~~ acres, including 2,266~~1,600~~ acres within the CCRMP~~present channel~~ boundary, plus several thousand acres located in the floodplain north of the City of Woodland (see Figure 3). ~~Subtracting this acreage from the 28,130 acres included in the State MRZs, leaves a total of approximately 23,174 acres within the planning area of the Off-Channel Mining Plan. As described in the following section, however, only 2,887 acres of the plan area are proposed to be rezoned to allow for off-channel mining over the next fifty years, or about 12 percent of the OCMP planning area.~~

Off-Channel Mining and Future Regional Aggregate Demand

The State Mining and Geology Board requires that classification reports include an estimate of the quantity of aggregate needed to supply the production consumption region over the next fifty years. In order to obtain this estimate of total future demand at the time the OCMP was being written, the State Geologist calculated an average consumption of 10.2 tons/person/year of aggregate within the region for the years 1960-1980. Approximately forty percent of the total aggregate during this time period was used in projects requiring PCC-grade materials. The per capita consumption rate was~~is somewhat~~ identified as higher than normal at the time, but was~~is~~ typical for metropolitan regions with low population density and extensive urban development. It was~~should be~~ noted that the per-capita consumption rate could change significantly in the future, either decreasing as urban area infrastructure systems mature and stabilize or increasing in times of disaster reconstruction and economic growth.

More recently, based on records spanning 1980 to 2010, DOC calculated per-capital consumption of aggregate in California at about 5.7 tons per person per year or about 44 percent less than the assumptions described above. However even with this greater efficiency, based on the current and projected population in the Sacramento-Fairfield Production-Consumption region of which Yolo County is a part, the state estimated in 2012 that permitted aggregate in the region would be exhausted within 11 to 20 years.[4]

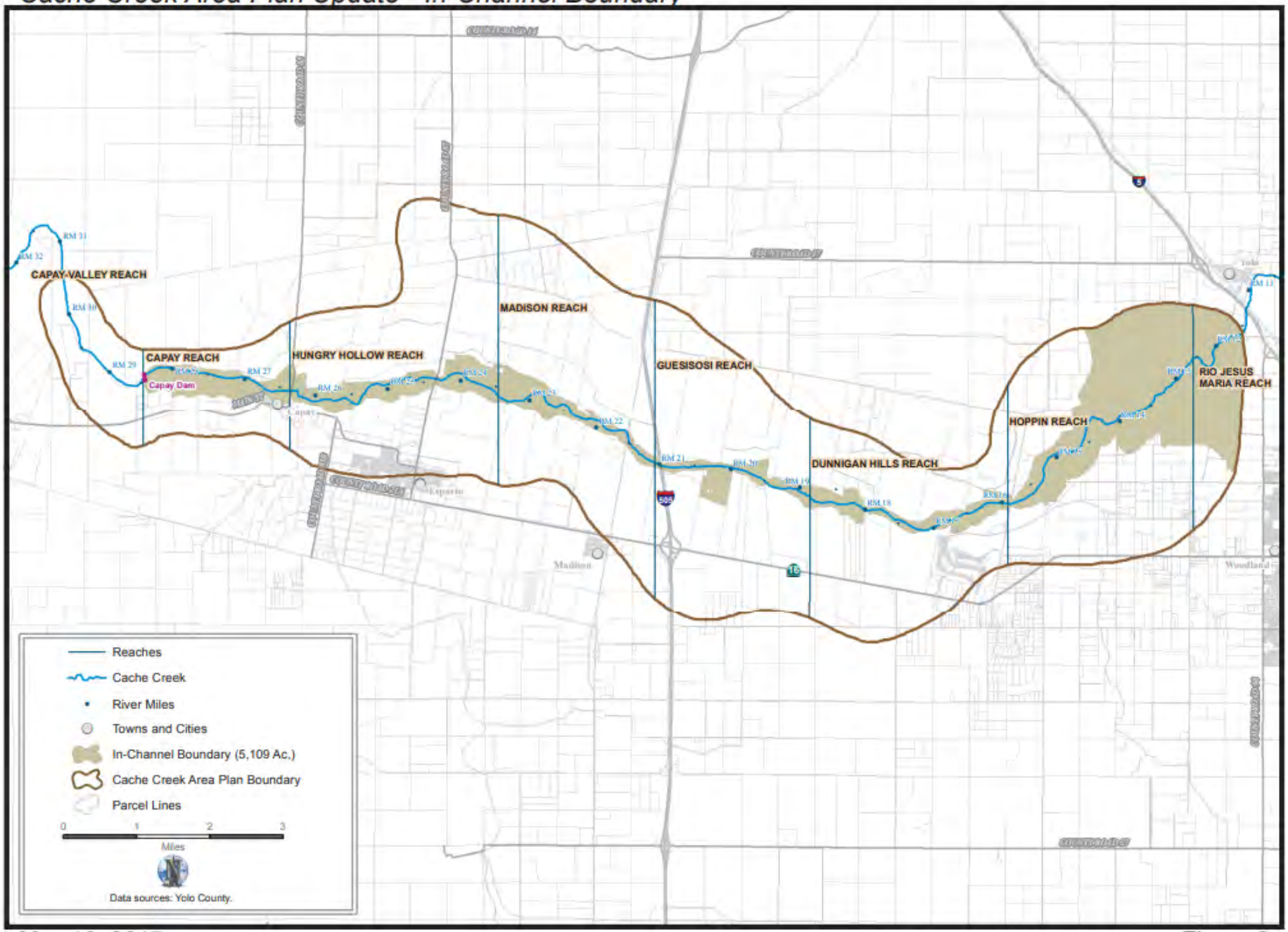
In the most recent classification study (SR 256, 2019) the State estimated average annual per capita consumption at 7.6 tons and estimated more than fifty years of resources based on the expanded Greater Sacramento Area P-C Region and more recently permitted reserves.

[4] Aggregate Sustainability in California, 2012, California Geological Survey, Department of Conservation

UsingNext, population forecasts were obtained from the California Department of Finance, which assumed an average 1.25 percent annual growth and Using the per capita consumption demand and population projections, the State Geologist was able to estimate that total aggregate demand between 1983 and 2033 would total 888.6 million tons, of which 40 percent (355.2 million tons) would need to be PCC-grade quality.

The OCMPCounty's Off-Channel Mining Plan was approvedis also based on a fifty year horizon, from 1997-2046. By extrapolating the population projections contained in the State's classification study and assuming that aggregate production from Cache Creek remains steady at approximately 26 percent of the total regional production, it wasis estimated that 308 million tons mined (271 million tons sold) of aggregate wouldwill be required over the next fifty years horizon. This averages out to approximately 6.2 million tons mined (5.4 million tons sold) per year. Under the OCMP, surface mining permits may be granted for a maximum of 30 years. Based on the above calculations, it was determined that about 173 million tons mined (152 million tons sold) wouldwill be required to meet aggregate demand through 2028over the next three decades. To meet estimated demand production over this period would have to average approximately 5.8 million tons mined (5.1 million tons sold) per year.

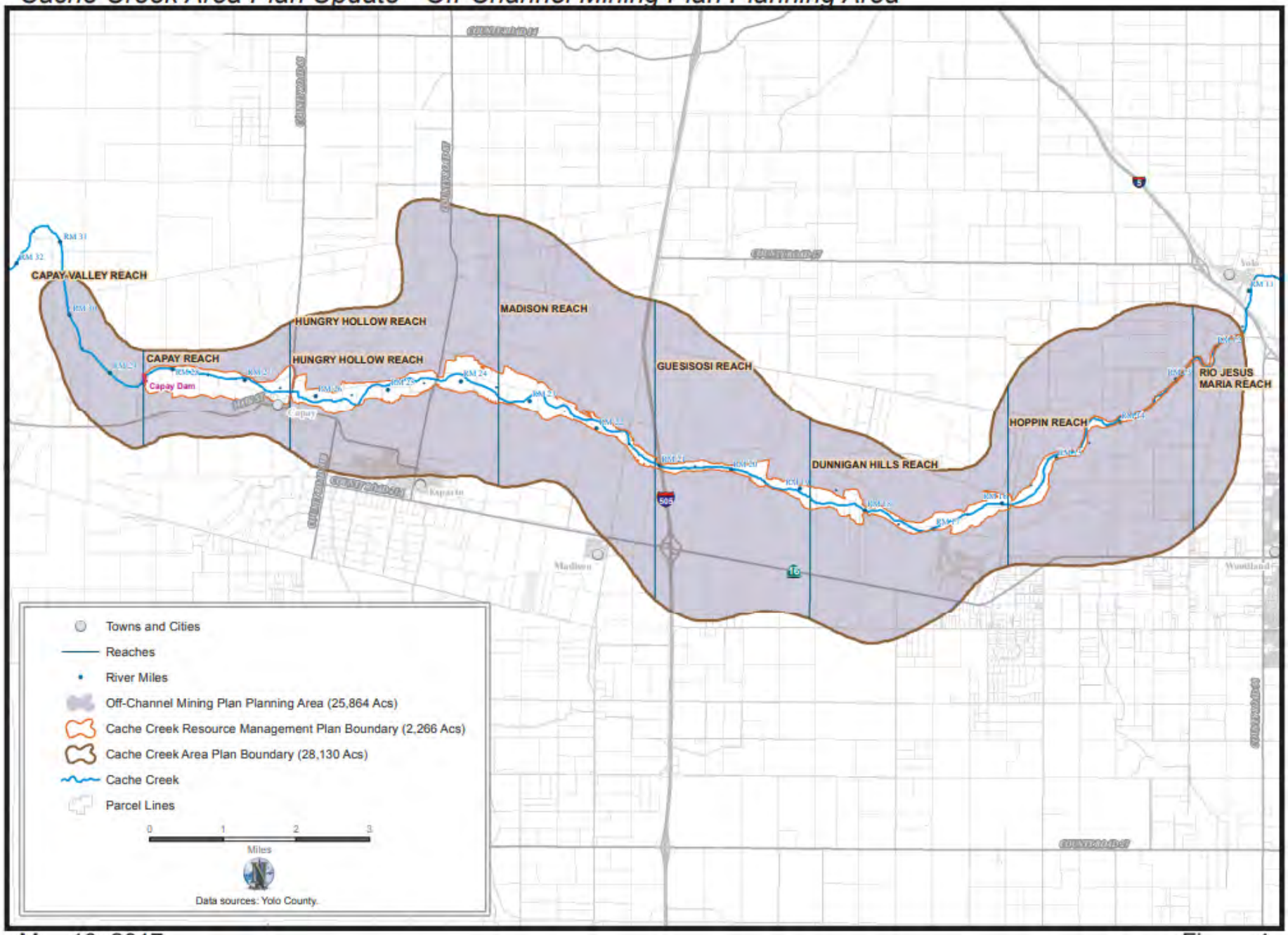
Cache Creek Area Plan Update - In-Channel Boundary



May 10, 2017

Figure 3

Cache Creek Area Plan Update - Off-Channel Mining Plan Planning Area



May 10, 2017

Figure 4

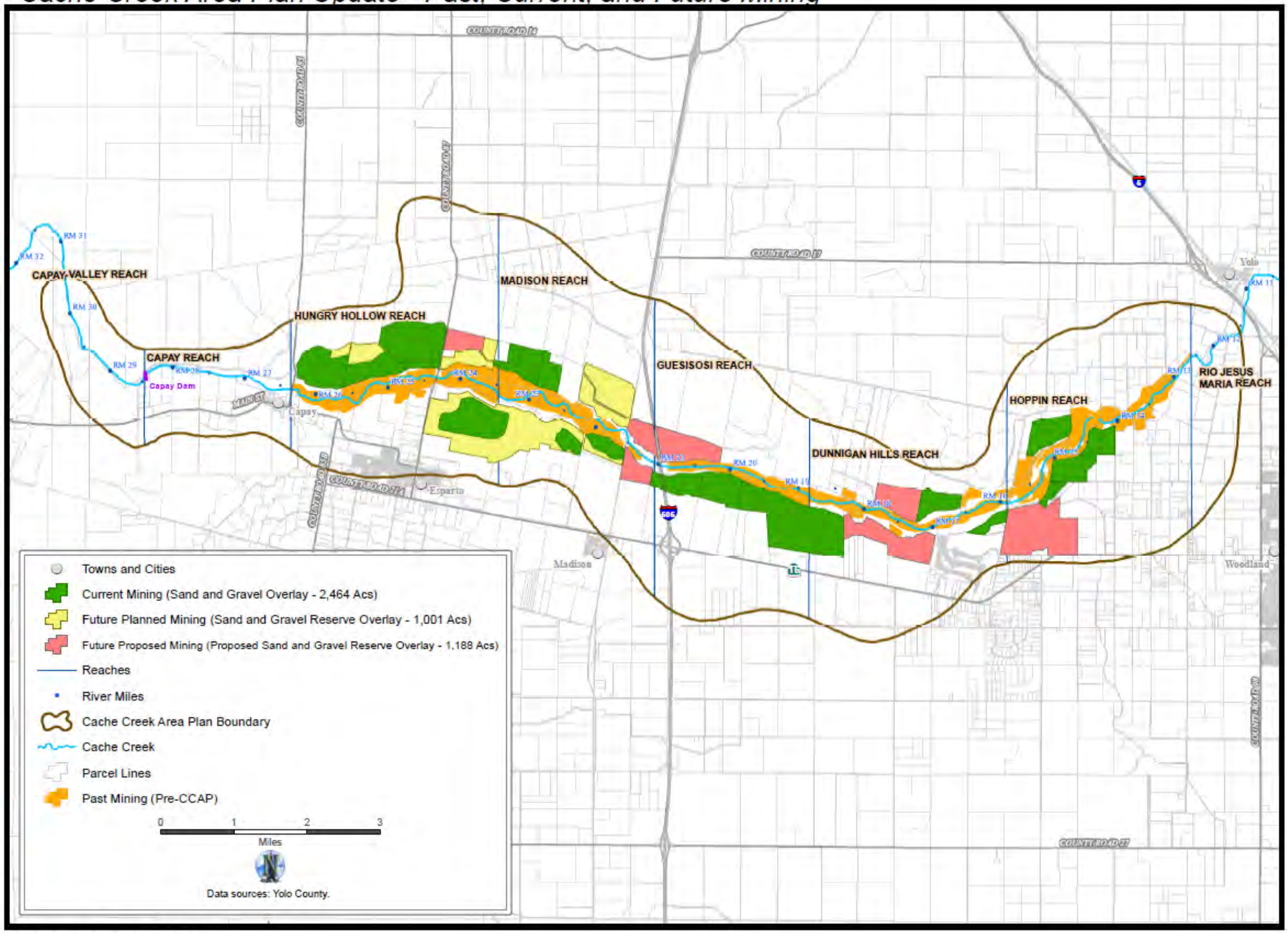
~~The County has received five applications for off-channel surface mining operations, from the following companies: Cache Creek Aggregates, Solano Concrete, Syar Industries, and Teichert Aggregates (two applications). A fifth company, Schwarzgruber and Son, has not submitted an application at this time, but intends to apply within the next five years or so. As a reasonably foreseeable outcome of this process, Schwarzgruber's tentative plans have been included in the analysis of the Off-Channel Mining Plan. All together, the five operators propose to mine a total of some 180 million tons over the next thirty years, which will be sufficient to meet regional demand. Mining during this initial phase would take place over 2,123 acres within the planning area (see Figure 4).~~

~~The five applications, plus the two existing aggregate operators (Granite Construction and Schwarzgruber and Sons), and the areas proposed for rezoning to add the SGR overlay, comprise the OCMP boundary. The OCMP boundary, which includes 3,073 acres,~~ Since approval of the OCMP in 1996 the County has approved seven mining permits allowing for removal of a total of 176 million tons of material on 1,900 acres (2,464 total acres for combined mining operations). Unless extended, one of these permits will expire in 2027, four in 2028, one in 2029, and one in 2041. Approved mining areas are designated Sand and Gravel Overlay (SG-O) on the County Zoning Map. Future planned but not approved mining is zoned Sand and Gravel Reserve Overlay (SGR-O). There are currently 1,001 acres designated in this category. In addition, some areas of additional likely mining have been identified on another 1,188 acres through work done for the draft Yolo Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP). Figure 5 identifies ~~represents~~ those areas where mining is approved or reasonably foreseeable over the next 50 years ~~(see Figure 4)~~.

~~For CEQA purposes, the analysis in the OCMP looks at the maximum tonnage requested by the applicants, plus assumptions regarding other extraction that might occur over the next 30 years. The maximum production expected is 8.59 million mined tons per year. Calculating this seemingly simple number is greatly complicated by variables such as assumed annual extraction, assumed total reserves, aggregate extracted under the CCIP, and whether tons mined or tons sold is used as the criteria.~~

~~The issues with the most relevance to this discussion are the historic high production, estimates regarding future market demand, the maximum volume that emerged from the consensus group process, and equity and fairness between the producers. The historic high was 3.41 million tons mined in 1989. It should be pointed out, however, that some producers have approached or reached their individual allocations in recent years. As mentioned above, the staff estimate of future demand is an average of 5.4 million tons sold (6.2 million tons mined) annually over a 50-year period, or 5.1 million tons sold (5.8 million tons mined) annually on average over a 30 year period. The number that emerged from the citizen "consensus group" meetings in 1994 was 5.5 million tons sold per year. Regarding the issue of fairness and equity, the existing allocation is an arbitrary number that represents the average for each producer of their recorded extraction during the three-year period of 1976 through 1978. As such, other methods may be used that more accurately reflects the market demand and environmental impacts of aggregate production.~~

Cache Creek Area Plan Update - Past, Current, and Future Mining



September 5, 2018

Figure 5

~~The maximum cumulative allocation under the OCMP is 5.97 million tons sold per year (6.78 million tons mined). This number represents the existing allocations for Granite Construction and Schwarzgruber and Sons (0.42 and 0.11 million tons mined respectively, less a 12 percent waste factor from each, for a total of 0.37 and 0.10 million tons sold), plus 5.5 million tons sold to be allocated to off-channel mining operations as permits are granted.~~

~~The reason for this recommendation is to maintain consistency with the approach used in formulating the OCMP itself, which was to build on the work that has already been done. In this case, the 5.5 million "new" tons represent the outcome of the 1994 consensus group process. The consensus group had also agreed on a variation of up to 20 percent per operator per year to account for changing market conditions, so long as the ten year average did not exceed the maximum allocation. This concept has not been included. It would be difficult to monitor and regulate this feature, and the total tonnage in and of itself is 17 percent over the market projection, which should adequately allow for such economic variation.~~

~~In addition, the County has also received requests to designate certain lands with the SGR (Sand and Gravel Reserve) overlay zone, indicating that the property is appropriate for off-channel mining over the next fifty years. This would occur over 686 acres, in addition to the area proposed to be mined. It is estimated that these rezoned lands contain 38 million tons of aggregate, in addition to the 180 proposed to be mined initially, for a total of 218 million tons available during the fifty year plan horizon. This will be insufficient to meet the projected demand of 289 million tons.~~

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 Surface Mining and Reclamation Act

Yolo County's regulatory efforts are complemented and directed by the California Surface Mining and Reclamation Act (SMARA), which was enacted in 1976. The act created a regulatory framework for the mining industry, requiring all new excavations to obtain approval of a reclamation plan describing the methods to be employed in ensuring that the site could be beneficially used once operations had been completed. Since adoption~~Over the past five years~~, substantial amendments have been added to address problems not covered in the original legislation. Lead agencies are required to annually inspect each mine located within their jurisdiction to monitor permit compliance. Each operator is required to put up financial assurances, as a guarantee that money will be available to properly reclaim the property should the mining company abandon the site. In addition, the State Mining and Geology Board has adopted standards, in order to ensure that reclamation work is consistently implemented. The requirements of SMARA must be followed by all lead agencies as a minimum, however, the County may adopt stricter measures where it deems appropriate.

One of the primary problems that SMARA was designed to address concerned the loss of regionally significant aggregate deposits to land uses, such as urban growth, that would preclude mining. Included within SMARA is a requirement for the State Geologist to map ~~out~~ areas of the state ~~which are~~ subject to urban expansion, in order to determine the presence or absence of significant mineral resources. This information is ~~then~~ transmitted to the lead agency, so that policies can be incorporated into local~~the~~ General Plans to protect identified significant mineral deposits from inappropriate uses, so that they may be harvested in the future.

As discussed earlier, the DOC~~State Department of Conservation~~ released Special Report 156 in 1988[5], which classified the sand and gravel deposits along Cache Creek as being significant mineral resources. The DOC released Special Report 245 in 2019[6] which updated some information in the 1988 report. 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.

[5] Special Report 156, Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Sacramento-Fairfield Production-Consumption Region, 1988, California Department of Conservation, Division of Mines and Geology.
[6] Special Report 245, Mineral Land Classification: Concrete Aggregate in the Greater Sacramento Area Production Consumption Region, 2018, California Department of Conservation, California Geological Survey.

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.

Section 2774 of SMARA requires that every lead agency adopt ordinances that establish procedures for the review and approval of reclamation plans, financial assurances, and surface mining permits. Regulations must be periodically reviewed and revised, as necessary to ensure that they remain in accordance with State policy. The ordinances ~~I~~implementing the ~~Off-Channel Mining Plan (OCMP)~~ have been updated~~are new and revised ordinances to the Yolo County Code governing off-channel surface mining and reclamation. The ordinances include performance standards~~ to reflect~~carry out~~ the ~~policies~~update of the OCMP, as well as ~~providing procedures for ensuring compliance with the~~the new relevant requirements mandated in recent SMARA amendments.

Prior to adoption of the updated OCMP~~Off-Channel Mining Plan~~, State Mining and Geology Board review and comment is required under Section 2762(~~a~~c) of SMARA. Any future proposed amendments to the OCMP and its policies must also be sent to the Mining and Geology Board for review and comment, prior to their adoption. Similarly, Section 2774.3 of SMARA requires the off-channel surface mining and reclamation ordinances be reviewed by the State Mining and Geology Board, and certified as being in accordance with State policy if it meets or exceeds the requirements of SMARA and the Reclamation Regulations.

The ~~Yolo County Off-Channel Mining Plan has been~~update of the OCMP was prepared in accordance with Sections 2761~~-~~ through 2764 of Division 2, Chapter 9, of the Public Resources Code (SMARA). The~~is plan is~~ updates are also in conformance with Article 9, Sections 3675~~-~~through 3676 of Division 2, Chapter 9, of the Code of Regulations (the Reclamation Regulations of the State Mining and Geology Board).

The 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.

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)

~~In its final report in 1977, the Aggregate Resources Committee (ARC) stressed the need for a coordinated approach to resource management, stating that "the adoption of a Countywide (resource) management policy and plan should maximize the benefits of an aggregate industry in the County." This recommendation lead to the adoption of Conservation Policies 34 and 35 of the General Plan, as follows:~~

~~CON 34 Mineral Resources~~
~~Yolo County shall adopt a Mining Ordinance to implement these policies as they apply to mineral resources, including sand and gravel.~~

~~CON 35 Cache Creek~~
~~Yolo County shall adopt a Cache Creek Management Program for the carefully managed use and conservation of Cache Creek and its sand and gravel resource, its riverside environment, its relationship to ground and surface water characteristics and its value as a fishery and recreation resource.~~

The OCMP has been evaluated and determined to be consistent with the various goals and policies of the County General Plan. The OCMP~~Off-Channel Mining Plan~~, together with the ~~Cache Creek Resources Management Plan (~~CCRMP~~)~~, ~~will~~ constitute the Cache creek Area Plan (CCAP), which provide~~s~~ the ~~necessary structure and policies~~policy framework for implementing ~~a~~this program to manage the wide variety of resources associated with the creek, including habitat, water resources, aggregate, agriculture, and recreation. ~~One of the means for implementing this program is the adoption of new~~The County's off-channel surface mining ordinance, ~~and~~ reclamation ordinance~~s~~, ~~as well as a new~~ and in-channel~~stream~~ maintenance ordinance all implement the policy framework. These ordinances ~~will~~ include specific performance standards that~~for~~ ensur~~e~~~~ing~~ that the goals and objectives spelled out in the OCMP and CCRMP are achieved. Provisions are also made in the CCRMP for ~~establishing~~ an ongoing Technical Advisory Committee (TAC)~~, to continue~~ charged with monitoring and studying Cache Creek~~,~~ as it responds to the programs carried out within the plans and ordinances. The Committee ~~will~~ make~~s~~ recommendations, as appropriate, to ensure that management is responsive to the dynamic nature of the creek. Although each plan wh~~a~~s ~~been~~ 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~~it is intended that the final OCMP and CCRMP will be joined together after adoption, as one printed document entitled the Cache Creek Area Plan~~.

Cache Creek Area Plan

An "area plan" is a focused planning policy document that is part of a general plan. The OCMP meets all the requirements of State land use law to function as an area plan for the MRZ planning 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 element exists in the planning area. As allowed by State law, the degree of specificity and level of detail of the discussion of each such element reflects local conditions and circumstances. A brief summary of how ~~all~~ the General Plan requirements are satisfied is provided below.

Planning Area

By taking in the entire Mineral Resource Zone area as designated by the State, the OCMP addresses all land and resources which bear a relationship to mineral resource planning along Cache Creek.

Time Horizon

The Plan contains projections of conditions over a 30- and 50-year horizon, and provides for accommodating those conditions over the long term.

Diagrams and Implementation Programs

The Plan contains appropriate diagrams and specific discussion regarding implementation.

Consistency

The Plan has been examined for consistency, and found to be both internal 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 density, intensity, location, and distribution of mineral resources and aggregate production in the planning area. The Plan clearly specifies where mineral resource extraction is allowed, the circumstances under which it is allowed, how it shall be extracted, and the maximum intensity with which it can be extracted.

It examines the distribution of open space and agricultural land both before and after mining. The availability of mineral resources is assessed. It also addresses recreational facilities and opportunities as a result of mining reclamation.

Other typical Land Use Element issues such as educational facilities, public buildings and grounds, solid and liquid waste facilities, and areas subject to flooding are addressed only in the context of having relevance to the mining of off-channel terrace deposits.

Consistency with the Airport Land Use Plan 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. Haul routes and trip generation as related to maximum projected aggregate production is examined, and participation is required in a program to maintain levels of service and safety.

Housing Element Issues

The Plan identifies nearby housing for purposes of assessing the potential for impact from mining activities. It indirectly addresses new construction needs by ensuring the provision of aggregate resources sufficient to meet future demands. It discusses in detail existing and planned regulation of the production of aggregate, which has relevance in terms of creation or removal of constraints to the production of housing. Opportunities for energy conservation are addressed in relation to increased transportation costs for imported aggregate under scenarios of increased or decreased regulation (supply).

Conservation Element Issues

The Plan addresses conservation, development, and utilization of natural resources in the Cache Creek MRZ, including the Creek and its hydraulic forces, soils within the planning area, tributaries and other waters that affect the planning area, biological resources, and mineral 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 of proposed mining and other components of the Streamway Influence Zone are identified as requiring ongoing monitoring and study. A detailed program for stabilizing and restoring Cache Creek is included as an adjunct to the OCMP (please refer to the CCRMP). Land within the CCRMP boundary has been designated as Open Space (OS) in the County General Plan.

The managed production of mineral resources under the OCMP is a focus of the Plan. General opportunities for recharge of the groundwater basin are identified.

Scenic resources and cultural resources have been identified in the planning area and policies and programs for preservation or mitigation are included in the Plan. Future recreation nodes that would provide access to areas targeted for future open space and passive recreation are identified. Buffers between mining and the Creek, and between various activities associated with mining are required.

Noise Element Issues

Existing noise sources and noise associated with mining activities have been identified and are regulated in the Plan. Methods for noise control and attenuation are provided.

Safety Element Issues

The effects of seismically induced surface rupture, ground shaking, ground failure, and dam failure are addressed. Policies and specific regulations to address these concerns are provided. Slope instability issues, general geologic hazards, and flooding are given extensive treatment as related to appropriate controls during mining and after reclamation.

Other

Coastal issues and timber harvesting issues are not relevant to the OCMP planning area, and have not been addressed in the Plan.

Yolo County Mining and Reclamation Ordinances

Commercial i~~I~~n-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 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. ~~is presently governed by Chapter 3 of Title 10 of the County Code. "The Interim In-Channel Surface Mining Regulations of Yolo County" apply only to in-stream mining within Cache Creek. They were intended to be a temporary three-year set of regulations, to be revised by the Resource Management Plan being drafted by the Aggregate Technical Advisory Committee in the early 1980s. As subsequent planning efforts resulted in stalemate, however, the interim regulations were never revised. They continue to remain the standards by which in-stream mining is regulated. A new in-stream ordinance will be developed and brought before the Board of Supervisors for adoption after the OCMP, CCRMP, and long-term off-channel mining applications have been considered, in accordance with work schedule adopted by the Board in June of 1994.~~

~~Mining areas located outside of the Cache Creek channel are governed by~~ Chapter ~~2~~4 of Title ~~8~~10 of the Yolo County Code~~, which~~ is the County's Off Channel Mining Ordinance. This ordinance regulates aggregate mining that is allowed to be conducted along Cache Creek in the off-channel area pursuant to SMARA and the requirements of the CCAP.~~provides procedures for the processing of use permits, including off-channel mining permits. Chapter 2 provides sufficient authorization to process off-channel mining permits and, when supplemented by the California Environmental Quality Act (CEQA), ensures that adverse environmental effects are minimized or eliminated. As both the scale and intensity of off-channel mining increases, there is a need for performance standards specific to off-channel mining. The off-channel mining ordinance will become Chapter 4 of Title 10 of the County Code.~~

Chapter 5 of Title 10 is the County's ~~designated the "Yolo County~~ Surface Mining Reclamation ordinance. This ordinance regulates reclamation of mining pursuant to SMARA and the requirements of the CCAP.~~Law" and currently applies to all surface mines located within the unincorporated areas of the County, both in-channel and off-channel. Like the in-stream regulations, the Reclamation Ordinance has not been substantially updated since the early 1980s and was intended to be revised by the AgTAC Resource Management Plan. The Reclamation Ordinance is now long overdue for change. Over the past five years, SMARA has been extensively amended, especially in the area of reclamation plans. Minimum reclamation standards, interim management plans, annual reporting, and financial assurances have all been added to the state legislation and need to be addressed in the County's regulations.~~

~~The Board of Supervisors adopted Minute Order 94-73 in June of 1994, approving the development of an Off-Channel Mining Ordinance, in recognition of the need to accommodate the potential shift of emphasis from mining within the creek to off-channel terrace-pit mining. The Minute Order also provided for the submittal of long-term, off-channel mining permit applications. An Off-Channel Surface Mining Ordinance has been adopted to provide implementation of the OCMP. The Ordinance contains application requirements different from those specified in Minute Order 94-73. As a result, the Minute Order is superceded by the new Ordinance.~~

The Cache Creek Resources Management Plan

The OCMP~~Off-Channel Mining Plan~~ is ~~being prepared as~~ a companion plan to the Cache Creek Resources Management Plan (CCRMP), which is a river management plan that governs land use activities and environmental restoration within the present channel banks and 100-year floodplain (~~as determined by the U.S. Army Corps of Engineers~~). The two plans, which together ~~will~~ comprise the ~~Cache Creek Area Plan~~ CCAP adopted as a part of the County General Plan, 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 which occur in one area affect the other. The Streamway Influence Zone ~~Boundary~~ (see Figure 6~~5~~) described originally in the recommendation of the 1995 Technical Studies~~'~~ ~~recommendations~~ and ~~updated~~reaffirmed in 2017 shows the approximate area subject to these interrelationships, based on the historical extent of ~~the channel~~meander migration.~~.~~ Thus, although the planning areas for the two plans are mutually exclusive, both plans include integrated goals and policies that maximize the positive interrelationships between in-channel and off-channel concerns.

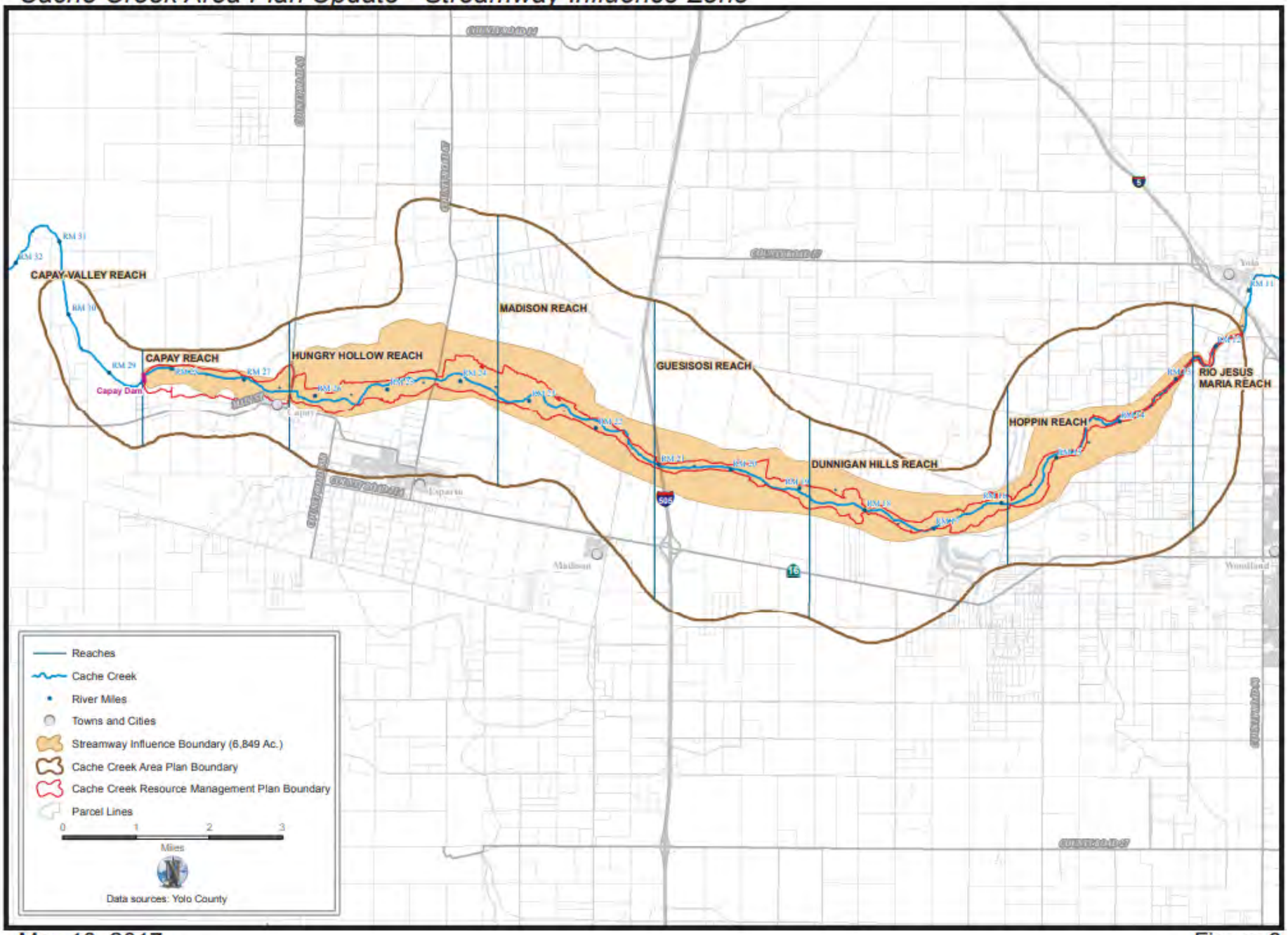
1.4 REQUIRED APPROVALS

Certification of the Program EIR

Section 15168 of the Guidelines for 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 a 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 concerns associated with

Cache Creek Area Plan Update - Streamway Influence Zone



May 10, 2017

Figure 6

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 focus~~s~~ed 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 hearings.

A Program EIR ~~h~~was ~~been prepared~~certified for the OCMP in 1996~~Off-Channel Mining Plan~~. ~~The Draft EIR was made available for public comment on March 26, 1996. The Response to Comments document was released on June 14, 1996. Together, these two volumes constitute the Final EIR for the OCMP.~~ The County requires the preparation of ~~F~~focus~~s~~ed project-level EIRs ~~will be prepared~~ for each long-term, off-channel surface mining permit and reclamation plan application submitted for sites located within the planning area. ~~The Program EIR identifies twelve general areas of potential environmental impact including: land use, geology and soils, hydrology and water quality, agriculture, biological resources, air quality, traffic and circulation, noise, aesthetics, cultural resources, hazards, and public services. Site-specific issues, such as aesthetics, groundwater effects, drainage, slope stability, flood protection, and noise will be dealt with in the project-level EIRs.~~

Adoption of the Off-Channel Mining Plan

Both the OCMP~~Off-Channel Mining Plan~~ and the companion CCRMP~~Cache Creek Resources Management Plan~~ are intended to be evolutionary documents~~,~~ that adjust and change in response to new creek conditions. Adoption of the OCMP in 1996~~will~~ allowed the County to begin taking the first steps in managing the resources along Cache Creek, however, the plan was~~should~~ not ~~be~~ seen as a static vision of what the ultimate disposition of the creek would~~ill~~ be in the future. ~~As such~~Rather, it ~~i~~was expected that the OCMP would~~ill~~ 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 OCMP is required to~~shall~~ be updated every ten years to respond to new regulatory requirements. This will 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 before significant harm is done. ~~Future a~~Amendments to the OCMP are to ~~will~~ be appropriately processed under CEQA.

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 the County Code Chapter 3 (In-Channel Ordinance),~~and~~ Chapter 4 (Off-Channel Surface Mining Ordinance), Chapter 5 (Surface Mining Reclamation Ordinance) respectively of Title 10.

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, Statutes of 1999). This law had a five-year sunset date, but ~~has~~was subsequently 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. ~~If the programs proposed under the CCRMP are determined to fall under the provisions of SMARA, then Chapter 3 would remain the in-channel mining ordinance, and the reclamation ordinance (Chapter 5 of Title 10) will govern both in-channel and off-channel mining. The off-channel mining and reclamation ordinances have been revised to include recent changes in SMARA and the State Reclamation Regulations, as well as policy directives issued by the State Department of Conservation. Specific performance standards for both mining and reclamation have been included, in addition to those already mandated by the State. These standards have been developed through the recommendations of the Technical Studies prepared for Cache Creek, the studies and recommendations of past advisory groups, public and industry input obtained through the consensus group process, public workshops and hearings, as well as the experience and practices of other jurisdictions in the regulation of mining.~~

In June 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

The OCMP~~Off-Channel Mining Plan~~ has designated an area for future surface mining to meet the long-term future~~fifty year~~ aggregate needs of Yolo County and the surrounding region. Those areas permitted for mining ~~over the next thirty years will be rezoned~~are designated with the ~~S-G~~SG-O ~~Z~~zone in order to identify the land as being appropriate for mining in the near-term~~decades to come~~. Surface mining operations within Yolo County may only occur on properties designated SG-O on the County's Zoning Map. The SG-O may be combined with either the A-N (Agriculture Intensive) or A-X (Agriculture Extensive) zones outside of the CCRMP boundary. Those areas where mining ~~w~~could occur in the future~~30 to 50 year will have a new overlay zone applied to them: the~~ are zoned SGR-O ~~(Sand and Gravel Reserve) Zone~~. This designation ~~would~~ indicates that gravel mining is appropriate for the site at a future date. The SGR-O z~~Z~~one ~~will~~ also serves to notify existing and future property owners, as well as land use decision-making bodies, that mining will likely occur in these areas. Potentially incompatible uses that are proposed to be located on sites adjoining SGR-O Zoned properties should take the likelihood of future mining into account and be designed accordingly.

~~**Amendment of the County Code**~~**Mining Within An Agricultural Preserve**

~~A substantial portion of the lands proposed for mining are located within the A-P (Agricultural Preserve) Zone (see Figure 6). Currently, the only aggregate extraction permitted in the A-P Zone must have creek bank protection and/or erosion control as its primary purpose. Since future mining will be predominantly characterized by off-channel excavations, commercial aggregate extraction is essentially prohibited in the A-P Zone. Furthermore, under the present ordinance, privately owned reservoirs and/or water retention basins are not permitted if they were created through the reclamation of lands mined for rock, sand, and/or gravel.~~

The California Land Conservation (Williamson) Act, which governs the administration of agricultural preserves, was amended in 1994 to restrict the types of uses allowed on contracted land. All new uses must meet all of the findings described in Section 51238.1 to protect agricultural activities and agricultural land. Compatible uses may include permitted uses on prime agricultural land which contain conditions or mitigations that ensure the long-term productive capability. Specific criteria for permitted uses on non-prime agricultural land are also provided. In general, the use must be consistent with the intent of the Williamson Act to conserve agricultural land, open-space uses, and/or natural resources. To meet this finding, the use of mineral resources must also comply with Section 51238.2.

Section 51238.2 was added to the California Land Conservation Act in 1994, specifically addressing surface mining within contracted land. It states that any mineral extraction operation which is unable to meet the findings described above may still be approved as a compatible use, as long as there is the commitment to preserve prime land for agricultural purposes and non-prime land for open-space use are not significantly impaired. All such mining operations must include conditions that comply with the State Reclamation Regulations.

~~All aggregate surface mining operations within Yolo County must be located within the S-G (Sand and Gravel) Zone. For lands located outside of the In-Channel Boundary, the S-G Zone may only be combined with the A-1 Zone. However, nearly two-thirds of the land proposed for mining over the next thirty years is currently located within the A-P Zone. Rather than require that this acreage be taken out of agricultural preserve, the A-P Zone shall be amended to allow off-channel mining, as long as it is consistent with the Williamson Act. Off-channel mining on contracted land would only be permitted within the OCMP boundary. A new section will be added to the A-P Zone to require that all conditional uses meet the findings required in the Williamson Act. The A-P Zone would also be amended to allow for the creation of privately owned reservoirs, developed through sand and gravel mining, that will be reclaimed for the purpose of wildlife habitat or other beneficial uses.~~

~~Revision of the A-P Zone would not only further the goal of the County to retain contracted land, but would also bring the County into conformance with State law and minimize potential regulatory conflict.~~

~~The A-1 (Agricultural General) Zone will be amended to require that off-channel mining conform to the mining and reclamation ordinances, as well as the OCMP. The creation of privately owned reservoirs would also be permitted in the A-1 Zone, under the same provisions as those discussed for the A-P Zone above.~~

~~The SG (Special Sand and Gravel Combining) Zone will also be amended to allow it to be combined with either the A-1 or the A-P Zone for off-channel mining, within the boundaries of the OCMP. In addition, a new zoning category will be created. The SGR (Special Sand and Gravel Reserve Combining Zone) will designate those lands that have been identified in the OCMP as appropriate for mining in the future. It would function as a holding zone, to allow long-range planning for those uses located near the designated property. In order for mining to occur on a parcel zoned SGR, the applicant would have to obtain approval of a mining use permit and reclamation plan, go through appropriate environmental review, and obtain approval of a rezoning to the SG Zone.~~

1.5 ORGANIZATION OF PLAN

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

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

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 OCMP to manage this resource in the future. Following these initial discussions are a series of goals, objectives, and actions 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.

CHAPTER 2.0 AGGREGATE RESOURCES ELEMENT

2.1 INTRODUCTION

Present Conditions

Off-channel mining is allowed on SG-O zoned land outside of the CCRMP boundary but within the OCMP Planning Area~~boundary~~ (see Figure 4~~5~~).~~currently defined as being outside of the 1979 In-Channel Mining Boundary established for Cache Creek (see Figure 7).~~ ~~In general, the boundary was determined by taking the outer limits of the area subject to erosion and deposition, excluding the agricultural areas, and giving consideration to the desires of the property owners affected by the designation. Using this definition, t~~There are currently seven mining operations that have approvals to mine under the regulatory framework of the OCMP. These operations include: (1) Cemex, located south of Cache Creek and west and east of I-505 (±586 acres); (2) Granite Capay, located north of Cache Creek between County Road 85 and County Road 87 (±312 acres); (3) Granite Esparto, located north of Cache Creek and just west of County Road 87 (±3~~13 acres); (4) Syar~~ Industries, located south of Cache Creek between County Road 87 and County Road 89 (±248 acres); (5) Teichert Esparto, located north of Cache Creek between County Road 87 and I-505 (±148 acres); (6) Teichert Woodland, located north and south of Cache Creek and west and east of County Road 94B (±252 acres); and (7) Teichert Schwarzgruber, located south of Cache Creek at the northern terminus of County Road 97 (±41 acres). ~~There are currently four mining areas considered to be off-channel, as follows: (1) a 17 acre pit operated by Schwarzgruber and Son, at the northern extension of Road 96; (2) two pits totalling 92 acres operated by Teichert Aggregates, just east of Road 94B (Haller Muller); (3) a 57 acre pit operated by Teichert Aggregates, just north of Road 19A (Reiff Esparto); and (4) a pit of approximately 135 acres operated by Solano Concrete, north of State Highway 16 and east of Interstate 505. All together~~In total, there are ~~about~~approximately 1,900 acres approved for excavation and ~~268~~ 2,464 acres (including the excavation acreage) permitted as part of the mining operations~~for off-channel mining at present~~ (total acreage zoned Sand and Gravel Overlay or SGO).

~~Off-channel mining is currently regulated under Chapter 2 of Title 8 of the Yolo County Code, which governs use permits as they pertain to the zoning ordinance. Chapter 2 does not provide any specific performance standards for off-channel mining, nor does it describe the procedures necessary for such required items as annual inspections or reporting. Yolo County recently approved three off-channel mining permits for terms of three years each. The short-term permits were granted to mining operators who were running out of available reserves. The permits provide additional material until such time as the Off-Channel Mining Plan and Cache Creek Resources Management Plan are adopted and new long-term permit applications may be considered. In order to supplement the regulation of off-channel mining provided in Chapter 2 of the County Code, the Board of Supervisors passed Minute Order No. 94-306 which established specific standards and application requirements for the short-term off-channel applications.~~

~~In November of 1982, total permitted aggregate reserves for the Cache Creek production area were estimated by the State Geologist at 40 million tons. It was projected that these reserves would run out in 1994. Approximately 31 million tons have been mined since 1982, which leaves~~

~~9 million permitted tons available for future use. This number was confirmed by a report conducted in 1994 by the firm of CH2M Hill, on behalf of Yolo County, in a report entitled "Final Cache Creek Aggregate Resource Inventory." The report was amended later by the Yolano Engineers report (1994). The aggregate resource inventory estimated that the permitted remaining reserves among the four largest mining operations was about 7.4 million tons. The inventory study further noted that existing permitted reserves would be depleted by 1997. In 1995, three additional permits were approved that added three years' production capacity to the Teichert Woodland and Esparto sites, as well as Solano Concrete. Similarly, Cache Creek Aggregates was granted approval to process an existing stockpile of aggregate estimated at some 800,000 tons. Regardless of the limited recent additions to the total permitted reserves, however, the present permitted reserve capacity is insufficient to meet the 173 million ton (mined) projected demand for Cache Creek over the next 30 years.~~

As previously noted, the seven operations summarized above are collectively approved to extract 176 million tons of sand and gravel. From 1996 through 2015 approximately 72 million tons have actually been extracted leaving 115 million tons approved but not yet mined. Based on estimates of the size of the Cache Creek mineral reserves, approximately 742 million tons of aggregate will remain even after this approved tonnage has been extracted.

OCMP Vision

As is stated in SMARA, the extraction of sand and gravel is essential to the continued economic well-being of the state and to the needs of society. However, mining must also be balanced against other valuable considerations, including water resources, agriculture, wildlife, aesthetics, and recreation. Due to concerns about the impacts of in-stream mining to structures, property, and riparian habitat, commercial in-stream mining was~~will be~~ prohibited under the CCRMP in 1996. The OCMP and CCRMP ~~together~~ provided the policy and regulatory framework for a redirection of the focus of the gravel industry from in-channel to off-channel operations. Mining facilities and operations within Cache Creek currently were~~may be~~ considered "vested." This meant~~s~~ that the County could~~can~~ not adversely affect those rights without compensation. By providing what ~~i~~was, in effect, a sort of transfer of property rights, the gravel mining in the creek channel was~~would be~~ discontinued, and exchanged for rights to mine in the off-channel areas.

The OCMP~~Off-Channel Mining Plan seeks to~~ allow~~s~~ for the development of a sufficient supply of aggregate to meet ~~the~~ future needs~~ of society~~, while increasing the level of environmental protection and monitoring. In order to provide a sufficient source of sand and gravel ~~over the next thirty years, approximately 2,211~~2,464 acres are ~~will be~~ designated for off-channel surface mining. An additional 1,001~~676~~ acres ~~will have an~~have been designated SGR-O ~~(Sand and Gravel Reserve) Zone overlay applied~~. This overlay ~~will clearly~~ delineate~~s~~ where the County will encourage future mining~~ over the next 30 to 50 years~~, so that land use decisions can be planned accordingly. It also ensures that additional reserves will be available for development once ~~the~~current mining ~~applications processed under the OCMP~~operations are completed. In addition to the SGR-O designated lands, another 1,188 acres have been identified as likely sites for future mining. Remaining ~~Those~~ areas within the MRZ areas that are feasible for mining may be considered in the future.~~do not have the SGR overlay will be conserved for mining beyond the year 2047 or conserved into perpetuity~~. In addition to the use of overlay zones, the OCMP

contains a commitment to maintain the existing agricultural zoning within the planning area. This not only reinforces the County's general policy of encouraging the agricultural industry, but will ensure that mining is buffered from residential and other sensitive land uses.

Although the County recognizes that mining is important to the regional economy, it also acknowledges that mining is an activity that carries with it the potential for adverse environmental impacts. The OCMP includes ~~several~~ provisions to regulate surface mining ~~more effectively~~ to reduce or prevent adverse effects. Specific performance standards have been incorporated into the ~~revised~~ off-channel mining and reclamation ordinances~~, based on the Technical Studies prepared for Cache Creek, as well as standard procedures used in the industry and other jurisdictions. These standards~~ that ~~-~~complement and go beyond the requirements already mandated by SMARA and the State Reclamation Regulations. The OCMP also imposes a 30-year maximum term for any off-channel mining permit, as well as 10-year reviews that allow for the addition of new environmental regulations to the permit, if appropriate. ~~In addition, a 15-year review may be held, at the discretion of the Planning Commission.~~ A 20-year extension to the mining permit may be granted, if approved aggregate reserves have not yet been exhausted. ~~Existing and new aggregate processing facilities will be linked to off-channel mining permits.~~ All plants and facilities will sunset when permits to mine expire, thereby precluding the future "unregulated" processing of imported material. Similarly, the requirements for annual reporting have been substantially expanded, to provide staff with better information to monitor both mining operations and reclamation efforts.

Off-channel aggregate deposits are essentially non-renewable resources. While new sand and gravel deposits are laid down by Cache Creek, the geological processes involved in replenishment take centuries to occur. By placing a cap on the amount of aggregate that can be mined in any one year, the use of a non-renewable resource can be regulated to ensure its continuing availability. In addition, by restricting production, the potential environmental impacts that vary with the amount of aggregate extracted (e.g., traffic, air quality, noise) can be effectively limited. Setting a maximum annual production level must balance a variety of factors, including: the environmental impacts that result from mining, the regional market demand for sand and gravel, the direct and indirect costs/benefits of aggregate production, and the economic interests of the mine operators.

2.2 GOALS

2.2-1 Protect lands containing identified mineral deposits from the encroachment of incompatible land uses so that aggregate resources remain available for future use, as needed.

2.2-2 Encourage the production and conservation of mineral resources, balanced by the consideration of important social values, including recreation, watershed, wildlife, agriculture, aesthetics, flood control, and other environmental factors.

2.2-3 Prevent or minimize the adverse environmental effects of surface mining.

2.2-4 Eliminate or minimize hazards to the public health and safety that are associated with surface mining operations and reclamation.

2.2-5 Ensure that mined areas are reclaimed to a usable condition which are readily adaptable for alternative land uses, such as agriculture, wildlife habitat, recreation, and groundwater management facilities.

2.2-6 Provide a responsive process to consider future changes in environmental and regulatory conditions.

2.2-7 Maintain an economically viable and competitive local aggregate industry that provides a stable job base and tax revenue to Yolo County and contributes to other resource enhancements through the investments in improved technology and reclamation planning.

2.3 OBJECTIVES

2.3-1 Recognize that the aggregate deposits along Cache Creek are significant to the economy of Yolo County, as well as surrounding jurisdictions.

2.3-2 Discourage the encroachment of incompatible land uses into areas designated for future off-channel surface mining operations.

2.3-3 Provide standards and procedures for regulating surface mining operations and reclamation so that hazards are eliminated or minimized and potential adverse environmental effects are reduced or prevented.

2.3-4 Coordinate individual surface mining reclamation plans so that the development of an expanded riparian corridor may be achieved.

2.3-5 Create regular opportunities to incorporate new information into the OCMP.

2.3-6 Structure mining so that the disturbance of the existing landscape is minimized and will be reclaimed so that the property can be used and enjoyed in perpetuity by current and future generations.

2.3-7 Avoid damage to important cultural resources, in order to document and/or preserve the historic and prehistoric record.

2.3-8 Ensure through the CEQA process and ongoing permit compliance review that operators are paying their fair share of the costs of impacts to local roadways from truck use associated with each approved mining operation. This obligation is separate and distinct from the Mining Fee Program.

2.4 ACTIONS

2.4-1 Provide an open space buffer around the community boundaries of Capay, Madison, Esparto, Woodland, and Yolo to reduce potential conflicts between urban areas and nearby surface mining operations. Commercial mining shall not take place east of County Road 96. (See Section 10-4.429(h) of the County Mining Ordinance)

2.4-2 Hazardous materials business plans (or equivalent) must be submitted ~~biennially~~annually, as required by the California Health and Safety Code, unless the types of hazardous materials used change, in which case revised business plans must be submitted within thirty (30) days of the change. (See Section 10-4.403 of the Mining Ordinance)

2.4-3 Establish a "sunset clause" for each surface mining permit. This would set defined length of time during which mining may occur. Any extensions beyond the permit expiration would require further environmental review and discretionary approval. The term of mining should be balanced so as to allow sufficient time for the operator to amortize investments, without sacrificing regulatory effectiveness. The maximum length of time for which any surface mining permit may be approved is thirty (30) years, with ten (10) year reviews to examine actual environmental impacts and to apply any relevant environmental regulations or statutory changes promulgated by a responsible or trustee agency with authority over a particular environmental resource (such as air, water, habitat, state lands, etc.), including Yolo County. ~~An additional review may be held fifteen (15) years after permit approval, at the discretion of the Planning Commission.~~ The reviews will also be used to verify whether per-ton fees are sufficient to meet actual costs. The mining permit may be extended for a maximum period of twenty (20) years, if necessary, subject to the same ten-~~ and optional fifteen~~ year review requirements. (See Section 10-4.426 of the County Mining Ordinance)

2.4-4 Revise the existing mining and reclamation ordinances contained in the Yolo County Code to incorporate recent amendments to SMARA; performance standards to prevent hazards and reduce potential environmental impacts; and programs to carry out the policies included within the OCMP~~Off-Channel Mining Plan~~. (Completed in 1996)

2.4-5 Rezone those lands necessary to meet aggregate needs for the next thirty years with the SG-O~~S-G (Sand and Gravel)~~ Zone. Those lands designated for mining within the next 30 to 50 years shall be rezoned with the SGR-O ~~(Sand and Gravel Reserve)~~ Zone. The SG-O~~S-G~~ and SGR-O Zones will serve to notify existing and future property owners that mining operations may occur within these properties, in order to discourage the encroachment of incompatible uses. ~~The final OCMP boundaries shall be defined as including only those 3,073 acres (off channel areas within the planning area) that are presently under consideration for rezoning or are a part of established aggregate operations.~~

2.4-6 Update the OCMP~~Off-Channel Mining Plan~~ every ten years. This will allow the plan to be amended so that the results of monitoring programs and reclamation efforts can be taken into account.

2.4-7 Require that all surface mining applications within the OCMP plan area include a proposal for providing a "net gain" to the County, as determined by the following criteria:

a. Reclamation to multiple or conjunctive uses;

b. Enhancement and enrichment of existing resources; ~~and/or~~

c. Restoration of past sites where the requirements of reclamation at the time no longer meet community expectations in terms of good stewardship of the land; and/or

d. Provision of new dedications and easements to supplement/benefit the Cache Creek Parkway including reclaimed mining sites, restored habitat, trail connections, and related enhancements.

(See Section 10-4.502i of the Mining Ordinance)

2.4-8 Monitor and regulate aggregate extraction in a manner that supports the ability of mining operations to perform long-range business planning and helps ensure that they will carry out their project responsibilities. The costs to the County of administering and monitoring the aggregate industry shall be borne by the mining operators. (Permit compliance is addressed in Article 7 of the Mining Ordinance commencing with Section 10-4.701. Program costs are addressed through the Gravel Mining Fee Ordinance, Section 8-11.01 et. seq. of the County Code. The Fee Ordinance was updated in 2007 as part of ten-year review.)

2.4-9 Reduce the amount of sand and gravel mined, by not including any waste concrete and asphalt processed as recycled materials for use in construction, as part of an operation's maximum annual production. (See Section 10-4.405 of the County Mining Ordinance)

2.4-10 Encourage off-channel excavation operations to access additional aggregate reserves through the use of wet pits, in order to increase mining efficiency and to minimize the surface land area disturbed by mining.

2.4-11 Define the OCMP boundaries to include approved and planned future mining operations. ~~3,073 acres, including the long-term off-channel mining and rezoning applications analyzed in the EIR, as well as the existing Granite Construction and Schwarzgruber and Sons operations. The provisions of the OCMP do not apply to those existing operations that have not requested additional discretionary permit approvals.~~

2.4-12 Establish a maximum annual production level for off-channel mining of 5.97 million tons sold. This total production limit applies to all off-channel mining included within the plan area. Individual producers may exceed their maximum annual allocation in order to meet temporary market demand. Aggregate sold in excess of the maximum annual production shall be subject to additional surcharges, which shall be used to benefit the Cache Creek area. (See Section 10.4.405 of the Mining Ordinance and Section 8-11.01 of the Fee Ordinance)

2.4-13 Sunset the aggregate processing plants and facilities at the greater of thirty (30) years following the commencement of mining under the approved permit, unless extended under subsequent permits to mine additional aggregate deposits. (Addressed in each development agreement)

2.4-14 Recognize the funding provided by Cache Creek Aggregates, Solano Concrete, Syar Industries, and Teichert Aggregates in preparing the OCMP and related documents. Prior to the approval of any new surface mining permits within the OCMP boundary, the County shall adopt a fee ordinance that requires new surface mining applicants to pay their proportionate fair-share cost of preparing the OCMP, implementing ordinances, and the Program EIR. Completed. Agreement No. 94-298 was entered into December 6, 1994 and expired ten year later in December 2004.

2.4-15 Establish a mechanism for compensating property owners who may have vested in-channel mining rights without having yet received reasonable financial consideration resulting from the mining associated with said permits, and who do not own land within the OCMP plan area. (Completed in 1996 through the execution of development agreements)

2.4-16 Execute development agreements between the County and mining operators in order to document in a contractual setting the transfer of mining rights in Cache Creek, whereby in-channel mining will be discontinued in exchange for rights to mine off-channel. The development agreements will also provide a mechanism for documenting the linkage of the plants to the mining permits; the payment of a per-ton fee for implementation of the OCMP and CCRMP; funding of the Cache Creek Conservancy; implementation of approved net gain projects; dedication of reclaimed lands; and compensation of property owners who would not otherwise receive consideration. (Completed for original applications; ongoing for subsequent applications)

2.4-17 Withhold the granting of each surface mining permit applied for under the OCMP, until the CCRMP has been adopted and in-channel mining rights have been relinquished by the applicant. (Completed in 1996 through the execution of development agreements)

2.4-18 Institute an exchange of property rights, whereby existing in-channel mining permits and allocations are discontinued, and exchanged for rights to mine off-channel aggregate deposits. (Completed in 1996 through the execution of development agreements)

2.4-19 ~~Establish that both s~~Surface mining permits and the production allocations associated with the permits apply only to the subject lands for which they are approved and may not be transferred. Mining permits are use permits which run with the land and are not transferrable to alternate locations without additional analysis and permit amendment.

2.4-20 Create a fund to ensure that money is available to address unforeseen environmental concerns and problems once mining and reclamation activities have been completed. The aggregate industry shall be fully responsible for subsidizing the fund. (See Section 8-11.02(b) of the Fee Ordinance and Section 10-4.803 of the Mining Ordinance)

2.4-21 Ensure that each mining operation adheres to approved haul routes and approved ingress/egress locations. Ensure through conditions of approval and other appropriate mechanisms that mining operations are funding their fair share of roadway and related impacts, including both one-time improvements and ongoing operations and maintenance, along approved haul routes and in proximity to approved operation ingress/egress locations.

CHAPTER 3.0 WATER RESOURCES ELEMENT

3.1 INTRODUCTION

Present Conditions

Cache Creek is located within a groundwater basin that is generally defined by the Coast Range to the west, the Sacramento River to the east, the Colusa Basin watershed to the north, and the Putah Creek watershed to the south (see Figure 7~~8~~). ~~The Groundwater Technical Study (Todd, 1995) estimates that the basin has a storage capacity of approximately 5 million acre feet.~~ Groundwater~~Groundwater~~ quality is hard to very hard in this area, due to above average concentrations of constituents such as calcium, and magnesium. Boron is the constituent of most concern, brought down by tributaries of Cache Creek from saline springs in the Rumsey Hills.

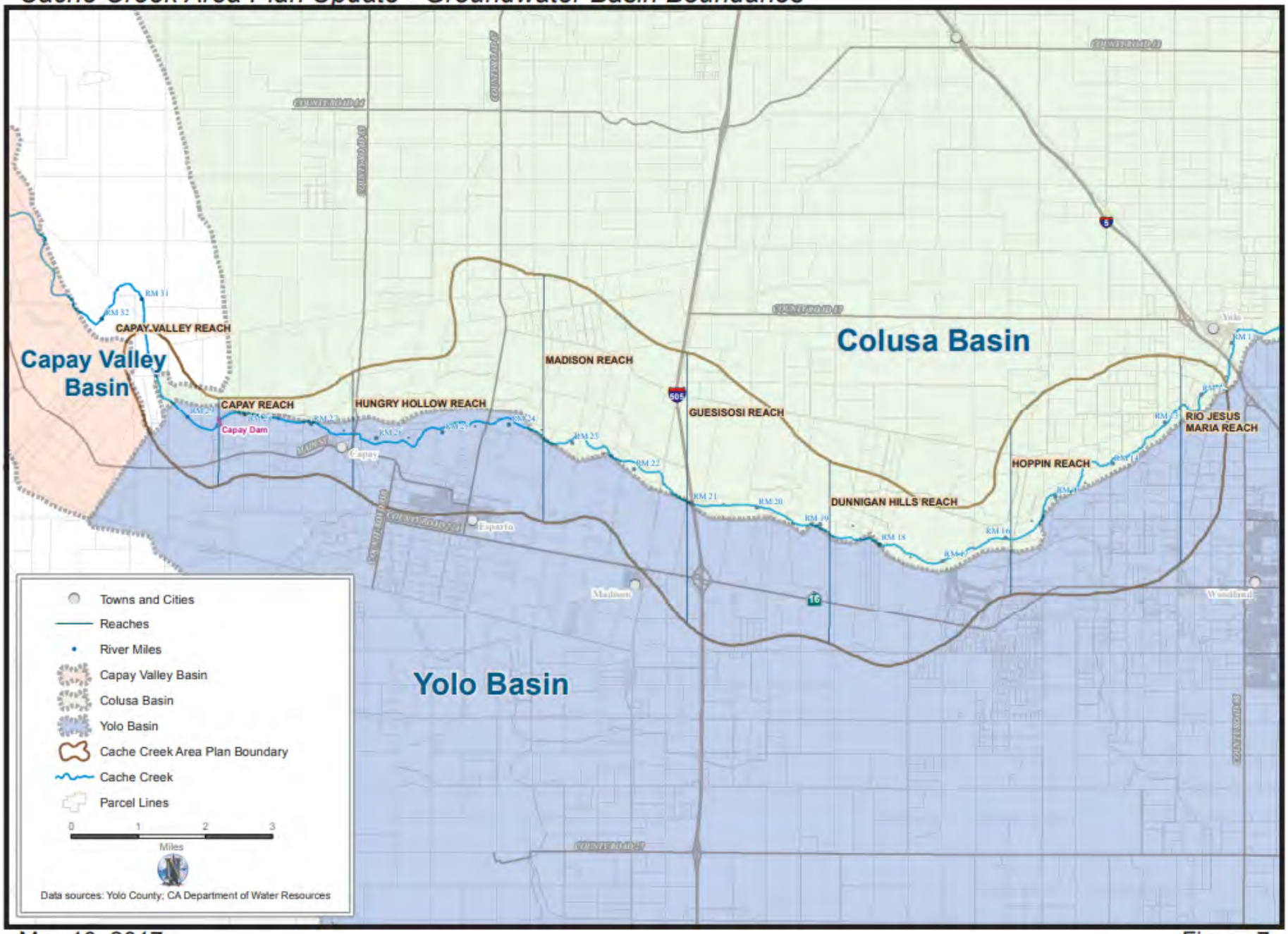
The single most significant factor affecting groundwater storage is rainfall. Groundwater levels drop rapidly due to increased pumping and decreased recharge during times of drought, and rise back up again after wet periods. Secondarily, the most important change has been the development of irrigated agriculture. The diversion of surface water has reduced in-channel recharge and increased the levels of total dissolved salts in the aquifer, while the widespread use of well pumping has altered groundwater flow patterns and cycled the water through the aquifer more rapidly. Both activities have significantly increased the consumption of water for crops, which has resulted in an overall lowering of the water table from levels seen at the turn of the century. Nevertheless, the basin has a substantial capacity for recovery.

OCMP Vision

In order to make the best use of the recovery capacity of the groundwater basin, the Yolo County Flood Control and Water Conservation District (YCFCWCD) retains their canals and ditches in an unlined condition. ~~is currently preparing a plan to establish a series of water recharge, storage, and conveyance facilities. It is expected that this plan will utilize some of the off-channel excavations proposed pursuant to the OCMP as recovery facilities. By doing so, t~~The YCFCWCD seeks~~intends~~ to place more water into the aquifer to increase the availability of groundwater. In the past the YCFCWCD has expressed interest in experimenting with groundwater recharge using reclaimed mining pits. ~~The potential environmental impacts of these activities will be addressed by the YCFC&WCD as a part of their planning process.~~ Given the interrelated goals of both agencies, the County will continue to work with the YCFCWCD in coordinating ~~our~~ efforts to protect and improve both the quantity and quality of groundwater supplies.

The 1995 Technical Studies noted that ~~the availability of~~ groundwater data, especially as related ~~with regards~~ to water ~~quality~~quality~~,~~ ~~i~~ was poorly developed and unorganized. Having a sufficient body of information ~~i~~was identified as crucial for~~when~~ monitoring development that extends into the groundwater table, such as off-channel excavations. The OCMP addresses this deficiency by requiring that each off-channel mining operation maintain a detailed monitoring program, to include both groundwater level measurements and water quality tests the number and extent of

Cache Creek Area Plan Update - Groundwater Basin Boundaries



May 10, 2017

Figure 7

which vary as mining and reclamation activities progress. As a part of the 2018 update, the data that has been generated through the program ~~In addition, the County will designate appropriate staff to~~was assembled and analyzed ~~the data that is generated, so that~~ for long-term trends and influences. ~~It is anticipated that t~~This effort has~~could~~ served as the basis for ~~creating~~ specific recommendations ~~for inclusion in the County's overall~~regarding water resource management policies that are included as a part of this update.

Although water is a vitally important issue to both agriculture and urban areas, the OCMP acknowledges that other resources have a need for water that must be accommodated. Open bodies of water, such as those that may result from wet pit mining allowed under the OCMP, may~~would~~ lose ~~an estimated 2,341 acre feet of~~ water regularly~~annually~~ due to evapotranspiration. This amount can be ~~substantially~~ reduced through the avoidance of shallow water depths of less than ten feet. However, these same shallow depths provide the necessary conditions for recreational uses and wetland habitat. The OCMP encourages the balanced use of wet pits, so that they may serve the variety of goals expressed for Cache Creek.

Other areas around the state use permanent lakes reclaimed from mined lands in a number of diverse ways in order to benefit the local economy and/or the environment. Recreational parks have been established at Oak Lake in Stanislaus County and at Shadow Cliffs Park, near Livermore in Alameda County. Also near Livermore, is the "Chain of Lakes" which links several former mine pits into a groundwater storage and recharge facility. Surface water is conveyed through a series of gravel excavations that have been converted into sealed settling basins, before it is introduced into a permanent lake for recharge into the aquifer. The Chain of Lakes is operated by the Alameda County Water District. Sand and gravel operators along the San Joaquin River, near Fresno, have reclaimed their mines into permanent lakes and wetland habitat. These lands have been dedicated to the Department of Fish and Wildlife~~Game~~, which operates them as wildlife areas, with limited tours in the springtime for bird watchers and other enthusiasts. The habitat areas are located immediately next to the San Joaquin River Parkway and serve to increase the amount of open space along the riparian corridor. Through careful management, permanent lakes created through mining can be used in a variety of beneficial ways.

There is a tremendous potential for off-channel excavations to provide a range of opportunities for Cache Creek, including the groundwater management, recreation, and habitat uses discussed above. As an example, in December of 2014 the Board of Supervisors formally agreed to partner with the Yolo Habitat Conservancy to allow certain reclaimed properties that will be dedicated to the County as a part of the CCAP to be included in the countywide HCP/NCCP. It is important, however, to ensure that proposed mining pits are designed so as not to adversely affect the existing aquifer flow patterns, water table levels, or groundwater quality for the surrounding area. Backfilled pits can create localized obstructions to groundwater flow, while pits located too close to nearby wells may serve as a conduit for potential contamination. In order to address these issues, the OCMP includes specific performance standards for protecting both groundwater and surface water quality and quantity. These standards apply both to the off-channel mining operations, as well as their reclaimed uses.

3.2 GOALS

3.2-1 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.

3.2-2 Maintain the quality of surface and groundwater so that nearby agricultural productivity and available drinking water supplies are not diminished.

3.2-3 Improve the gathering and coordination of information about water resources so that effective policy decisions can be made.

3.3 OBJECTIVES

3.3-1 Encourage the development of a Countywide water management program, including the participation of the YCFCWCD and other relevant agencies, to coordinate the monitoring and analysis of both surface and groundwater supplies.

3.3-2 Ensure that off-channel surface mines are operated such that surface and groundwater supplies are not adversely affected by sedimentation, lowering of the water table, and/or contamination during mining and reclamation.

3.4 ACTIONS

3.4-1 Consider evaporation losses as an acceptable result of exposed groundwater, when reclaimed wet pit areas are included as a part of proposed riparian habitat or recreational facilities.

3.4-2 Coordinate with the Yolo County Flood Control and Water Conservation District in developing an integrated groundwater recharge plan for Cache Creek, in order to increase the available groundwater supply for municipal and agricultural uses.

3.4-3 Include a groundwater monitoring program as a condition of approval for any surface mining and reclamation operation that proposes off-channel excavations that extend below the groundwater level. The monitoring program shall require regular groundwater level data, as well as a water quality monitoring program based on a set of developed standards. (See Section 10-4.417 of the Mining Ordinance)

3.4-4 The ~~Yolo~~ County ~~Community Development Agency~~ shall designate staff and resources to coordinate with City, County, regional, State, and Federal agencies that may wish to receive copies of data generated from the off-channel mining operations regarding water resource issues, including the towns of Capay, Esparto, Yolo, and Madison, the City of Woodland, the Yolo County Flood Control and Water Conservation District, the Water Resources Agency, the Central Valley Regional Water Quality Control Board, and the California Department of Water Resources. The data base shall be expanded to include other relevant sources of information, so that it can be used as reference material for

regional water planning efforts. A data inventory shall be developed including a data management system with formal protocols.

3.4-5 Require that surface mining operations demonstrate that proposed off-channel excavations extending below the groundwater level will not adversely affect the producing capacity or water quality of local active wells. (See Sections 10-4.412, 10-4.417, 10-4.427, and 10-4.502(b)(2) of the Mining Ordinance)

CHAPTER 4.0 FLOODWAY AND CHANNEL STABILITY ELEMENT

4.1 INTRODUCTION

Present Conditions

Cache Creek has changed extensively due to human influences over the past 100 years. Generally speaking, by the time in-channel mining was eliminated from the program in 1996, that portion of the creek within the planning area hads become narrower, faster, and deeper~~, and carries more water~~ than it wasdid a century or more ago. Some reaches of the creek wereare less than a third as wide as they once were, in some cases a difference of nearly a half-mile. Overall, the area of Cache Creek hads decreased by over two-thirds, from 5,000 acres in 1905 to just under 1,600 acres in 1996~~today. As the creek narrows, the speed of the water becomes faster, increasing the capacity for erosion. The increased stress within the channel has stripped riparian vegetation from the streambed, which has led to further destabilization. As a result, the streambed has lowered 25 feet in some reaches. Not surprisingly, the structure of Cache Creek is out of balance with the flows and sediment loads that it presently carries.~~ These changes created higher shear stress conditions in Cache Creek that resulted in accelerated erosion, streambed lowering, and loss of riparian vegetation.

Nearly 10.4 million tons of sand and gravel have been deposited in Cache Creek throughout the CCRMP area since 1996, resulting in increased channel bed elevations and development of more diverse channel conditions and establishment of more riparian vegetation. However, the channel is still significantly narrower than it was a century ago and elevated shear stresses now interact with more sediment than was the case in 1996. Cache Creek in 2017 is still in the process of establishing a dynamic equilibrium since the cessation on in-channel commercial mining.

Most of the 10.4 million tons of deposition occurred during the extreme high flows in the winter of 1997/1998. Subsequent high flow years have both eroded and deposited sand and gravel from reaches of Cache Creek. Stated more simply, really big floods add sand and gravel to Cache Creek, while normal winter high flows move sand and gravel from reach to reach. These conditions have resulted in areas of Cache Creek with high rates of channel change and others with much more stable conditions.~~A complex series of factors have led to this condition. In the mid-1800s, extensive grazing and forest clearing removed large areas of the native riparian vegetation, and allowed for the expansion of farmland onto former floodplains. At the same time, canals began diverting water from the creek for irrigation, preventing regular flows from gradually reshaping the creek. At the turn of the century, levees were constructed to protect farms and residents along the creek, thus narrowing the channel. Bridges were built to allow for the transportation of goods and people, creating severe bottlenecks in the creek. Gravel mining increased around bridge construction sites, to provide the necessary concrete. After World War II, additional levees were constructed to protect the gravel mining operations, further restricting the creek. Agriculture expanded out further to fill in the lands opened up by the new levees. Similarly, gravel mining also expanded significantly, both in depth and in the area mined. Throughout the last several decades, in-stream mining quickly outstripped the annual sand and gravel replenishment of Cache Creek, leading to a severe sediment deficit and intensifying the scour created by other factors.~~

Assuming the prohibition of~~If all~~ in-stream mining ~~was prohibited,~~ and assuming the creek was left to its own devices, long-term simulations in the 1995 Technical Studies indicated that a more balanced condition would likely be achieved over the next 100 years. However, the continued diversion of surface water during the irrigation season would inhibit the development of a stable low-flow channel that would encourage stabilization of the creek. In addition, Cache Creek is a dynamic~~violent~~ watercourse, subject to extreme~~severe~~ flood events, that make the establishment of a natural equilibrium ~~under these circumstances~~ difficult given other constraints along the creek. ~~As a result, it is likely not possible to return the stream to its condition of 100 years ago. There may be an opportunity, however, through careful management, to help the river repair itself and achieve a more stable existence.~~While the net deposition of sand and gravel since 1996 has been nearly four times greater than anticipated in 1996, restoring Cache Creek to the condition it was in over one hundred years ago (prior to mining) is not possible. However, the past twenty years have shown that careful management, even the mostly passive management that has been possible since the program's inception, helps the river repair itself and achieve a condition closer to a natural equilibrium.

OCMP Vision

In 1996, the County realized that the assumptions behind the regulation of in-channel and off-channel mining in the 1970s, 1980s, and early 1990s had become obsolete. Adoption of the CCAP replaced those obsolete concepts (e.g. theoretical thalweg[6]) with a policy framework and regulations better suited to community values, modern theories of environmental regulation, and the physical characteristics of the creek system. These concepts included a data-based delineation of in-channel/ versus off-channel areas and a Streamway Influence Zone (see Figure 3,4, and 6), which depicts the extent to which the creek affects off-channel land uses.

In addition, the CCAP included a conceptual configuration for the reshaping of Cache Creek, to maintain flood flow conveyance capacity and decrease channel instability. The boundaries of this new configuration were described originally in the 1995 Technical Studies as the Test 3 Run Boundary, which was created from the results of a HEC-6 sediment transport computer model that assumed the banks of Cache Creek would be smoothed to remove abrupt width and slope changes, and that the channel sections upstream and downstream from the bridges along Cache Creek would be hardened to allow smooth flow transitions into and out of the narrow bridge openings. Few channel modifications of this type have been completed since 1996, and hardening of the bridge transitions did not occur. However, the analysis of changes and trends in geomorphic, hydraulic, and biological conditions since 1996 has shown that nearly 10.4 million tons of sediment have deposited in Cache Creek since in-channel mining was halted and more natural channel slope and sinuosity has been restored in some reaches. In addition, native riparian forest and other habitat types have increased along much of the channel, while flood flow conveyance capacity has remained mostly unchanged.

[6] The theoretical thalweg is the middle of the deepest part of the channel of a river or stream; the bottom of the low-flow channel. The County's mining regulations in effect prior to the CCAP allowed in-stream mining down to this depth. The purpose of the thalweg was to minimize streambed lowering as a result of in-channel mining.

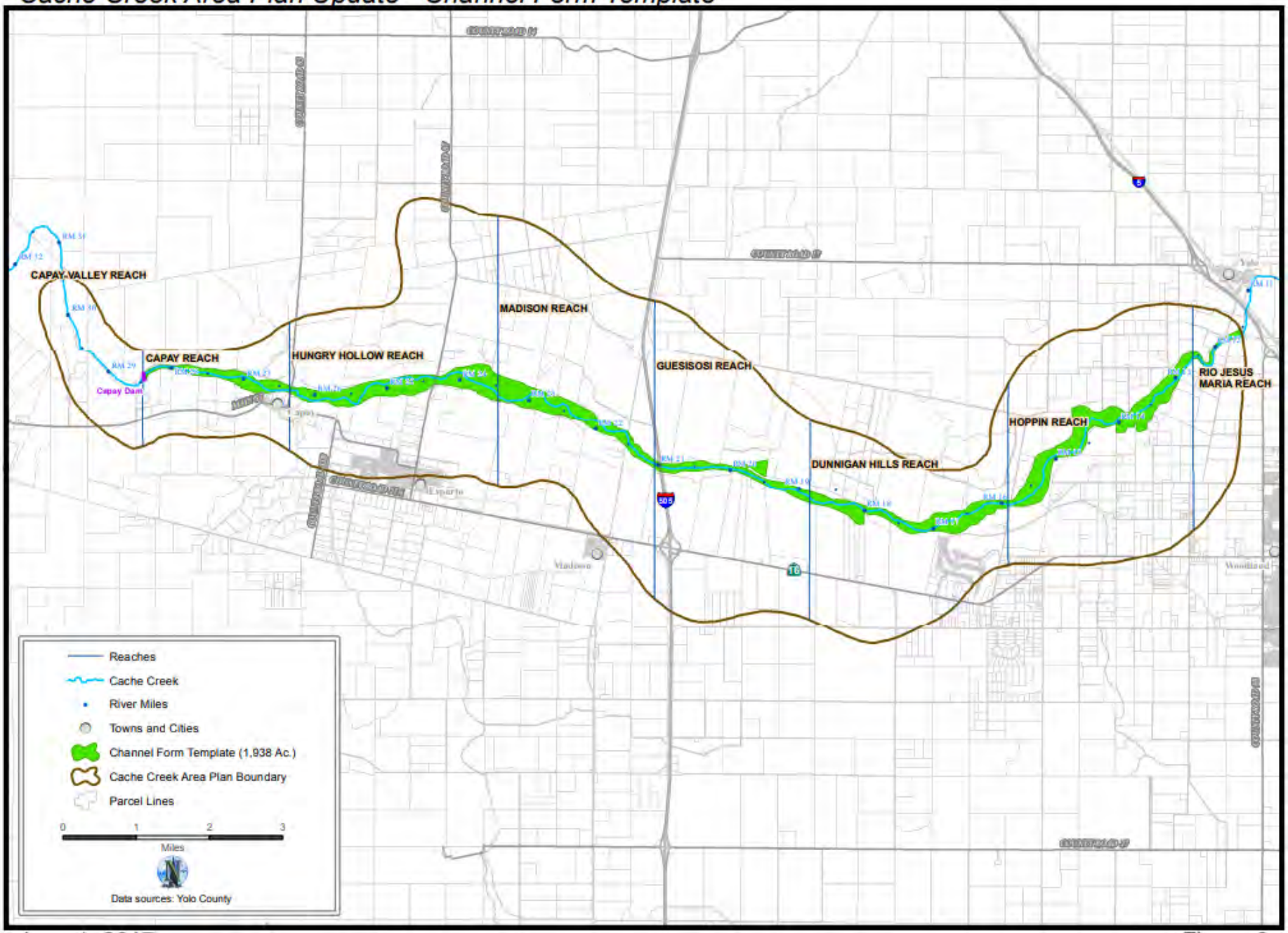
Based on this more data-driven understanding of Cache Creek and the new hydraulic modeling of the creek conducted as part of the 2017 Technical Studies, the Test 3 Run Boundary has been updated and renamed Channel Form Template to better reflect the intent (see Figure 8).

As the OCMP~~Off-Channel Mining Plan~~ and CCRMP are reviewed~~amended~~ every ten years, updates will be undertaken~~the concepts outlined above will also be updated~~, based on the information provided by ~~recommended~~required monitoring programs. These updates will account for the habitat restoration and channel stabilization efforts that have been completed~~expected to occur~~, as well as for property owners who chose~~do~~ not ~~wish~~ to participate in the reconfiguration of Cache Creek. Thus, the in-channel boundary and the Channel Form Template~~Test 3 Run~~ will continue to ~~likely~~ shift in the future as Cache Creek continues to adjust to aggradation occurring under current management practices, especially after extreme peak flows~~a result of constantly changing channel conditions~~. Limited ~~amounts of~~ flooding and erosion are beneficial, in that healthy riparian systems require a dynamic balance between erosion, deposition, and periodic inundation to maintain vegetation~~plant~~ regeneration and succession. Therefore~~Subsequently~~, the OCMP is not intended to be a static document, but a dynamic~~fluid~~ one, evolving to meet the shifting conditions~~dynamic needs~~ of the creek in the future. Nevertheless, the in-channel boundary and Channel Form Template~~Test 3 Run~~ ~~provides initial starting points for~~ shall guide management~~repairing~~ of the creek to achieve a natural equilibrium state, and ~~, and~~ the design of ~~any~~ off-channel excavations shall ~~must~~ take this ~~effort~~ into account.

Channel stability issues are more thoroughly discussed in the CCRMP~~Cache Creek Resources Management Plan~~, which deals specifically with the regulation of in-channel uses. However, the two plans overlap within the Streamway Influence Zone~~Boundary~~. The 1995 Technical Studies estimated that Cache Creek may meander as much as 700 feet in a single flood event, threatening to erode levees and significantly changing the geomorphology of the creek through uncontrolled pit capture. In recognition of the interrelationships between off-channel and in-channel uses within this area, the OCMP requires that off-channel excavations be set back a minimum of 700 feet, unless a~~n~~ project-specific, site-specific 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 is 200 feet from the existing channel bank.

While measures can be included as a part of individual mining applications to provide protection against pit capture and channel instability, the presence of mining and other land use activities within the historical floodplain (as defined by the streamway influence zone~~boundary~~) affect the creek's configuration. In order to offset these effects and as a further means of ensuring that there is a continuing effort to protect off-channel mining areas from 100-year floods, each mine operator shall participate in channel maintenance and reshaping activities through conditions on their operations and shall contribute to the funding of the CCIP through the payment of per-ton fees.

Cache Creek Area Plan Update - Channel Form Template



June 1, 2017

Figure 8

The OCMP contains provisions for requiring that mining operations be protected from the 100-year flood, and ensuring that program activities do not increase flood risk affecting other land use activities~~ are also designed to be protected from floods~~. ~~More importantly, the channel capacity of Cache Creek through the planning area has increased significantly over the past fifty years. While this has partially relieved the surrounding lands from flooding, especially the Hungry Hollow area, it has also increased the amount of water being sent downstream, thus creating new problems for the community of Yolo and the City of Woodland. In~~ response~~response to this concern, t~~The OCMP does allow~~provide~~ for engineered features to facilitate~~that allow for the~~ controlled flooding of off-channel mining pits during peak flows that~~events which~~ exceed the 100-year flood. Although such measures c~~w~~ould reduce flow rates~~volume~~ in the early stages of a flood, they may~~would~~ not be sufficient to resolve flooding downstream. As pointed out in~~According to~~ the 1995 Technical Studies, the creek is severely restricted by the bridges and levees located at Interstate 5 and eastward. The OCMP does not directly~~is not able to~~ address flooding issues ~~outside of the planning area,~~ due to a lack of jurisdiction. Solutions must be developed on a regional basis, taking the entire riparian system of Cache Creek into consideration. The County strongly supports the inter-agency approach to resolve flooding and other regional issues related to Cache Creek.

4.2 GOALS

4.2-1 Recognize that Cache Creek is a dynamic ~~stream~~ system that naturally undergoes gradual and sometimes sudden changes during high flow events.

4.2-2 Coordinate land uses and improvements along Cache Creek so that the adverse effects of flooding and erosion are minimized.

4.2-3 Establish a more natural channel floodway capable of conveying floodwaters without damaging essential structures, causing excessive erosion, or adversely affecting adjoining land uses.

4.3 OBJECTIVES

4.3-1 Support ~~Provide~~ flood management objectives as required to protect the public health and safety.

4.3-2 Recommend actions to create~~Determine an appropriate flood capacity standard for Cache Creek, so that the extent of~~ a more stable channel configuration and flood flow conveyance capacity consistent with regional flood management programs~~may be designed~~.

4.3-3 Support regional efforts to protect against~~Ensure no measurable increase in~~ downstream flood impacts on communities such as Yolo and Woodland.

4.4 ACTIONS

4.4-1 Recognize that mining activities located within the streamway influence zone~~boundary~~, as described in the 1995 Technical Studies, have a potential to influence the flow characteristics of the creek. In response, mine operators shall be required to participate in funding the Cache Creek Improvement Program (CCIP), as outlined in the CCRMP, and implement the CFT as described in Section 10-4.429 of the Mining Ordinance. Funding may be provided through a per ton surcharge or other mechanism to support activities that stabilize the creek channel. (See Section 8-11.02(a) of the Fee Ordinance)

4.4-2 Evaluation of proposed significant modifications to the floodplain, including off-channel mining areas, shall be made with reference to the channel improvement strategy and guidelines presented in the Cache Creek Resource Management Plan. This will ~~-~~ensure a consistent frame of reference and allow consideration of such modifications in the context of an integrated creek management program. (See Section 10-4.429(d) of the Mining Ordinance)

4.4-3 Work with other entities,~~agencies having jurisdiction over Cache Creek~~ including, but not limited to, the YCFCWCD~~Yolo County Flood Control and Water Conservation District~~, the U.S. Army Corps of Engineers, the California Department of Resources, ~~State Reclamation Board, and~~ the Federal Emergency Management Agency, landowners, and regional groups in developing a coordinated solution for managing ~~flood events throughout~~ 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.)

4.4-4 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 Damage Ordinance and ensuring that new development complies with the requirements of Flood Hazard Development Permits~~the State Reclamation Board~~. (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.)

4.4-5 Allow for the design of spillways or other engineered features that provide controlled flooding of off-channel mining pits during events which exceed the 100-year flood. (See Sections 10-4.413, 10-4.416, and 10-4.502(a)(3) and (b)(8) of the Mining Ordinance.)

4.4-6 Enter into a Memorandum of Understanding with the YCFCWCD~~Yolo County Flood Control and Water Conservation District~~ 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~~established consistent with the~~

~~Technical Studies~~, in order to create a stable low-flow channel and allow for the natural revegetation of in-channel areas along the creek, where appropriate.

4.4-7 ~~Update the Flood Insurance Rate Maps affected by channel maintenance activities and levee improvements within the planning area every ten (10) years. The County Floodplain Administrator shall file for a Letter of Map Revision with the Flood Emergency Management Agency in order to initiate the update.~~Deleted.

4.4-8 Establish a setback from the banks of Cache Creek outside of which off-channel mining project must remain. The setback fulfills the following policy objectives:

■Sufficient buffer to protect off-channel mining areas from lateral river adjustments;
■Additional buffer against failure for un-engineered levees and natural streambanks;
■Adequate area in which to maneuver heavy equipment during an emergency;
■Access for continuing maintenance activities;
■Flexibility for future channel sculpting during implementation of the CCIP; and
■Available space for revegetation and habitat restoration efforts along the creek.
■Potential future corridor for recreational activities
■Consistent and uniform treatment of channel banks throughout the OCMP planning area

(This was incorporated into Section 10-4.429(d) of the Mining Ordinance. The setback also creates a potential future corridor for recreational activities and allows for consistent and uniform treatment of channel banks throughout the OCMP planning area.)

CHAPTER 5.0 AGRICULTURAL RESOURCES ELEMENT

5.1 INTRODUCTION

Present Conditions

As described in Chapter 2, the planning area largely consists of lands zoned A-~~1~~ N (~~General Agriculture~~Agricultural Intensive) and A-~~P~~ X (Agricultural ~~Preserve~~Extensive)~~ (see Figure 6)~~. Agricultural uses are an allowed use in these zones and are not subject to any discretionary approval by the County~~Community Development Agency~~, except where building permits or property adjustments and divisions are required.

~~The off-channel mining applications being processed under the OCMP contain a total of 2,123 acres, of which some 1,523 acres is currently under a Williamson Act contract. Approximately 988 acres of area mined is expected to be reclaimed to agriculture, the majority of which (542 acres) would be to row crops. Tree crops, such as poplars, which would provide bio-mass fuel, paper pulp, and lumber are proposed on 401 acres, while 45 acres would be reclaimed to pasture. Another 3,427 acres owned or controlled by the aggregate producers would not be disturbed and would remain in farming. The tree crops would also serve as a buffer between the mined and/or agricultural areas, to protect riparian habitat from pesticide spraying, noise, dust, and activity.~~ Since its inception, the CCAP has required 1:1 mitigation for permanent loss of prime farmland, with no separate mitigation requirements for non-prime land or for land impacted on an interim basis during the term of the mining but ultimately reclaimed to agricultural uses. There are a variety of reasons for this including:

- The County's mining program is already one of the most stringent in the state and exceeds the requirements of SMARA for operator obligations.

- The CCAP imposes burdens for the protection of open space and agriculture on the mining industry that exceed those imposed on other land uses.

- The CCAP includes a requirement for special community benefits called "net gains" that include the provision of property dedications and easement for/on reclaimed mining sites, restored habitat, trail connections, and related community enhancements (see OCMP Action 2.4-7).

- Integral to the program is a focus on managing lower Cache Creek resources to balance and maximize multiple competing goals.

- Each operator along Cache Creek has an agreement with the County to fund the entire program plus specified open space and restoration activities through the payment of fees for each ton of aggregate sold (see OCMP Action 2.4-16).

- The program is already structured to minimize the geographic impacts of mining by limiting it to a defined area and by encouraging the removal of the full depth of available resources.

- The program includes an obligation to develop and implement the Cache Creek Parkway Plan.

- The program includes, and has since 1996, special protections and monitoring of groundwater and recharge, management of the creek for the protection of adjoining land uses, and permanent protection of reclaimed lands as open space or agriculture.

- Aggregate mining is a unique land use in that it is interim by definition – permits are limited to a maximum term of 30-years (Mining Ordinance Section 10-4.426) and reclamation to a beneficial end use (agriculture, open space, or habitat) is not only required, but ensured through special bonding called financial assurances.

- Aggregate mining is also unique in that it is the only land use that can result in the creation of net new prime agricultural land through reclamation.

- Aggregate mining is an important economic development engine for the County.

In order to address inconsistency between the County Code and the CCAP as related to mitigation for agricultural conversion, this CCAP Update expands the obligation to mitigate beyond prime farmlands to also include unique farmlands, and farmlands of statewide significance consistent with the requirements of CEQA. This update also requires mitigation equivalent to but not necessarily identical to the increased ratios in the County Code. It applies the same 3:1 and 2:1 mitigation ratio requirements from Section 8-2.404 of the County Code that apply elsewhere throughout the County, but allows new mining applications to demonstrate equivalency (down to a minimum 1:1 base mitigation ratio) to the applicable ratio using several options identified in Section 10-5.525 (Farmland Conversion) of the Reclamation Ordinance. These options include improvements to farmland quality, permanent easements, dedication of additional net gain lands beyond those already required under the CCAP program, and/or other benefits consistent with the Cache Creek Parkway Plan that would not otherwise already be achieved through agreements and obligations of the program.

OCMP Vision

The OCMP acknowledges Yolo County's continued commitment to the preservation of agricultural land and farming activities. Strict performance standards governing the reclamation of farmland and maintenance of the A-~~1~~ N and A-~~P~~ X Zones throughout the planning area have been included to further protect agricultural uses. However, the goal of the OCMP is to balance the various resources that coexist along Cache Creek. In order to expand opportunities for habitat, recreation, and groundwater recovery, the CCAP acknowledges that some agricultural land will be lost.

This approach is consistent with the scope~~intent~~ of the Williamson Act, which not only includes the preservation of agricultural land, but applies to the preservation of wildlife habitat, recreation space, and open space as well. The OCMP~~Off-Channel Mining Plan~~ is intended to provide for the full range of land uses along Cache Creek, of which agriculture is a component. In fact, in terms of acreage, agriculture will remain the primary activity within the ~~23,174 acre~~ planning area.

~~As discussed elsewhere, the OCMP contains provisions for revising the A-P (Agricultural Preserve) Zone to allow for commercial surface mining.~~ In order to maintain as much land as possible within agricultural preserves, the Williamson Act contract may continue through both the mining and reclamation phases, as long as the proposed project is consistent with the applicable Williamson Act findings. This would especially apply to projects which would~~plan to~~ mine the majority of a parcel under contract, but ~~plan to~~ continuously reclaim as mining occurs so that a portion of the parcel is always in agricultural production. Temporary conservation easements on undisturbed farmland may offset the impacts of mining on contracted land, until successful reclamation is achieved.

In accordance with both the Williamson Act and other applicable State regulations~~the State Reclamation Regulations~~, the OCMP requires that any surface mining operation on contracted property that includes prime farmland, which proposes agricultural uses in its proposed reclamation plan, must return the land to ~~a~~ agricultural productive capacity similar to that before mining commenced. Non-prime agricultural land shall be reclaimed so it is capable of producing crops commonly grown in the area at an economically sustainable rate.

5.2 GOALS

5.2-1 Improve soil and water resources so that a diverse agricultural economy, supporting a variety of crops and products, is maintained.

5.2-2 Ensure the compatibility of land uses adjacent to agricultural operations, so that productivity is not adversely affected.

5.2-3 Recognize that although multiple uses are encouraged along Cache Creek, agriculture remains the primary economic activity in the region.

5.3 OBJECTIVES

5.3-1 Encourage the preservation of prime and important farmland along Cache Creek, while giving consideration to other compatible beneficial uses, such as groundwater storage and recharge facilities, surface mining operations, riparian habitat, and public recreation. Reclamation of agricultural lands to other uses, however, is discouraged wherever agricultural reclamation is feasible.

5.3-2 Ensure the use of appropriate agricultural management practices in reclaiming mined areas to productive farmland.

5.4 ACTIONS

5.4-1 Maintain the existing A-~~1~~ N (~~General Agriculture~~Agricultural Intensive) or A-~~P~~ X (Agricultural ~~Preserve~~Extensive) base ~~Z~~zoning within the off-channel planning area, except where it serves as a holding area for growth within the community~~ies~~ spheres of Capay, Madison, Esparto, and Yolo, so as to preserve the agricultural character of the region.

5.4-2 ~~Revise the A-P (Agricultural Preserve) Zone to allow for the operation of surface mining on contracted land, in accordance with the provisions of the California Land Conservation (Williamson) Act. The primary purpose of the Williamson Act is to preserve open space, including agriculture, scenic areas, wildlife habitat, and recreational uses.~~ Deleted

5.4-3 Provide for the protection of farmland within the planning area, including mined and reclaimed farmland, through the use of agricultural preserves and/or conservation easements. (Each approved mining permit under the CCAP contains a condition of approval that states: "Upon the completion of reclamation within each phase of the project, the operator shall enroll each reclaimed parcel in Williamson Act contracts, and provide long-term easements or an equivalent (e.g. deed restrictions) to protect open space and agriculture.")

5.4-4 Ensure that all proposed surface mining operations that include reclamation to agricultural uses comply with the requirements of the Land Conservation (Williamson) Act and the State Mining and Geology Board Reclamation Regulations.

5.4-5 Assess property taxes on permitted mineral reserves within contracted land, in order to account for the increased value of the property and ensure that the tax incentives associated with agricultural preserves are not misapplied.

5.4-6 Encourage off-channel excavation operations to access additional aggregate reserves through the use of wet pits, in order to minimize the amount of agricultural land disturbed by mining.

5.4-7 Ensure maximum public benefit from reclaimed uses by establishing the following priority to be used to assess the adequacy of proposed reclamation plans:

1. Reclamation to viable agricultural uses;
2. Reclamation to native habitat;
3. Reclamation to public recreation/open space uses;
4. Reclamation to other uses.

CHAPTER 6.0 BIOLOGICAL RESOURCES ELEMENT

6.1 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 may reduce the effects of climate change.

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

~~T~~As a result, ~~t~~The 1995 Technical Studies~~y~~ estimated that only 200 acres of riparian forest remained within the present-day CCAP area. Substantially more willow scrub and herbaceous (non-woody) vegetation was estimated to have remained, yet large stretches of the creek were devoid of any significant vegetation. However, 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 at the time of the Technical Study. In 1995, there was an estimated 353.8 ac. of riparian forest, 589.0 ac. of oak woodland, 529.9 ac. of willow scrub, and 113.5 ac. of herbaceous vegetation within the CCAP area. As of 2015, there was an estimated 372.5 ac. of riparian forest, 593.9 ac. of oak woodland, 259.6 ac. of willow scrub, and 1835.5 ac. of herbaceous vegetation within the CCAP 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.

~~remain and those are threatened by a number of factors, including: the narrow stream channel, lack of surface water, and lowered groundwater levels, and in-stream mining. The narrow width of the channel increases the velocity of the streamflow, making it difficult for young plants to keep from being washed away. 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, while in-stream mining directly removes the vegetation in order to remove the gravel underneath. In addition, the invasion of aggressive non-native species, such as the giant reed and tamarisk, has inhibited the recovery of diverse native habitat.~~

The most extensive riparian forests are presently 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 can be found. Bands of dense willow/mulefat scrub line the channel, interspersed with patches of herbaceous wetland 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.~~The most extensive riparian habitat is located at the western end of the planning area, upstream of Road 85, between the community of Capay and the Capay Dam. This reach still contains large areas of oak woodlands and mixed forest, as well as long stands of willow scrub. A lesser, though still significant concentration of riparian habitat is located between Interstate 505 and Road 94B. This reach is characterized by small areas of alternating willow thickets and riparian forest, in close proximity to the creek.~~ Much of the remaining off-channel riparian habitat consists of ~~scattered segments of "orphaned" forest~~isolated forest patches, small ~~clusters~~ stands of oak trees ~~left by agriculture~~in agricultural fields and rangelands, and willow scrub with some taller trees growing along the canals and ditches that run through the area. Notably, substantial recovery of woody vegetation has occurred in historically-mined areas, including off-channel sites, within the Guesisosi and Dunnigan Hills reaches, and to a lesser extent within the Hungry Hollow and Madison reaches.

Numerous threats to the remaining vegetation were identified in the 1995 Technical Studies~~y~~, including: the narrow creek channel, lack of surface water, invasive plant species, and lowered groundwater levels. These factors are still present in 2017~~6~~. 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. The latter two factors are especially relevant for vegetation within the off-channel lands that characterize the OCMP area.

However, additional threats to native vegetation have arisen over the past two decades, including: 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. 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 species have established along lower Cache Creek, including Ravenna grass, perennial pepperweed, tree of heaven, nonnative thistles, tree tobacco, Himalayan blackberry, 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. 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.

Wildlife and invertebrate species are also important components of the biological resources present within the OCMP area. The 1995 Technical Studies presented an overview of native species that were known to be present within the CCAP area, as well as those species that could be present given suitable habitat. Some of these species, such as Western pond turtle (*Actinemys marmorata*) and bank swallow (*Riparia riparia*) are associated with either the creek itself or adjacent habitat, and thus not present or potentially present within the OCMP area. Notable species that were present or potentially present within the OCMP area at the time of the 1995 Technical Studies included: Swainson's hawk (*Buteo swainsoni*; present), tricolored blackbird (*Aegelaius tricolor*; present), Cooper's hawk (*Accipter cooperi*; potentially present), yellow warbler (*Stenophaga petechia*; potentially 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*).

As of 2017, notable species observed within the OCMP area include Swainson's hawk, tricolored blackbird, yellow warbler, bald eagle (*Haliaeetus leucocephalus*), burrowing owl (*Athene cunicularia*), golden eagle (*Aquila chrysaetos*), loggerhead shrike (*Lanius ludovicianus*), long-eared owl (*Asio otus*), Northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), ring-tailed cat, bobcat (*Lynx rufus*), mountain lion (*Puma concolor*), American badger (*Taxidea taxus*), nonnative wild pig (*Sus scrofa*), Valley elderberry longhorn beetle, California red-legged frog (*Rana aurora halophilus*), and potentially Sacramento Valley red fox (*Vulpes vulpes* spp. *patwin*). More than 100 additional common species of snakes, lizards, birds, mammals, and invertebrates also occur across the OCMP area.

Threats to native wildlife and invertebrates include nonnative competitors and predators such as brown-headed cowbird (*Molothrus ater*) and bullfrog (*Rana catesbeiana*); 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; and, establishment and spread of invasive plant species that reduce habitat value.

OCMP Vision

Although the OCMP cannot reestablish the diversity and extent of riparian habitat that existed 150 years ago, there is substantial opportunity for improving the degraded situation that occurs today. Habitat enhancement and restoration projects should be implemented within the OCMP area to complement similar projects within the CCRMP area in order to conserve and protect biological resources within the CCAP area. Habitat enhancement refers to removal of invasive species, woody debris, and other impediments to the recovery and persistence of biological resources. Habitat restoration includes both passive and active restoration; the former is essentially equivalent to habitat enhancement in that impediments to habitat recovery are removed, while the latter is generally a more-intensive form of management in which native seeds or seedlings are planted after site preparation and invasive species removal. Habitat enhancement and restoration within the OCMP area should complement similar efforts within

the CCRMP by creating larger patches of functional habitat, reducing fragmentation, increasing patch connectivity, increasing habitat complexity, and providing a habitat buffer around the CCRMP to reduce invasion by nonnative species. All of these outcomes directly benefit native vegetation, wildlife, and invertebrate species. Habitat enhancement and restoration within the OCMP area should also be consistent with the goals, objectives, and conservation guidelines of the County's Habitat Conservation Plan and Natural Community Conservation Plan (Yolo HCP/NCCP).

Habitat enhancement efforts should focus on control of invasive species, including but not limited to arundo, barbed goatgrass, Himalayan blackberry, Italian thistle, medusahead, milk thistle, Ravenna grass, tamarisk, perennial pepperweed, tree tobacco, and yellow starthistle. These species are abundant throughout the CCRMP and OCMP areas, but tend to co-occur with native vegetation and are thus more common in more vegetated reaches such as Capay, Dunnigan Hills, and Hoppin. The spatially-explicit framework for invasive species mapping, treatment, and monitoring within the CCRMP area should be implemented within the OCMP area to maximize cost-efficiency and success. Areas treated for invasive species should be replanted with native species to minimize re-invasion and improve habitat. Invasive species treatment efforts should focus on County-owned properties, but also include off-channel mining pits that are in the process of revegetating, properties with large remnant populations of arundo and/or tamarisk, and other locations as deemed appropriate.

Habitat restoration efforts should focus on County-owned properties to ensure site access and to align with the ongoing development and implementation of the Cache Creek Parkway Plan. For example, significant restoration opportunities exist for the Capay Open Space Park (native grassland and riparian forest), the Millsap property (oak woodland and riparian forest), the Wild Wings property (native grassland and oak woodland), the Woodland Reiff property (native grassland and oak woodland), and the Correll-Rodgers property (riparian forest). Former off-channel mining sites, such as those within the Dunnigan Hills and Hoppin reaches, are also good candidates for habitat enhancement and restoration. In general, restoration efforts should be prioritized within the~~Primary restoration efforts should be focussed on~~ area generally located between Interstate 505 and Road 94B, which is a fairly stable and gaining reach of the creek. A gaining reach is one where the streambed is lower than the surrounding groundwater elevation, which allows water to seep from the aquifer and collect in the channel, thus providing a consistent source of surface water. Depth to groundwater is an important factor to consider for all restoration projects implemented within the OCMP area, since groundwater depth will largely dictate the pool of species that can be used in restoration. ~~The Moore Dam Sanctuary, owned and managed by the YCFC&WCD, represents a prime example of the natural recovery potential on this portion of Cache Creek, and supports an impressive array of wildlife species.~~

~~A second area of emphasis is Zone 1, located downstream of Road 94B. This stretch of the creek has several reclaimed off-channel mining excavations that have not revegetated. In addition, although the reach upstream of Road 85 is heavily vegetated, much of the plant cover consists of tamarisk which is preventing the establishment of more diverse native species. Initial efforts at eradicating this specie should be concentrated in this reach.~~

It is anticipated that much of the habitat restoration work along Cache Creek will~~ould~~ continue to~~would~~ be undertaken by ~~volunteer organizations, such as the HAWK (Habitat Alliance and Wildlife Keepers) program, Americorps, and the~~ Cache Creek Conservancy~~.~~ staff and contractors.~~.~~ In addition, reclamation plans for off-channel mining along Cache Creek call for several hundred~~273~~ acres of habitat to be created, largely consisting of wetland areas adjoining permanent ponds and lakes. Perhaps the most critical component in ensuring the success of these efforts is the maintenance of a year-round flow in Cache Creek. The availability of water is presently driven by the demands of irrigated agriculture, leaving little surface water for habitat restoration. ~~Much of the water that flows down Cache Creek, however, is not retained within the County. The Yolo County Flood Control and Water Conservation District has plans for utilizing this unclaimed portion and is currently in the process of applying for additional allocation rights for water from Cache Creek. As part of a separate program, the district intends to create conditions to percolate the additional water into the aquifer, thereby making more groundwater available. A portion of this increased water supply could be reserved for maintaining a summer surface flow in Cache Creek, thus enhancing the potential for riparian habitat restoration.~~

In addition to riparian habitat enhancement and restoration, provisions should be made for wildlife and invertebrate species ~~along the creek,~~within the OCMP area~~,~~ especially special-status species known to be present or historically present~~cies of concern~~, which include ~~such as the~~ Swainson's~~Swainsons~~ hawk~~,~~, white-tailed kite, Northern harrier, tricolored blackbird, American badger, and ~~the~~ Valley e~~E~~lderberry l~~L~~onghorn b~~Elderberry Longhorn B~~eetle~~, burrowing owls, the tri-colored blackbird, and the bank swallow~~. Where populations of these and other special-status species already exist, mitigation measures must be incorporated into approved project to ensure that their habitat is maintained. Mitigation measures should be developed in conjunction with the State Department of Fish and Wildlife~~Game~~, and/or the U.S. Fish and Wildlife Service, and should be consistent ~~complement~~ with the goals, objectives, and conservation guidelines of the ~~County's Habitat Management Plan~~Yolo HCP/NCCP. Wherever possible, restoration and reclamation projects should ~~also~~ incorporate features to conserve existing populations and to encourage the establishment of new populations.

6.2 GOALS

6.2-1 Provide for a diverse, native ~~natural~~ ecosystem within the ~~off-channel planning area~~OCMP area ~~along Cache Creek,~~ that is self-sustaining and capable of supporting native wildlife and invertebrate species.

6.2-2 ~~Create~~ Seek to enhance, expand, and connect existing patches of ~~a continuous corridor of riparian, woodland, and wetland~~ native woody and herbaceous vegetation to reduce habitat fragmentation and support similar efforts with the CCRMP area. ~~to link the foothill habitats of the upper watershed with those of the settling basin~~.

6.2-3 Integrate climate-smart adaptation strategies to increase resiliency and prepare for future uncertainty

6.3 OBJECTIVES

6.3-1 Conserve and protect existing wildlife habitat within the ~~off-channel planning~~OCMP area to the greatest extent possible.~~.~~

6.3-2 Establish conditions to encourage the development of a variety of natural habitat types in the off-channel areas along the Cache Creek channel.

6.3-3 Adopt standards for planning, implementing, and monitoring habitat revegetation and restoration projects in order to ensure consistency, to maximize success and account for future uncertainty due to climate change.

6.3-4 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.

6.4 ACTIONS

6.4-1 Coordinate with appropriate entities, such as the Cache Creek Conservancy, YCFCWCD, Yolo Resource Conservation District, California Department of Fish and Wildlife~~Game~~, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers to ensure that proposed habitat restoration projects are consistent with or complement the Off-Channel Mining Plan and the Parkway Plan. Restoration plans shall complement the preservation and enhancement measures in the Yolo County Natural Communities Conservation Program (HCP/NCCP).

6.4-2 Provide for the development of shallow areas along reclaimed off-channel excavations that extend below the groundwater level, to create wetland and riparian habitat. See Section 10-5.529 of the Reclamation Ordinance.

6.4-3 ~~Require that all proposed off-channel surface mining operations that will result in the short-term loss of row crop agricultural lands and/or grasslands, obtain a 2081 Permit from the California Department of Fish and Game. The 2081 Permit will provide mitigation for the temporary effects of mining on Swainson's hawk habitat.~~ Mitigate for short-term and long-term loss of agricultural land and habitat pursuant to applicable County requirements and CEQA.~~in effect at the time.~~ Comply with the Yolo HCP/NCCP for species covered by that Plan. For non-covered species for which impacts may occur, ensure compliance with appropriate measures in site-specific biological assessments required under the OCMP and CCRMP, in compliance with the State Fish and Game Code, Migratory Bird Treaty Act, and other applicable regulations, plans and programs, as appropriate.

6.4-4 ~~Promote the eradication of invasive species, such as the giant reed and tamarisk, in areas where they inhibit the growth and development of native riparian vegetation, especially in the area upstream of the Capay Bridge (County Road 85).~~ Implement strategic mapping, prioritization, treatment, and monitoring of invasive plant species including arundo, barbed goatgrass, Himalayan blackberry, Italian thistle, medusahead, milk thistle, Ravenna grass, tamarisk, perennial pepperweed, tree tobacco, yellow starthistle, especially in areas where they inhibit the growth and development of native riparian vegetation.

6.4-5 Include provisions to enhance habitat for special-status species in restoration components of reclamation plans, where feasible. (See Section 10-5.523 of the Reclamation Ordinance.)

6.4-6 Encourage cooperative agreements and voluntary conservation easements with private landowners to preserve, protect, and enhance the biological resources of Cache Creek, and to implement provisions of the OCMP.

6.4-7 Restore riparian habitat throughout the planning area, wherever appropriate. However, revegetative efforts should be primarily focused on implementing recommendations described in the Technical Studies and the subsequent Restoration Recommendations incorporated into the CCRMP. Integrate off-channel and in-channel revegetation plans with the goal of reducing fragmentation by expanding and connecting existing habitat patches, optimizing restoration planning in alignment with the Parkway Plan, and supporting future funding proposals. Ensure that elements such as soils, drainage, slopes, and habitat types complement one another in a coordinated effort.

6.4-8 Include native-planted hedgerows and other vegetated buffers between restored habitat areas and adjoining farmland, in order to minimize the potential for riparian areas to serve as harbors for predators and insect pests. These~~Said~~ buffers will also reduce the noise, dust, and spraying generated by agricultural operations, in addition to providing valuable pollinator resources that in turn could enhance agricultural production.

CHAPTER 7.0 OPEN SPACE AND RECREATION ELEMENT

7.1 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). ~~Currently, there are no public recreational facilities located within the planning area along Cache Creek. Although~~ In the upper reaches of Cache Creek the County also owns ~~there is a County~~ parks near Rumsey and Guinda, and several campgrounds and whitewater rafting areas near Bear Creek~~., the lower portions of the creek are predominantly characterized by agricultural and mining uses.~~ Due to the high proportion of land in private ownership, access to the creek is ~~severely~~ limited. ~~In-stream mining has compounded the problem, often creating an unattractive landscape where the use of heavy equipment generates noise and hazards for visitors to the creekbed.~~

Other ~~Existing~~ recreational facilities~~areas~~ within the immediate area~~planning~~ 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. ~~None of these facilities provide direct access to the creek or the adjoining environs.~~

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, 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.

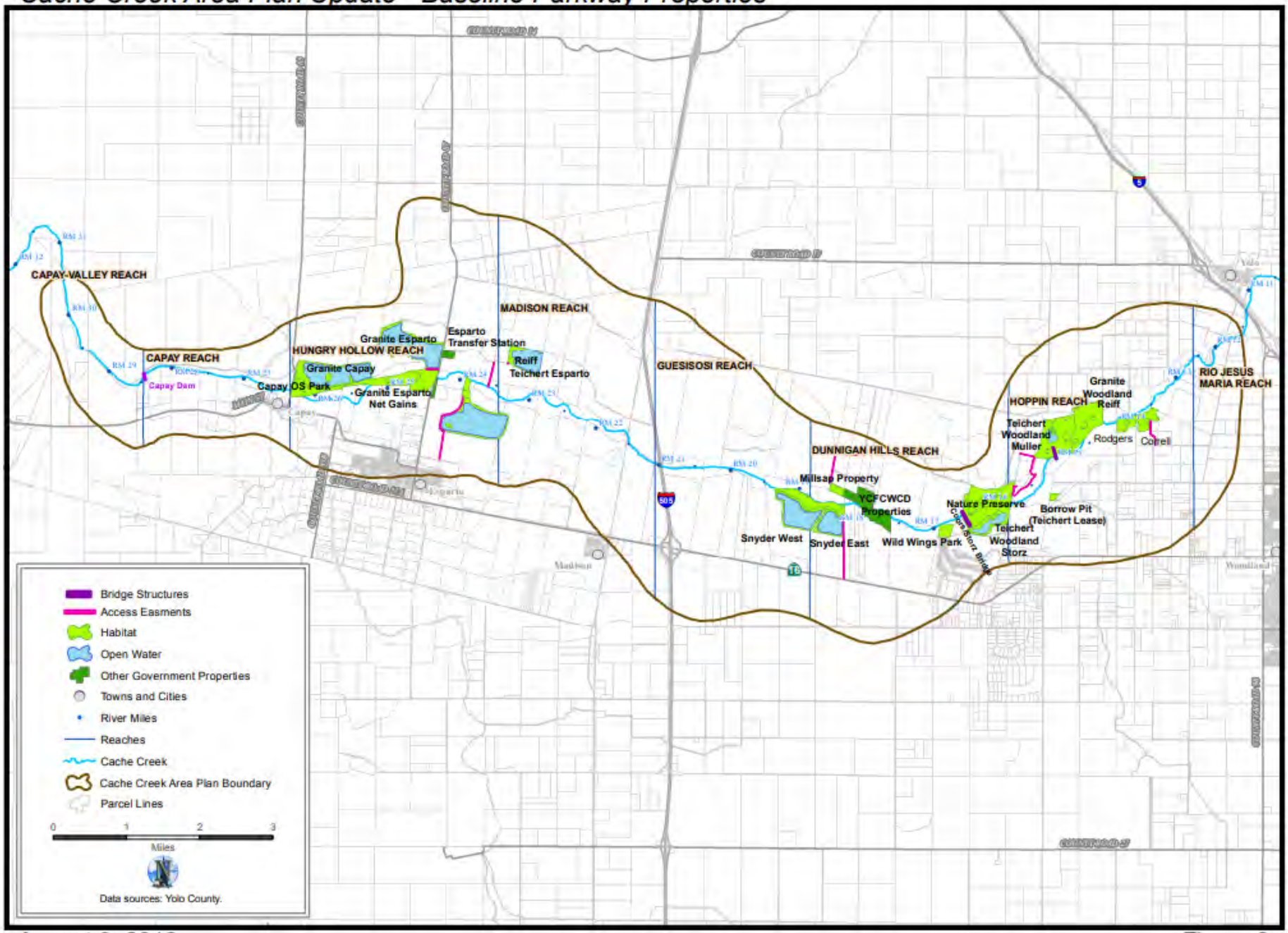
Pursuant to the vision and direction articulated below, the County in 2016 started the process of drafting the Cache Creek Parkway Plan which will provide a detailed vision and integrated management plan for: 1) properties currently under public ownership and managed by the County pursuant to the CCAP;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

OCMP Vision

The OCMP and the CCRMP, which together comprise the CCAP~~Cache Creek Area Plan~~, address~~deal~~ with the "first phase" of creek management - restabilizing the~~and~~ creek channel and restoring the riparian habitat. The "second phase" ~~should~~ involves a more detailed analysis of the recreational needs of Yolo County and the resulting environmental effects that recreation would have on surrounding properties. ~~It is recommended that~~The OCMP anticipates that the County will pursue an integrated system of trails and recreational areas along Cache Creek, similar to facilities~~efforts occurring~~ along the San Joaquin and American Rivers, although at a less intensive scale of development. ~~as part of the subsequent interactions in planning for Cache Creek. Future~~ The County has undertaken a more detailed analysis of the recreational needs of Yolo County which will include consideration of resulting environmental effects (including land use conflicts) of a regional parkway. Development of the~~a~~ Cache Creek Parkway Plan will~~ould~~ allow for community involvement and provide specific proposals as well as projected costs for developing and maintaining a parkway system. It will~~ould~~ also be valuable for addressing creek ownership and access issues. ~~more directly, as these issues become more relevant over time.~~

The OCMP ~~Off-Channel Mining Plan~~ has designated six general areas for recreational use (see Figure 9~~10~~). These areas are conceptual in nature. ~~and will serve to set aside land for future consideration as recreational areas.~~ They are~~Sites were~~ located at regular intervals of approximately two miles along Cache Creek, in order to function as trailheads or staging areas for a ~~possible~~ future system of bicycle, pedestrian, and/or horse paths. These r~~R~~ecreational areas are located~~were also sited~~ on lands included for 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 was an important consideration, to ensure that the public would have adequate access to the sites and the trail system. Also, a variety of sites were included in order to provide a range of potential recreational uses. The three easternmost areas are~~would be~~ located near reaches proposed for habitat restoration, and may be suitable for passive activities, such as hiking, birdwatching, horseback riding, and educational exhibits. The three westernmost sites are~~will be~~ located in areas of the creek that contain more open space and may be appropriate for intensive activities, including non-motorized boating, catch and release fishing, bicycle riding, and picnic grounds. Active recreational uses in the western sites, would directly benefit the nearby communities of Madison, Esparto, and Capay, and could serve as a future basis for expanded tourism opportunities and economic benefits.

Cache Creek Area Plan Update - Baseline Parkway Properties



August 9, 2018

Figure 9

7.2 GOALS

7.2-1 Preserve scenic resources within the off-channel planning area.

7.2-2 Establish a variety of outdoor recreational and educational opportunities along Cache Creek for use by the public.

7.2-3 Ensure the compatibility of recreational facilities with surrounding land uses, in order to minimize adverse impacts.

7.3 OBJECTIVES

7.3-1 Continue to ~~Include~~ use ~~of~~ the "Open Space" zoning designation for the area located within the creek's existing banks and other areas where resource management and habitat protection is warranted.

7.3-2 Create a continuous corridor of natural open space along the Creek and provide for limited access, at specific locations, to recreational and educational uses.

7.3-3 Discourage the encroachment of incompatible uses into areas surrounding designated recreation sites.

7.3-4 Design recreational facilities to maintain the privacy and security of surrounding property owners.

7.4 ACTIONS

7.4-1 Continue to s~~S~~olicit the dedication of restored habitat areas and/or recreational areas to the County or to an appropriate land trust such as the Cache Creek Conservancy, in order to provide continuous open space along the creek.

7.4-2 Develop a future Cache Creek Parkway Plan~~Open Space and Recreation plan~~ for Cache Creek, 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.

7.4-3 Identify ~~specific~~ locations for future recreational and educational uses along Cache Creek. Sites shall be located at regular intervals throughout the planning area, with access to a County Road or State Highway. The location and operation of such facilities shall be compatible with surrounding residences, agriculture, mining, and wildlife habitat.

7.4-4 Designate dedicated recreational areas as "Open Space" in the OCMP~~Off-Channel Mining Plan~~.

7.4-5 Coordinate with the U.S. 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 planning area. (The BLM Cache Creek Coordinated Resource Management Plan was adopted in December 2004.)

7.4-6 Ensure that active surface mining operations are located away from public areas, such as County roads, residences, and sites reclaimed to recreational uses, unless adequate mitigation is provided. (See Section 10-4.429 of the Mining Ordinance.)

7.4-7 Design and manage recreational sites so that trespassing, vandalism, and other undesirable activities are discouraged. Suggested options include controlled and gated access, day-use fees, and volunteer docents to patrol the site.

ACKNOWLEDGEMENTS

2019 Update

Updated acknowledgement will be inserted here

1996 Plan

For the last twenty years countless hours have been spent by elected officials, citizens, landowners, aggregate operators, farmers, agency representatives, staff members, and consultants trying to agree on an appropriate balance between the use of natural resources and the sustainability of the riparian environment. From those efforts a mountain of studies have been produced, providing a ready source of technical data upon which policy and planning may be based. We will have foregone an opportunity and failed as stewards of the land if we do not translate this knowledge into a plan of action. The past debate concerning Cache Creek has been vital in assuring the investigation of a wide variety of alternatives, but there is a general feeling that the coordinated management and planning for the creek must begin now. Further delays would not appreciably improve our understanding of the creek. Continued inaction, however, will allow the existing degraded conditions to worsen. It is time to concentrate less upon our differences and to devote our energies towards achieving the goals that we have in common. Through these efforts, and the tremendous resiliency of our natural resources, Cache Creek will once again achieve the vitality that makes it one of the County's unique treasures.

1996 Yolo County Board of Supervisors

Mike McGowan	District 1
Helen Thomson	District 2
Tom Stallard, Chair	District 3
Betsy Marchand	District 4
Frank Sieferman	District 5

1996 Yolo County Planning Commission

Bob Heringer	District 1
Barbara Webster	District 2
Harry Walker	District 3
Jim Gray, Chair	District 4
Henry Rodegerts	District 5
Nancy Lea	At Large
Kent Lang	At Large

1996 Key Members of Staff

Roy Pederson	County Administrative Officer
David Morrison	Resource Management Coordinator

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 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.

Funding for this project was provided by R.C. Collet, Solano Concrete Company, Syar Industries, and Teichert Aggregates.

♦ ♦ ♦

To find out more about this Plan, or the process through which it was developed and updated, please contact:

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Exhibit 3 to Attachment B

DRAFT ***REVISED*** ~~***FINAL***~~
CACHE CREEK RESOURCES
MANAGEMENT PLAN (CCRMP)
for LOWER CACHE CREEK

Yolo County

Updated _____, 2019
Amended July 23, 2002
Adopted August 20, 1996

~~**Revised August 15, 2002**~~

DRAFT REVISED ~~FINAL~~

CACHE CREEK RESOURCES MANAGEMENT PLAN for LOWER CACHE CREEK

Yolo County

Updated _____, 2019 (Board Resolution x.x)
Amended July 23, 2002 (Board Resolution 02-130)
Adopted August 20, 1996 (Board Resolution 96-132)

~~Revised August 15, 2002~~

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NOTE TO READER: Figures and cover will be replaced with new clean updated graphics. Photographs will be added and the plan will be reformatted to make it more attractive and user friendly.

CHAPTER 1.0 INTRODUCTION

~~On June 14, 1994, the Yolo County Board of Supervisors adopted draft goals and objectives for the Cache Creek Resources Management Plan (CCRMP) and Off-Channel Mining Plan (OCMP). In doing so, the Board recognized that the creek is integrally bound to the environmental and social resources of the County, including drainage, flood protection, water supply and conveyance, wildlife habitat, recreation, aggregate mining, and agricultural production. As such, development of these plans is based on the key assumption that the creek must be viewed as an integrated system, with an emphasis on the management of all of Cache Creek's resources, rather than a singular focus on any one issue. The CCRMP and OCMP establish a number of goals to assist in this overall management, balancing a diverse range of concerns within the overriding vision of enhancing the variety of resource needs for the region.~~

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~~stream~~ 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 ~~being~~ used to power mills and irrigate nearby fields.

Several ditches were constructed to divert water from Cache ~~c~~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 postwar 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 expandedgrew 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 highlymost-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-1970shas been attempting to resolve issues related to Cache Creek for over twenty years. 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 nose 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. Widening through increased meandering was also determined to

~~be a result of in-stream mining, although the consultants thought that natural processes might have also played a role.~~

Several of the recommendations described in the Woodward Clyde report were~~have been~~ incorporated into the CCRMP, including; the construction of sills, check dams, and jetties within the channel, to reduce the potential or erosion~~; limiting the amount and depth of aggregate extraction, to minimize scour;~~ 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~~e~~ early report advised that aggregate mining should be encouraged ~~along the banks and~~ 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~~stream~~. 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~~ir~~ EIR, Environ also analyzed~~discussed~~ 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~~suggested~~ that the County reexamine its policy with regard~~s~~ 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~~stream~~ 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~~A-P (Agricultural Preserve) Zone~~ 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);

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~~f~~ 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 of 1994. These findings formed the foundation for the goals and objectives of the CCRMP~~Cache Creek Resources Management Plan~~.

Cache Creek Area ~~Resources Management~~ 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 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 August 20, 1996 (Board Resolution 96-132), underwent a focused update 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 of 1994, the Board of Supervisors adopted a framework of goals and objectives for the CCRMP[1]. The document ~~adopted a comprehensive outlook that was reflected in overall goals, which were~~was based on the key premise~~assumption~~ 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 objectives were adopted for each of the elements, with suggested policies for their implementation.

A work schedule was also approved by the Board in~~during the~~ June 1994 ~~meeting~~, 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~~can~~ be made of the creek's ~~present~~ 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.

~~The framework provided a working outline for development of both the OCMP and the CCRMP. Portions of the framework, such as the cultural landscape element, did not easily lend themselves to specific implementation. Similarly, some of the objectives, such as those requiring certain percentage increases in types of habitat, were not supported by the Technical Studies and have therefore been modified or eliminated. The conceptual framework was intended to be a guide for development of the CCRMP, subject to the conclusions of the Technical Studies. Staff has followed the intent of the framework as closely as possible in developing this plan and balancing the diverse resource needs of the Cache Creek area.~~

[1] The Yolo County Cache Creek Resources Management Plan (CCRMP) was adopted August 20, 1996 with an update 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.

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~~stream~~ 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 1979 In-Channel Boundary**~~

~~The existing boundary for defining the Cache Creek channel was adopted in 1979, as a part of the Interim In-Channel Mining Regulations for Yolo County (see Figure 1). The extent of the channel was determined primarily based on those portions of the creek where erosion and deposition had occurred, excluding any areas of land being converted to agriculture. The desires of local landowners were also taken into consideration with defining the channel boundary. Within this~~

~~area, commercial mining is allowed with approval of the appropriate permits, zoning, and a reclamation plan. In-channel excavation is also restricted by the "theoretical thalweg," a maximum depth established to minimize streambed lowering.~~

~~**Figure 1.** 1979 Regulatory In-Channel Boundary~~

~~These early attempts at managing the creek were ahead of their time. Even today, few jurisdictions have established a maximum depth for in-stream mining. However, the Technical Studies indicate that these concepts have since outlived their usefulness. In some areas, levees have been constructed to separate mining and other uses from the channel. Other areas were defined much too broadly, so that "in-channel" mining occurred some distance from the active channel. Similarly, the design of the theoretical thalweg did not take the complex characteristics of Cache Creek into account. Elevations and slopes were inappropriate for the channel hydrology. New definitions must be used, to more accurately reflect the nature of the creek.~~

The CCRMP Channel Boundary

~~The Technical Studies provided recommended channel slopes and sinuosity rations to replace the theoretical thalweg, but no specifics were given as to how the channel should be defined.~~ 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 wasis the existing channel bank, as shown in recent aerial photographs taken of Cache Creek. The other wasis the 100-year floodplain boundary. There wereare several flood boundaries for Cache cCreek 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 variedy 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 wasis 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 areas within both the present channel bank and the 100-year floodplain were then merged, and the outermost limit of these areas became the channel boundary for the Cache Creek Resources Management Plan (see Figure 2).~~ The area within the channel boundary originally encompassed 4,956 acres.~~; however,~~ As recommended in the Program EIR for the CCRMP, the boundary was modified to eliminate anthe off-channel mining pit operated by Solano Concrete at the time.~~, as recommended in the Program EIR for the CCRMP.~~ In addition, the large floodplains located downstream of County Road 94B were deleted,~~. from the CCRMP boundary~~ because it was determined that t~~T~~hese farmlands didde 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 wasis defined by the ~~present~~ channel bank line, as delineated in the 1995 Technical Studies. The revised channel boundary, comprising 2,324 acres, servedes 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.

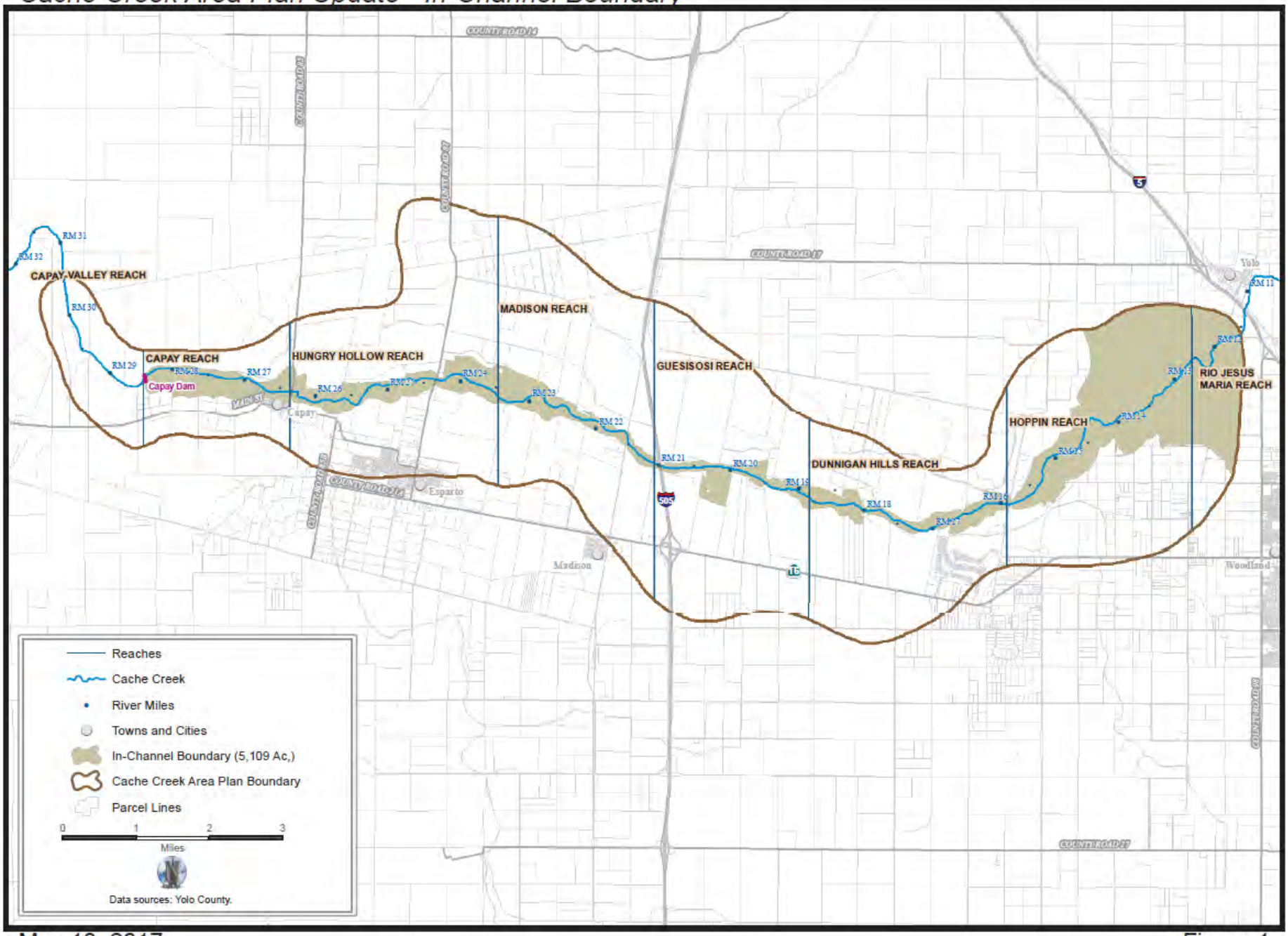
Although the CCRMP concentrates on those issues that most directly affect Cache Creek, management of the ~~stream must be done in~~creek requires a comprehensive approach~~manner~~ that recognizes the interrelationships between the creek and its regional setting. The Streamway Influence Zone~~Boundary~~ (see Figure 4~~3~~) 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 ~~Boundary ware~~ 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. ~~(Note: Staff at DOC have begun an update to this special report).~~ 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)~~in-channel area of the creek system, as defined above (see Figure 2)~~. The~~is~~ 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~~less than 3,000~~ acres or less than 17 percent of the total plan area are identified~~is being considered~~ for off-channel mining over the next fifty years.

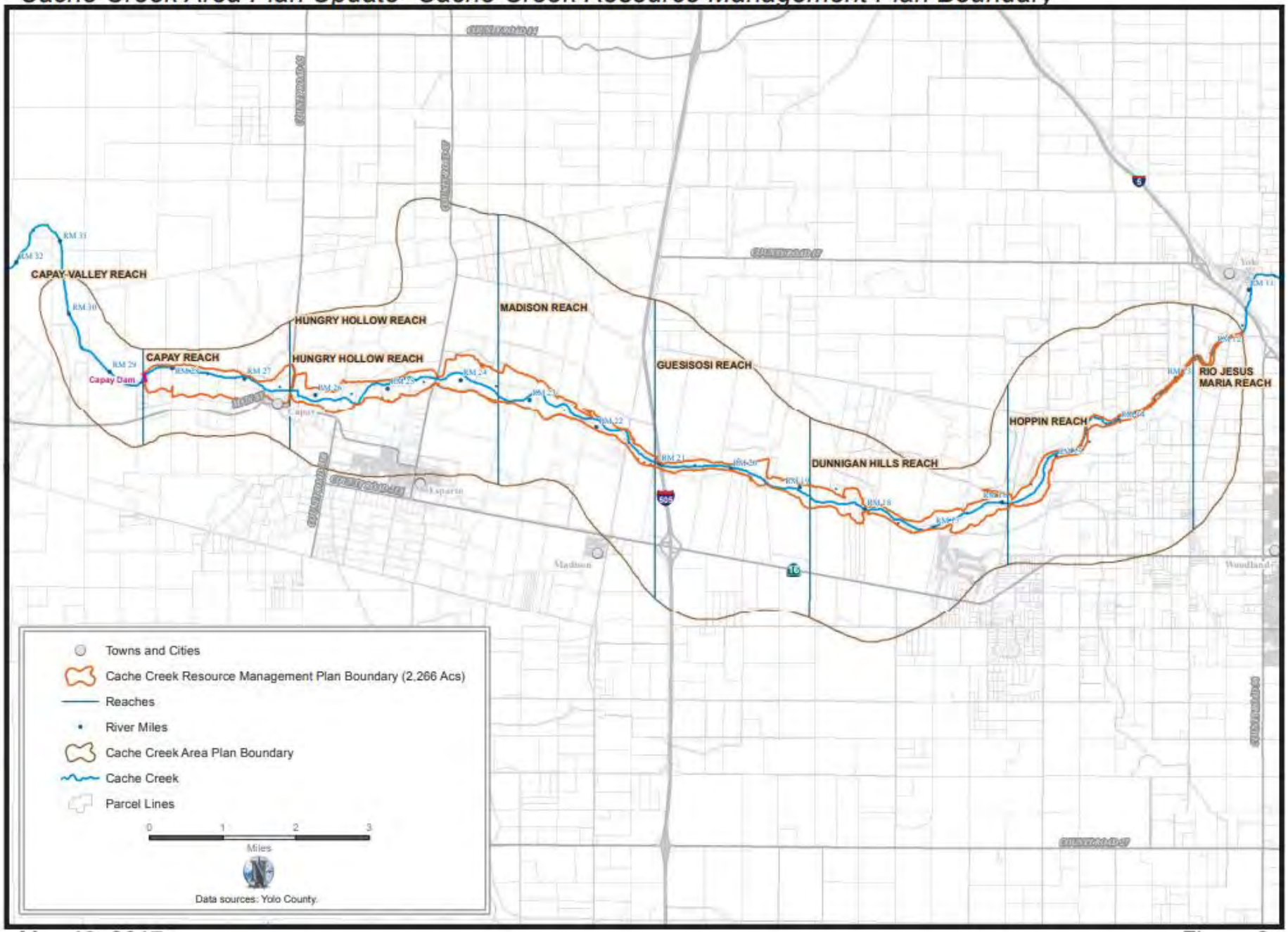
Cache Creek Area Plan Update - In-Channel Boundary



May 10, 2017

Figure 1

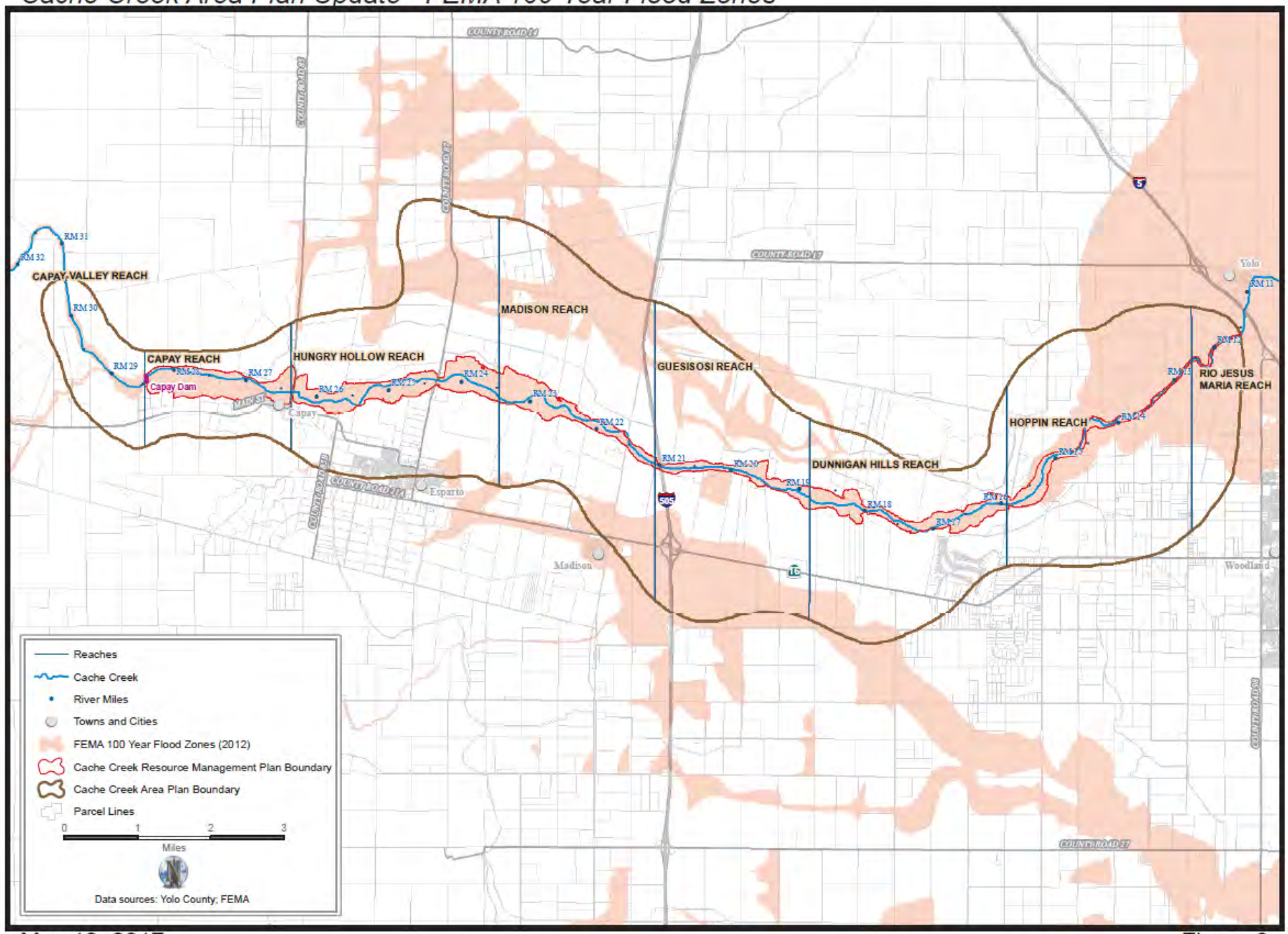
Cache Creek Area Plan Update -Cache Creek Resource Management Plan Boundary



May 10, 2017

Figure 2

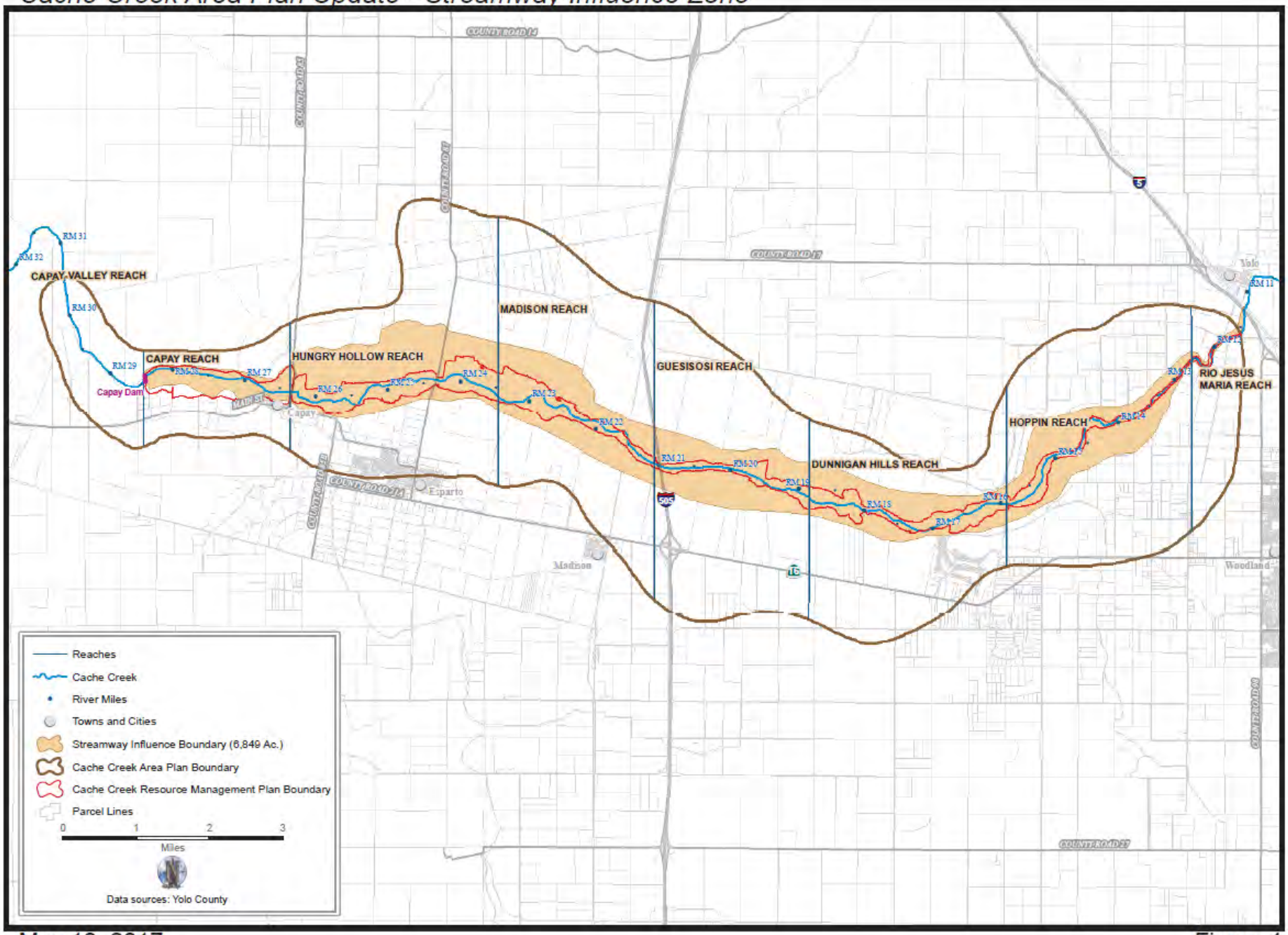
Cache Creek Area Plan Update - FEMA 100 Year Flood Zones



May 10, 2017

Figure 3

Cache Creek Area Plan Update - Streamway Influence Zone



May 10, 2017

Figure 4

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~~Cache Creek Resources Management Plan are~~: (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~~would be~~ prohibited with adoption of the plan, it was recognized that sand and gravel would~~will~~ still need to be removed from the channel in order to enhance channel stability. It was~~is~~ envisioned that future channel improvement projects would~~will~~ be directed by the County based on the review of the~~an~~ 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 ~~may~~ 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~~are~~ 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 fact, in-stream extraction is expected to~~

~~decrease as channel improvements are completed. More importantly, the CCRMP would prohibit future commercial mining within Cache Creek, and all existing mining permits within the active channel would be withdrawn.~~

~~If the CCRMP is found to be subject to SMARA, a single mining permit and reclamation plan covering the entire plan area would be requested from the Department of Conservation and administered by the County.~~ 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 ~~under this permit would likely be~~are required to post financial assurances to ensure restoration ~~reclamation~~ is performed in accordance with the approved plan.~~and offset a portion of the County's reporting fees to the State Department of Conservation.~~ They are also required to be compliant with the In-Channel Ordinance adopted in June 2008. ~~In return, this arrangement would streamline permit processing and allow for emergency work to be performed in a timely manner. Regardless of whether the CCRMP is subject to SMARA, a revised channel ordinance(s) will be required to implement the Cache Creek Resources Management Plan. The ordinance(s) will include standards to carry out the policies of the CCRMP, as well as provisions to ensure compliance with SMARA, if necessary. In order to avoid duplication and strengthen the County's enforcement abilities, the standards listed in the CCRMP will be deleted and subsequently incorporated into the in-channel ordinance, when it is prepared. This procedure is similar to that which occurred with the preparation of the OCMP and its implementing ordinances.~~

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. ~~As discussed earlier, t~~The CCRMP restricts ~~sand and gravel removal~~ extraction of material within the Cache Creek channel to those activities, which: maintain flood flow capacity;~~control,~~ protect existing structures,

infrastructure, and/or farmland; minimize~~prevent~~ bank erosion~~,~~; ~~or contribute to channel stabilization~~ 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~~during the previous year~~. 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~~is~~ required, as stated in Section 2762~~.~~(a) of SMARA. ~~Any f~~Future ~~proposed~~ 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. ~~Similarly, if the channel maintenance activities under the CCRMP are determined to be subject to SMARA, then Section 2774.3 of SMARA requires that the in-channel mining and reclamation ordinances also be reviewed by the State Mining and Geology Board, and certified as being in accordance with State policy.~~

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)

~~In its final report in 1977, the aggregate Resources Advisory Committee (ARAC) stressed the need for a coordinated approach to resource management, stating that "the adoption of a Countywide (resource) management policy and plan should maximize the benefits of an aggregate industry in the County." This recommendation lead to the adoption of Conservation Policies 34 and 35, as follows:~~

~~CON 34 Mineral Resources~~
~~Yolo County shall adopt a Minding Ordinance to implement these policies as they apply to mineral resources, including sand and gravel.~~

~~CON 35 Cache Creek~~

~~Yolo County shall adopt a Cache Creek Management Program for the carefully managed use and conservation of Cache Creek and its sand and gravel resource, its riverside environment, its relationship to ground and surface water characteristics and its value as a fishery and recreation resource.~~

~~In addition, the following General Plan policies are relevant:~~

~~CON 2 Yolo County shall foster conservation of its resources and avoid natural hazards by planning, encouraging, and regulating the development and use of these resources and the areas where they exist.~~

~~CON 5 In order to avoid conflict with this General Plan, as amended, or to avoid environmental hazards, Yolo County shall require the conservation of natural resources, in their development and managed utilization including:~~

- ~~Regulations of the use of land in stream channels and other areas required for the accomplishment of the General Plan; and~~

- ~~The location, quantity and quality of rock, sand, and gravel resources.~~

~~CON 6 Yolo County shall plan, encourage, and regulate to ensure that natural resources are maintained for their long term ecological values as well as for their more direct and immediate benefits.~~

~~CON 9 Yolo County shall ensure the protection, maintenance, and wise use of the State's natural resources, especially scarce resources and those that require special control and management.~~

~~CON 10 Yolo County shall plan, encourage, and regulate public and private agencies to prevent the wasteful exploitation, destruction or neglect of the State's resources.~~

~~OS 1 Yolo County shall preserve appropriate open space land through available means of land use controls, regulations, and advice or guidance and through coordination with other elements of this General Plan, as amended, and with other agencies.~~

~~OS 2 Yolo County shall use the Land Use Element policies, together with Specific Plans, zoning, use permits, site plan review, building permits, subdivision maps, the Agricultural Preserve-Land Conservation Act of 1965, assessment practices, coordination with the Soil Conservation Service and other available means to preserve all lands defined as Open Space.~~

~~OS 8 Recreation, bikeways, trails, and other public areas shall be integrated with open space plans and the provision of open space areas and corridors; and conformance with such plans shall be mandatory for all new development or redevelopment.~~

~~OS 9 Yolo County shall plan to maintain scenic highways and waterways or riverbank corridors or scenic value as part of its open space preservation program and shall use persuasion and regulation to that end.~~

~~OS 11 Yolo County shall safeguard existing and encourage additional areas of wildlife habitat as part of its open space preservation program.~~

~~REC 6 Development of riverfront recreation areas shall offer recreational facilities, visual aesthetics and open space amenities, while insuring access to the river for all residents.~~

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, ~~will~~ constitute the Cache Creek Area Plan (CCAP), which ~~will~~ provides the policy framework ~~necessary structure and policies~~ for implementing this~~a~~ 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 ~~all~~ 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~~Boundary~~ as defined in the 1995 Technical Studies, the CCRMP addresses all land and resources which bear a relationship to streamway planning along the creek.

~~*Time Horizon*~~

~~The Plan is based on 50- and 100-year projections of channel conditions, and provides for accelerating stabilization conditions projected to otherwise occur over a longer term. Due to the~~

~~continually changing nature of the creek, the Plan contains a policy to require that it be updated a minimum of every ten years.~~

Diagrams and Implementation Programs

The Plan contains appropriate diagrams and specific discussion regarding implementation under the ~~Cache Creek Improvement Program (~~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~~Technical Advisory Committee~~.

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 ~~encouragement~~ 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 ~~will~~ 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 ~~i~~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. ~~is presently governed by Chapter 3 of Title 10 of the County Code. "The Interim In-Channel Surface Mining Regulations of Yolo County" apply only to in-stream mining within Cache Creek. These regulations were intended to be a temporary three-year set of regulations,~~

~~to be revised by the Resource Management Plan being drafted by the Aggregate Technical Advisory Committee in the early 1980s. As subsequent planning efforts resulted in stalemate, however, the interim regulations were never revised. They continue to remain the standards by which in-stream mining is regulated at the time this Plan has been adopted. However, they are modified by the restrictions and requirements of the Cache Creek Improvement Program (CCIP) which has been adopted as a component part of this CCRMP. As a subsequent clean-up action in 1997, the County will revise the in-stream regulations to be consistent with and carry out the full spirit and intent of 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 ~~i~~was a specific elevation, below which in-stream mining was prohibited~~may not occur~~. In addition, in-channel mining ~~i~~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. ~~The regulations also have designated an in-channel boundary, defined in County ordinance, based on the patterns of erosion and deposition. However, this boundary sometimes extends well outside of the active stream channel, which causes confusion for both miners as well as adjoining landowners, and makes effective management of the creek difficult.~~

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 ratio~~n~~s (comparing the channel width to its length) were~~have been~~ adopted, which provide standards for maintenance excavation that would improve the channel flow. Commercial mining was~~ould be~~ prohibited~~.~~ and ~~T~~the prohibition against working near local bridges ~~i~~was removed ~~identified as inappropriate, so that~~ to allow for restoration activities including the construction of ~~effective~~ transitions ~~can be constructed~~ to improve flow efficiency through these portions of the creek. Additionally,~~Finally,~~ the in-channel boundary ~~h~~was ~~been~~ 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).

~~Chapter 5 of the County Code is entitled the "Yolo County Surface Mining Reclamation Law" and is referred to as the "Reclamation Ordinance."~~ The 1996 policy and regulatory changes ~~proposed change in~~changed the focus~~ emphasis~~ away from aggregate mining within Cache Creek to channel stabilization and flood conveyance capacity ~~floodway~~ management~~. also requires a significant shift in the way in-stream areas are restored. Up until now, in-channel mining reclamation has largely consisted of minimal grading and resoiling standards, with provisions for grass seeding, in order to minimize erosion.~~ Restoration under the ~~proposed~~ CCRMP~~, however, is primarily aimed at~~ 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. ~~New standards are recommended that reflect this change in priorities, by~~ The plan provides~~ing~~ guidance on habitat creation and ensures~~ing~~ that in-stream restoration is ~~more~~ sensitive to channel flow dynamics.

Yolo County Flood Protection~~Damage Prevention~~ Ordinance

~~In addition to having responsibilities for monitoring aggregate operations and coordinating with other agencies in implementing this Plan, the Community Development Director also serves as the County's Floodplain Administrator.~~ 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~~s~~ 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 ~~Damage Prevention~~Protection Ordinance (Chapter 4 of Title 8 of the Yolo County Code).

Implementation of the CCRMP is~~will be~~ carried out through the CCIP (Appendix A), which establishes a regulatory framework for stabilizing the channel. Central to this approach is the ~~Technical Advisory Committee~~TAC.~~, which will~~ The TAC is charged with identifying and establishing ~~as priority~~priorities for channel improvement projects, monitoring various issues related to the hydraulic ~~flow~~characteristics of flow ~~of~~ in the creek, and reviewing and commenting on proposed projects within the channel area. Channel improvements made pursuant to the CCRMP and CCIP ~~will~~ require a ~~Floodplain~~ 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~~"blanket"~~ permits issued by jurisdictional agencies. Thus, the requirements of the CCRMP and CCIP will be implemented through the ~~Floodplain~~ 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 ~~h~~was ~~been~~ 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 ~~major~~ 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~~Resource Management Coordinator (RMC)~~. Scientific analysis of the creek and recommendations will be provided by the ~~a Technical Advisory Committee (~~TAC~~)~~, in coordination~~who would coordinate~~ with the NRM~~RMC~~. In addition, an optional Cache Creek Stakeholders Group (CCSG) may~~will~~ be established~~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 c~~C~~ommercial mining is~~would be~~ prohibited under the CCIP. Aggregate excavation within the channel may only occur to install or maintain habitat restoration, ~~to~~ maintain flood control, protect existing structures, minimize bank erosion, or implement the Channel Form Template.~~Test 3 boundary.~~

Under the CCIP, ~~all~~ applicants proposing to modify the creek channel within the CCRMP boundary must~~will be required to~~ submit applications to the Community ~~Development Agency~~Services Department for a ~~Floodplain~~ Flood Hazard Development Permit. The permit is~~will be~~ reviewed by the TAC, which~~who~~ will provide recommendations to the Floodplain Administrator (or designee) prior to permit approval. The program is supported by ~~County will also pursue general "blanket"~~programmatic permits from agencies of jurisdiction (e.g., Regional Water Quality Control Board, Army Corps of Engineers, and Department of Fish and Wildlife~~Game~~) for channel shaping and maintenance activities. Flood Hazard~~plain~~ D~~d~~evelopment P~~p~~ermits within the CCRMP boundary must be consistent with the CCIP and CCRMP, comply with appropriate ~~"blanket"~~programmatic permits, protect sensitive biological resources, and ensure that flood~~ing problems at~~ risk for downstream communities such as Woodland are not~~aren't~~ worsened.

Channel improvement and maintenance projects must~~will have to~~ comply with design guidelines, target channel characteristics, and typical cross-section profiles, as described in the CCIP. These reach-specific guidelines incorporate baseline~~are based on~~ information ~~developed in~~from the 1995 Technical Studies, and the findings from the 2017 Technical Studies and CCAP Update. ~~and~~These guidelines will be periodically updated according to the information obtained through creek monitoring program. The results of the monitoring program are~~will be~~ included in the annual report prepared by the TAC for review by the Board of Supervisors. The annual report ~~will~~ 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 ~~any~~ proposed changes in the monitoring program for the following year.

The Off-Channel Mining Plan

The CCRMP is ~~Cache Creek Resources Management Plan is being prepared as~~ a companion document to the ~~Off-Channel Mining Plan (~~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~~Cache Creek Area Plan~~, 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~~project~~ and its emphasis on comprehensive and integrated resource ~~e~~ management ~~will~~ required consideration by the County of several additional actions (described below) for its implementation. These actions ~~will~~ provided the County with a regulatory framework for carrying out the various policies described within the CCRMP. ~~It should be noted, however, that approval of these actions is just the beginning.~~ Ongoing ~~I~~implementation of the CCRMP ~~will~~ 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 focus~~s~~ed 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~~The~~ Program EIR ~~h~~was ~~been prepared~~certified for the CCRMP~~Cache Creek Resources Management Plan~~ in 1996. ~~The Draft EIR was made available for public comment on April 8, 1996. The Response to Comments document was released on July 1, 1996. Together, these two volumes constitute the Final EIR for the CCRMP.~~ The Program EIR ~~h~~was ~~been~~ written to fulfill the federal National Environmental Protection Act (NEPA) standards, so that the EIR could~~may~~ 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~~Game~~).

~~The Program EIR identifies twelve general areas of potential environmental impact, including: land use, geology and soils, hydrology and water quality, agriculture, biological resources, air quality, traffic and circulation, noise, aesthetics, cultural resources, hazards, and public services.~~ The CCRMP EIR also serve~~s~~d 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~~Cache Creek Resources Management Plan~~ and the CCIP~~Cache Creek Improvements Program~~, as well as the companion ~~Off-Channel Mining Plan~~OCMP are intended to be evolutionary documents that adjust and change in response to new creek conditions. Adoption of the CCRMP in 1996~~will~~ 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 ~~should~~was not ~~be~~ seen as a static vision of what the ultimate disposition of the creek will be in the future. ~~As such,~~Rather, it ~~i~~was expected that the CCRMP would~~will~~ 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~~should 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.

~~A Supplemental Program/Project-Level Environmental Impact Report (SEIR) was prepared and certified in 2002 to inform public agency decisionmakers and the public of the environmental effects of the CCRMP and CCIP on Cache Creek since their implementation. The SEIR was also necessary prior to the County seeking new permits from the appropriate Government agencies.~~

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.

~~If the CCRMP is found to be subject to SMARA, planned revisions to the in-channel regulations, as well as the already amended reclamation ordinance, will be adjusted as necessary. These ordinances would then be sent to the State Mining and Geology Board for certification. Should this be the case, in-channel and off-channel mining regulations would be given separate chapters within the County Code. The reclamation ordinance would continue to govern both types of mining. Regardless of whether the CCRMP is subject of SMARA, performance standards developed through the recommendations of the Technical Studies prepared for Cache Creek, as well as the experience and practices of other jurisdictions, would be incorporated into the new regulations.~~

Approval of Zone Changes

~~At present, the majority of the area within the CCRMP plan boundary is zoned with the S-G (Sand and Gravel) overlay, reflecting its recent history of commercial in-stream mining. Under the existing ordinance, the S-G Zone may be combined with either the A-1 (General Agriculture) or A-P (Agricultural Preserve) Zones, within the 1979 Cache Creek Channel Boundary. However, the CCRMP will change the primary focus within the channel from commercial mining to multiple resource management. To reflect this new emphasis~~ In 1996, the area within the CCRMP plan boundary ~~will be~~was rezoned to ~~add~~ the Open Space (OS) designation. ~~as an integrated zone. Integrated zoning, as allowed under Section 8-2.301.4 of the Zoning Code, is similar to combining zoning, except that where used, both attached zones are "base" zones that would apply while and equally to the subject land. The OS zone would be added to the existing A-1 and A-P Zones (e.g., A-1+OS and A-P+OS), in order to ensure that existing Williamson Act contracts on land within the In-channel boundary are not adversely affected. The SG overlay would be deleted from the area within the CCRMP plan boundary, to preclude commercial mining from occurring in the future.~~ 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 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 ~~their~~ implementation. The SEIR was also determined to be necessary to support~~prior to~~ the County's ~~seeking~~request at the time to renew programmatic ~~new~~ 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 Game Code. ~~appropriate Government agencies.~~

1.5 ORGANIZATION OF PLAN

~~As mentioned earlier, t~~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. ~~s of a river system involve~~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 ~~even between stages within each~~from smaller flows in between large flood ~~event~~events.

In perennial (year-round) ~~rivers~~creeks, these adjustments are often made in a slow and steady fashion. Cache Creek is ~~an~~ ephemeral ~~stream~~. It does not flow year-round naturally or under existing conditions. Further~~more~~, ~~it~~ Cache Creek is an episodic system ~~that is~~ characterized by brief, intense flows that ~~create~~ can cause dramatic changes in creek conditions ~~in~~ over ~~a~~ relatively short ~~period~~periods of time. These changes may result in an imbalance between the factors described above. Historically, ~~the creek~~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 ~~bridge structures~~ bridges over Cache Creek were originally designed ~~for a~~to accommodate a relatively narrow channel width ~~that must be maintained with extensive~~ and often required bank protection measures~~.~~ to prevent excess erosion of channel banks. These ~~constructions~~ bridge crossings confine ~~bind the creek~~Cache Creek, resulting in ~~faster~~ higher flow velocities and ~~significantly~~ increased erosion and scour potential. Flood control improvements along Cache Creek have had an effect as well. ~~At the same time that the capacity of Cache Creek has increased, levees!~~Levees ~~have been~~ constructed throughout the plan area ~~to create new agricultural land and to prevent floods from inundating nearby residences and communities.~~further increase channel confinement and the resulting elevated flow velocities increase erosion and scour potential. ~~Thus, more water is being forced into a narrower channel, changing the character of flood peaks and travel time. The diversion of surface water for irrigation during the summer months does not allow for the establishment of the low flow channel to provide stability during average years. Without this partial control, larger floods become even more unpredictable.~~

Extensive in-stream mining prior to 1996 ~~has~~ also contributed to the destabilization of Cache Creek. The average annual sediment supply to the plan area (measured at Capay) ~~is~~ was estimated in the 1995 technical studies to be approximately 927,600~~928,000~~ tons, of which about 210,000~~163,000 tons is~~ 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. ~~in-stream excavation of sand and gravel has averaged some two million tons, however, which has resulted in a cumulative deficit of nearly 80 million tons since mining intensified in the 1950s. At the natural rate of replacement it would take over 500 year to replenish the material removed~~. ~~In addition, gravel bar skimming disturbs the formation or armor materials and removes riparian vegetation that allow the channel to readjust, thus increasing the potential for erosion.~~ 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~~these artificially imposed changes~~, Cache Creek has periods of natural instability. The upper watershed is narrow and steep~~., so that~~ As a result, flood events carry with them a great deal of force that impacts the channel over~~in~~ a short span of time. In addition, the coastal mountains in this area contain areas of highly erosive materials that can provide ~~a significant level~~very large volumes of sediment to the creek. The combination of energetic flood flows and large sediment supplies create the potential for ~~dramatic~~ large, rapid changes in Cache Creek. ~~Thus, in flashy, episodic systems such as Cache Creek, the stream is constantly lurching from one imbalance to the next after large flood events.~~

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 ~~in~~ 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, ~~though~~however, that it is not possible to return the ~~stream~~ 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

reestablishment of the ~~historic~~historical width of the channel, which approaches one mile in some areas. ~~These are radical~~ Such extreme requirements ~~, which~~ are ~~obviously~~ 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, ~~waterways~~ creek systems are complex ~~systems~~ 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, ~~there are opportunities~~as evidenced by the changes in Cache Creek observed since 1996, ~~through~~ careful management~~,~~ can continue to help the ~~river~~ 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~~are~~ several actions ~~that need to be taken in order~~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~~is~~ to significantly reduce the amount of aggregate removed from within the channel. In-stream extractions allowed under the CCRMP ~~mining should~~ 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.~~, and, in fact, should be far less than that amount in most years in order to allow the creek to aggrade and reduce the amount of scour.~~ 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~~would~~ resulted in the reshaping of portions of Cache Creek according to the conceptual design provided in the Test 3 Run Boundary~~ (see Figure 4)~~. The Test 3 Run Boundary~~This proposal requires~~ envisioned regrading the streambed to create a series of terraces and low-flow channel. These actions ~~will~~ stabilize the channel and allow it to operate more like a natural system. In addition, selected banks and levees may~~will~~ be excavated to provide gentle transitions into and out of the channel bottlenecks created by the bridge structures. In some areas, jetties may~~will~~ 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~~is~~ 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.

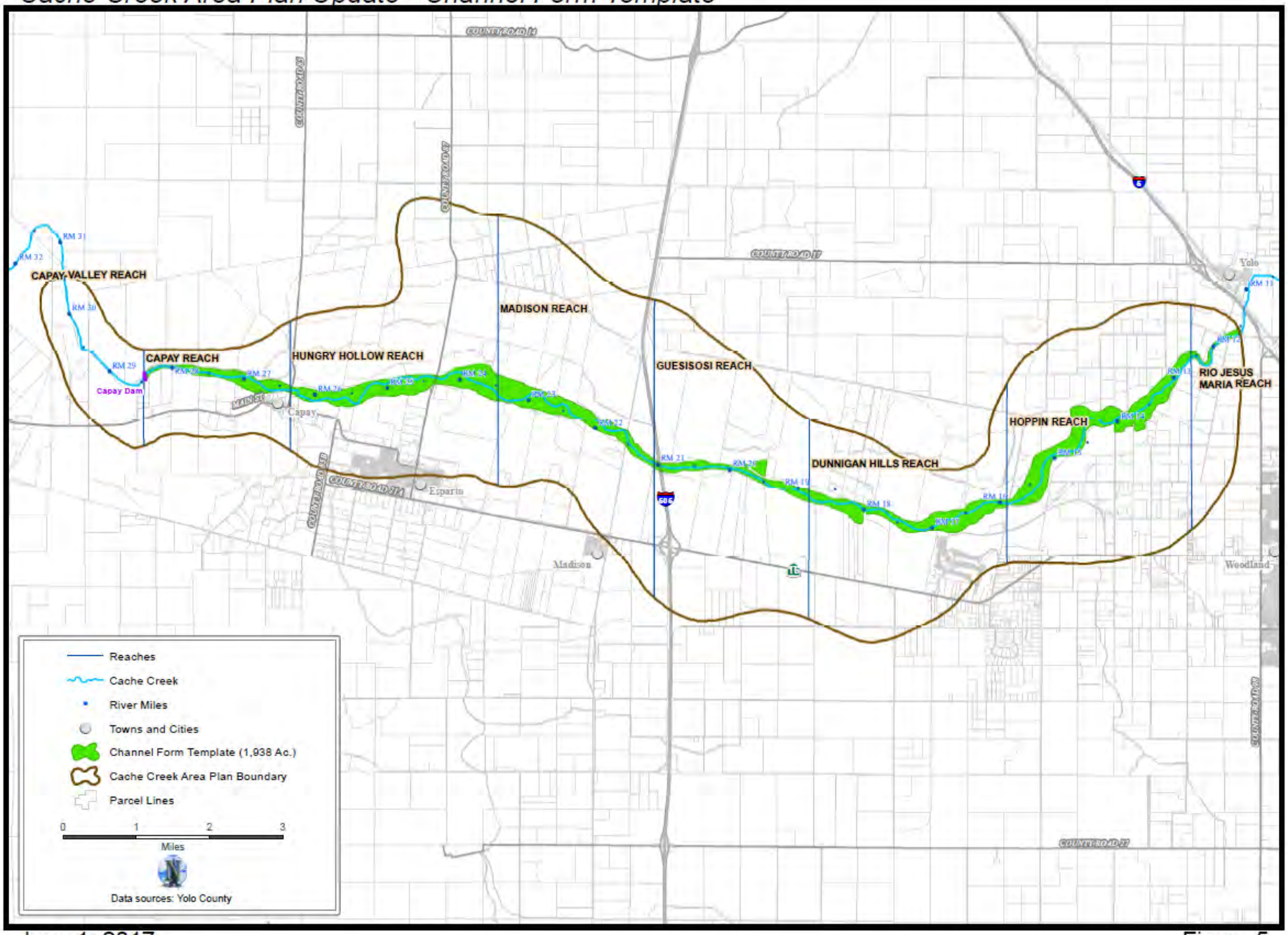
For off-channel mining applications implementation of the Test 3 Run Boundary was been linked to Section 10-4.429(d) of the Mining Ordinance which requires that off-channel excavations be set-back a minimum of 700 feet from the channel bank, unless an engineering analysis can demonstrate that measures 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.

~~Supplementing these efforts~~ The CCRMP also envisioned~~would be~~ 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~~6~~ plan update, this remains a goal of the plan to be achieved if feasible. This ~~would~~ could create a more stable low-flow channel that would ~~reinforce the regrading~~support the goals of the Channel Form Template~~performed in the Test 3 Run~~. In addition, increased surface flows would accelerate recovery of native vegetation and benefit native species of wildlife, invertebrates, and fish. Continued engagement with the YCFCWCD will be undertaken to determine the options for increasing surface flows, especially in warmer times of the year.

~~Although commercial in-stream mining would be precluded, sand and gravel removal would not be prohibited altogether.~~ 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 ~~would~~ takes a strong role in providing this management, based on the recommendations of the TAC. ~~a Technical Advisory Committee~~. ~~To reflect this shift in priorities, changes will be required in the operating concepts that currently regulate mining within Cache Creek. As discussed earlier, both the theoretical thalweg and the present in-channel boundary do not accurately represent existing channel conditions and it is recommended that they be replaced by new standards based on concepts provided in the Technical Studies.~~

Cache Creek Area Plan Update - Channel Form Template



June 1, 2017

Figure 5

Future in-channel modifications ~~will be limited to the 100-year floodplain and~~ must consider~~take not only~~ the elevation and slope of the streambed, as well as ~~into account, but the slope of the streambed and the ratio of~~ 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-section~~s profiles that have been~~ developed for ~~each reach of~~ 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 ~~remain six feet above the~~ existing thalweg elevation, unless local channel stability, desired habitat creation, or ~~maintenance of the existing 100-year~~ flood flow capacity requires otherwise. In addition, off-channel mining must~~will have~~ 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~~Test 3 Run Boundary~~ or as a result of maintenance extraction of gravel.

~~Maintenance of the creek will have a number of goals, several of which are competing and will require careful management. Retaining 100-year flood capacity will be a high priority. Flood insurance policy is changing, as the federal government expects local communities to take a more pro-active role in preventing flood damage from occurring. As a part of this effort, the regional flooding problem associated with Cache Creek must be resolved. A coordinated approach involving the County, the Yolo County Flood Control and Water Conservation District, the City of Woodland, the U.S. Army Crops of Engineers, and local property owners is vital in this regard. One jurisdiction cannot divert its floods to the next jurisdiction and consider the problem solved. Each group must be willing to shoulder its share of the burden so that all may benefit.~~

Although flood flow conveyance capacity ~~control~~ is important, ~~the County is not interested in converting Cache Creek into a concrete-lined drainage. ManagementM~~management of the Creek has to consider other values as well. Conditions must be created to allow native riparian vegetation to ~~flourish~~reestablish, as long as it does not adversely affect streamflow. Growth along the banks is especially encouraged, both for erosion control and to ~~contain~~ direct the highest flow velocities ~~within~~ 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 ~~a concern~~extremely important as compliance with the Sustainable Groundwater Management Act (SGMA) proceeds.~~, and~~ ~~t~~The CCRMP encourages coordination with YCFCWCD~~the Flood Control District~~ to enhance groundwater recharge, where possible, in order to ~~provide more~~ increase water supply reliability for both urban and agricultural users in the County.

Implementing these programs will require extensive monitoring and ~~factual~~ analysis. The County will ~~take advantage of the data already available, however new resources of information will need to be developed. These may include re-installation of the stream gauge at Capay, surface water quality testing, riparian vegetation surveys, and aerial photography~~continue to leverage the data collected through annual creek inspections described in Chapter 6 of the CCIP, the ongoing 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. ~~This~~ The information in this database is~~would be~~ reviewed by ~~a~~the TAC. ~~Technical Advisory Committee~~ 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~~make Cache Creek more healthy and productive~~. As a part of this monitoring, the CCRMP is required to ~~would~~ be updated a minimum of every ten years. This ~~would~~ 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.

2.2 GOALS

2.2-1 Recognize that Cache Creek is a dynamic ~~stream~~ 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~~vegetation~~, without adversely affecting flood flow conveyance capacity.

2.3 OBJECTIVES

2.3-1 Support~~Provide~~ flood management objectives as required to protect the public health and safety.

2.3-2 Integrate the CCRMP~~Cache Creek Resources Management Plan~~ with other planning efforts to create a comprehensive, multi-agency management plan for the entire Cache Creek watershed.

2.3-3 ~~Design and implement~~Recommend actions to create a more stable channel configuration with flood flow conveyance capacity that ~~will convey a 100-year flood event~~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, ~~R~~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~~promote channel stability, prevent~~ 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. ~~protect bridges, or to ensure 100-year flood~~

~~protection, in order to allow the streambed to aggrade and create a more natural channel system~~.

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~~during the previous year~~ as estimated by the ~~Technical Advisory Committee~~ TAC based on channel topography and bathymetry~~morphology data~~ (not to exceed approximately 690,800 ~~210,000~~ ton~~e~~s annually on average), except where ~~ban~~ excavation is necessary to widen the channel as a part of implementing the Channel Form Template~~Test 3 Run Boundary~~, or where potential erosion and flood~~ing~~ 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~~Technical Advisory Committee~~, with the voluntary cooperation of the landowners involved.

In-channel projects are limited to projects that: maintain ~~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; 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.

~~The County shall negotiate with the Regional Water Quality Control Board to allow 100 percent extraction of the previous year's accumulation of sand and gravel, under the 401 Water Quality Certification, if it can be demonstrated that the removal of sand and gravel is required for flood control purposes.~~

2.4-3 Implement the Channel Form Template~~Test 3 Run Boundary~~ described in the 2017~~1995~~ Technical Studies to reshape the Cache Creek channel based on best available data and hydraulic modeling tools. ~~Continue to gather HEC-model erosion and deposition data to~~

~~initiate streambed and channel alteration projects.~~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 NHC in the 1995 Technical Studies; HEC-RAS an HEC-2 were completed by MBK for the area between CR 94B and I-5 in 2001; HEC-RAS was completed by MBK for the area between CR 94B and I-5 in 2006)

~~Specific activities associated with this Action include:~~

~~A. Amend sediment-monitoring activities under the CCRMP without detracting from any existing CCRMP actions, policies or mitigation measures, to include the following:~~

- ~~Update the HEC-6 model (or equivalent model - see Item G below) developed for the CCRMP Technical Studies to reflect 2001 topographic and sediment conditions in the Cache Creek channel and compare the results with those of the 1995 model.~~

- ~~Update the HEC-6 model once ever five years or more frequently as determined necessary by review of aggradation/degradation trends evident from annual topographic mapping. Assess HEC-56 model accuracy and calibrate as appropriate using known flood hydrographs occurring over the previous year, known sediment deposition/scour and known changes in sediment size distribution over the year.~~

- ~~Use the HEC-6 model and topographic mapping to assess sediment supply and transport conditions for a range of discharges and flood hydrographs up to the 100-year flood. The HEC-6 results shall be used as a guide to estimate probable future areas of risk resulting from changes in sediment transport characteristics of the creek. Areas to be evaluated in detail include, but should not be limited to, areas of known bank erosion, areas~~

of potential degradation at bridges or other infrastructure crossings, and potential aggradation in areas where flood control capacity is limited.

B. Update the 1995 HEC-2 hydraulic model of Cache Creek, from Capay Dam to I-5, developed as a basis for the CCRMP, to evaluate hydraulic changes that have occurred as a result of channel bed elevation changes and other channel modifications since 1995. The following guidelines apply:

- In order that results be comparable, it is suggested that the same HEC-2 model prepared in 1995 be used as a basis (see Item G below). The model should be updated using the same cross-sections modified for 2001 topography, roughness conditions, encroachments, and in-channel structures. Cross-sections may be added or subtracted and other changes made as determined appropriate by a civil engineer, with the intent of maintaining continuity of the model to allow an appropriate comparison.

- Use the 1995 and 2001 HEC-2 models map the 100-year floodplain boundary as it existed in 1995 and 2001 and assess changes in floodplain extent and water surface elevation. This information should be used to assess the effect of channel aggradation, degradation, and the various CCRMP policies and projects on flood elevations.

- Model a range of discharges from 2-year to 100-year flood flow velocities and depths.

C. Use the information developed from the HEC-6 and HEC-2 models, along with appropriate local scour analysis techniques, to assess the level of risk to bridges, utilities, and other channel infrastructure of failure or exposure to scour.

D. Identify channel thalweg, slope, and cross-section goals on a reach-by-reach basis, based on the results of the HEC-2, HEC-6, and local scour analysis modeling. Identify appropriate CCRMP management activities to achieve the desired thalweg, slope, and cross-section goals, including potential skimming of accumulated bed material as appropriate to avoid loss of flood control capacity, provided that the total amount skimmed not exceed the previous year's supply nor violate any provision of Performance Standard 2.5-5 of the CCRMP.

E. Use the HEC-6, HEC-2, and local scour information to supplement streamflow, sediment inflow, topographic information, pebble count, and annual inspection information collected under CCRMP Actions 2.4-9 and 2.4-10 as a guide in making CCRMP management and policy decisions, identifying and prioritizing future projects, and in making recommendations regarding approval of proposed in-channel projects.

~~F. Have a land surveyor stake all excavations of material from the Cache Creek channel bed prior to excavation to ensure proper excavation depths, provide pre- and post excavation topographic mapping or surveying of the area to be excavated for review and inclusion in the annual TAC report.~~

~~G. The technical analysis need not be limited to HEC-6 and HEC-2. Other equivalent models may also be appropriate as determined by the County, provided that modeling consistency be maintained over time to ensure that observed changes in stream hydraulics and sediment transport are due to changes in the river system and not to the modeling methodology.~~

2.4-5 Acknowledge the streamway influence zone ~~boundary described in the 1995 Technical Studies~~ as the general area of the creek which has historically been subject to ~~meandering.~~meander migration. The streamway influence zone ~~boundary~~ 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~~agencies having jurisdiction over Cache Creek~~, including, but not limited to, the YCFCWCD~~Yolo County Flood Control and Water Conservation District~~, the U.S. Army Corps of Engineers, ~~the State Reclamation Board,~~ the California Department of Water Resources, ~~and~~ the Federal Emergency Management Agency, landowners, and regional groups in developing a coordinated solution for managing ~~flood events throughout~~ 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.)

~~As a part of this effort, the County should coordinate with the U.S. Army Corps to make appropriate sedimentation and channel stability assessments in conjunction with the development of flood control alternatives near the downstream end of the study area. This would ensure that both agencies are using the same sets of assumptions when making recommendations about the management of Cache Creek.~~

~~The County Resource Management Coordinator shall maintain contact with the specified agencies. Interagency contact shall be initiated at least annually. The Resource Management Coordinator shall encourage coordination between the County and the other agencies.~~

~~The County shall continue to identify all regional groups, landowners, and other jurisdictional agencies involved with the Cache Creek watershed and share information gathered by the TAC and County to better coordinate regional management efforts.~~

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~~the State Reclamation Board~~. (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.)

~~The County Floodplain Administrator shall file for a Letter of Map Revision with the Federal Emergency Management Agency to update the Flood Insurance Rate Maps affected by channel reshaping within the planning area every ten years, or as needed.~~

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 YCFCWCD~~Yolo County Flood Control and Water Conservation District~~ 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 ~~established~~ coordinated with the TAC~~consistent with the Technical Studies~~ 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 ~~the~~ updating the hydraulic model~~ing of~~ of the creek channel, obtain funding to install a ga~~u~~ge at Capay and work with other jurisdictional agencies (e.g. YCFCWCD, USACE, DWR) to establish a ga~~u~~ge maintenance program. This will allow the TAC~~Technical Advisory Committee~~ to monitor the amount of streamflow and sediment coming into the plan area and compare the results with data obtained from the ga~~u~~ge 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~~Capay~~ and Yolo ga~~u~~ge 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. ~~This data should be maintained in the County Geographic Information System so that staff can the Technical Advisory Committee can coordinate this information with the results of other monitoring programs to develop a comprehensive and integrated approach to resource management.~~

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 ~~also provide advice during emergency situations, such as flooding, and 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, ~~Focus efforts on~~ reshape~~ing the~~ channel banks immediately upstream and downstream of both County and State bridges to minimize scour and erosion. Work on the creek~~stream~~ banks could be accompanied by the construction of check dams or weirs within the channel, downstream of the bridges, to encourage aggradation. ~~These measures will not only create a more stable channel, but also will also help in preventing structural failure and prolong the life of local bridges.~~ The length of smoothed bridge~~the~~ transitions should generally ~~shall~~ 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~~Cache Creek Resource Management Plan a minimum of~~ 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.)

~~2.4-17 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.~~

~~**2.5 PERFORMANCE STANDARDS**~~ *(These have been integrated into the CCIP and/or In-Channel Ordinance)*

~~2.5-1 All proposed grading and/or construction projects within the channel shall be subject to the Yolo County Flood Damage Prevention Ordinance.~~

~~2.5-2 Check dams or sills should be constructed within the channel to stabilize the streambed so that structures, such as County bridges, are protected from the adverse effects of channel scour. Engineered plans for dams or sills shall be submitted to the County Building Division and the County Community Development Agency for approval prior to construction.~~

~~2.5-3 Spur dikes, or similar measures, shall be installed to fill in areas to meet the Test 3 Run configuration. The dikes will deflect stream flows to produce zones of higher velocity within the low-flow channel, as well as sheltered backwater sites that will encourage the development of riparian vegetation.~~

~~2.5-4 Deleted.~~

~~2.5-5 The Technical Advisory Committee shall review topographic data and such other information as is appropriate to determine the amount and location of aggregate to be removed from the channel. Aggregate removal from the channel shall only be recommended in order to provide flood control, protect existing structures, minimize bank erosion, or implement the Test 3 Run Boundary. Except for bank excavation to widen the channel, annual aggregate removal shall not exceed the amount of sand and gravel deposited the previous year, as determined by aerial photography analysis. Recommendations shall take into consideration the desires of the property owner where excavation is to take place, as well as the concerns of property owners in the immediate vicinity.~~

~~The provisions of the CCIP shall be implemented by the County Resource Management Coordinator, with the assistance of the TAC. The CCIP shall contain provisions to ensure that Cache Creek management decisions not reduce flood capacity nor exacerbate existing flooding problems downstream through channel reshaping. This will be accomplished by annual monitoring of channel geomorphology, distribution and density of plant material within the channel, and modeling to forecast changes in base flood elevations by comparing the most current FEMA mapping with 1995 floodplain modeling~~

~~and either updating the 1995 hydraulic model to forecast changes in base flood elevations or declare the FEMA mapping acceptable.~~

~~When modeling indicates that the channel is approaching loss of 100-year conveyance capacity (or has already lost this capacity), the TAC shall identify for consideration actions by the County or landowners to reestablish capacity.~~

~~The County shall review and monitor removal of aggregate and/or plant material consistent with the CCRMP and CCIP. The County, at its discretion, may enlist the aid of gravel mining operators, other private property owners, or conduct the maintenance activities using County resources.~~

~~2.5-6 Require all channel improvement projects to comply with the requirements of the CCIP and implementing regulations.~~

~~2.5-7 Require the TAC to annually prepare a list of priority channel improvement projects which will be identified and described in an annual report to the Board of Supervisors. Projects that could improve channel stability at the location of bridges or other structures shall maintain a high priority until implementation. Following review by the Board of Supervisors, the TAC shall contact individual landowners to explain recommended channel improvements for their property and describe available resources for design and implementation of the projects.~~

~~2.5-8 The review by the TAC of all Flood Hazard Development Permit applications for Cache Creek improvement projects within the CCRMP area shall include an evaluation of potential upstream and downstream effects of the proposed channel modifications. The TAC shall evaluate data on hydraulic conditions presented in the permit application. The TAC shall also examine aerial photographs and perform a reconnaissance investigation of the site and surrounding areas to identify potential upstream and downstream effects.~~

~~The TAC shall update the HEC flood modelinghydraulic model and confirm whether the channel is capable of handling conveying a 100-year flood event as indicated in recent FEMA/USACE maps. The TAC shall then review pertinent agreements and coordinate with all parties to ensure that channel conveyance capacity and flood protection as of 1996 is maintained.~~

~~2.5-9 Existing flooding problems associated with Cache Creek near the city of Woodland shall not be exacerbated by activities conducted under either the CCRMP or the CCIP.~~

~~The County shall evaluate Muskingum and/or Modified Puls hydrologic stream routing parameters used by the U.S. Army Corps of Engineers in developing the design discharge for the potential Woodland flood control project. They shall use these routing parameters to develop floodplain encroachment guidelines, taking into account probable cumulative effects when reviewing any projects that may have an effect on downstream discharge through removal of floodplain storage areas.~~

~~A stream-routing shall be performed every five years to monitor cumulative effects of development and to adjust encroachment guidelines as necessary.~~

CHAPTER 3.0 WATER RESOURCES ELEMENT

3.1 INTRODUCTION

Present Conditions

~~The Technical Studies included a review of recent groundwaterg~~Groundwater studies ~~that~~ have shown~~s~~ 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. ~~That portion of Cache Creek located between the Capay and Esparto Bridges tends to be a losing reach. Losing reaches are those where the level of the water in the creek is higher than the groundwater table. As a result, water permeates through the streambed and recharges the aquifer. A gaining reach, on the other hand, is one where the groundwater table is higher than the level of the stream. Thus, water permeates through the channel banks and flows into the creek.~~ 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~~stream~~. 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.

~~Over the past several decades, the elevation of the Cache Creek streambed has substantially lowered. In one reach, the bed has dropped thirty feet from elevations recorded earlier in the century. A report prepared by Woodward-Clyde Associates for the Aggregate Resource Advisory Committee in 1976, titled "*Aggregate Extraction in Yolo County: A Study of Impacts and Management Alternatives*" stated that this streambed lowering had resulted in a loss of groundwater storage of approximately ten feet throughout the basin. This loss would equate to between 17,000 and 38,000 acre feet of storage.~~

~~The "teacup analogy" used to describe this phenomenon suggested that future spring water groundwater levels would not be able to attain their historic highs, since any groundwater perched above the streambed would flow out into the creek and drain away. Subsequent reviews of the wells used in the Woodward-Clyde study showed that during the 1980s, after a couple of years of above-average rainfall, over half of the wells had recovered to levels seen in the 1950s. Thus, the severe groundwater declines noted by the Woodward-Clyde study were the result of intensive pumping and the drought of the 1970s, and were not caused by streambed lowering. The Technical Studies do indicate, however, that, importantly, the decline in groundwater levels can be reversed, which provides an opportunity for developing a groundwater recharge program.~~

~~The surface water of Cache Creek tends to have elevated concentrations of boron. Testing done on the North Fork of Cache Creek and lower Bear Creek during the 1950s showed high concentrations of sodium, chloride, and total dissolved solids (TDS), in addition to boron. Of great concern, the Regional Water Quality Control Board has recently designated Cache Creek as an~~

~~"impaired waterway" due to the high levels of detected mercury. The Regional Board and the County Environmental Health Department are currently working on a program to monitor mercury within the creek in order to detect the source of contamination. Recent broad based data on surface water quality within the creek is not available.~~

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 areawide 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 ongoing efforts to develop a Groundwater Sustainability Plan by January 2022.

CCRMP Vision

Studies that preceded adoption of the CCRMP in 1996 demonstrated that ~~Although the~~ 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 ten feet near the channel. This is one of the reasons ~~In order to address this impact,~~ the CCRMP ~~proposed to~~ limits ~~future~~ in-stream activities to ~~mining to~~ those ~~activities~~ that enhance channel stability, ~~and/or the~~ establishment of riparian vegetation, and recreation and open space activities as prescribed in the Parkway Plan. Such activities are~~will be~~ restricted to no more than the average annual amount of aggregate deposited since the last prior year of removal~~during the previous year~~ (not to exceed approximately 690,800~~200,000~~ tons on average), excluding the reshaping of the channel bank to comply with the Channel Form Template~~Test 3 Run conceptual design~~. Removal of aggregate from the channel ~~will be~~may only occur ~~done~~ under the direction of the County based on the recommendations of ~~a~~the TAC~~Technical Advisory Committee~~. It is intended that the streambed 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~~100-year flood~~ and can aggrade without adversely affecting this~~flood~~ capacity. In areas where the rising streambed does reduce channel capacity sufficiently to encroach on necessary flow conveyance capacity, periodic maintenance may~~will~~ be advisable~~necessary~~ to restore desired ~~maintain sufficient flood~~ flow conveyance capacity~~volume~~.

The CCRMP also recognizes opportunities to develop a groundwater recharge program as a component of mining reclamation. Recharge can ~~also~~ 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~~stream~~ should be encouraged to divert ~~these~~ 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 ~~in~~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 ~~year-round~~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~~and vegetation could absorb many of the fertilizers and amendments found in agricultural tailwater~~.

~~In order to determine whether actions carried out under the CCRMP and CCIP are having an effect on the surrounding area, more information will be needed. One way in which to collect this data is to ask local landowners to submit well level monitoring results on a regular basis. Such an effort would be on a voluntary basis but would provide a clearer picture of how the aquifer operates~~

~~along Cache Creek. Similarly, it would be useful to have baseline information about the quality of water flowing down the creek. Potential problems with surface water pollution could be identified and immediate remedial measures taken. Both the groundwater level information and the surface water quality data would be integrated with the groundwater monitoring systems being established for off-channel mining operations.~~

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~~Resource Management Coordinator~~ shall initiate contact with resource conservation agencies at least annually.

Pesticides (including herbicides, insecticides, rodenticides, and fungicides) ~~and herbicides~~ 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). ~~Evaluate the potential for herbicide use to cause pollution of nearby groundwater wells through understanding of groundwater hydrology (i.e., transport of herbicides from creek bed to well). If the potential exists, monitor groundwater in flow path to well in conjunction with requirements of the Yolo County Department of Public Health, Division of Environmental Health.~~

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~~Yolo County Flood Control and Water Conservation District~~, 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~~Resource Management Coordinator~~ at least once per year.

3.4-3 Provide for annual ~~testing~~ (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 ~~be comprehensive and respond to all applicable regulatory requirements. It should~~ include, but not be limited to: pH, ~~total dissolved solids,~~ temperature, turbidity, total and fecal coliform, mercury, ~~total petroleum hydrocarbons,~~ dissolved oxygen, nitrogen, and orthopohosphate. ~~orus, herbicides, and pesticides (EPA Methods 8140 and 8150), suspended and floating matter, odor, an color.~~ This information will~~ould~~ assist in habitat restoration efforts and allow the County to monitor water quality trends within the planning area. The County NRM~~Resource Management Coordinator~~ 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. ~~The testing program(s) should be designed to measure all constituents for which there are RWQCB numeric and/or narrative regulatory limits. If non-compliance is found, modify future projects of similar type to eliminate such non-compliance.~~

3.4-4 E~~stablish an outreach program to e~~ncourage landowners adjoining Cache Creek to participate in a groundwater monitoring program, so that ~~an~~ ongoing groundwater information can be integrated into the Water Resources Information Database (WRID) created since the CCAP was originally adopted in 1996. ~~database can be developed for this area. This information would be used as reference material for the Water Resources Agency and other regional water planning efforts. The County shall attempt to coordinate with other relevant jurisdictional agencies to educate landowners regarding ground/surface water interactions and the importance of developing a comprehensive groundwater database, with technical assistance forom the TAC.~~

3.4-5 Deleted.

3.4-6 ~~Establish operating standards for the use and handling of hazardous materials in and near the Cache Creek channel.~~ 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.

~~3.5 PERFORMANCE STANDARDS~~ *(These have been integrated into the CCIP and/or In-Channel Ordinance)*

~~3.5-1 All heavy equipment used for channel improvement projects shall be kept in good working order to reduce emissions and preclude the leakage of oils and fuels. Fueling and maintenance activities shall not occur within one hundred (100) feet of the active channel. All procedures for handling, storage, and disposal of hazardous materials shall~~

~~be described in a Storm Water Pollution Prevention Plan if required for the projects. Any long-term project (e.g., extensive erosion control, gravel removal) shall have a chemical spill prevention and emergency plan filed and approved by the appropriate local agency. The plan must include training of the equipment operator and workers in spill reporting and how to minimize environmental damage.~~

~~3.5-2 Firms or individuals performing work within the channel shall immediately notify the Community Development Director of any events such as fires, explosions, spills, land or slope failures, or other conditions at the site which could pose a hazard to life or property outside the permitted area. Upon request by any County agency, the firm or individual shall provide a written report of any such event within thirty (30) days, which shall include, but not be limited to, a description of the facts of the event, the corrective measures used, and the steps taken to prevent a recurrence of the incident. This condition does not supersede nor replace any requirement of any other government agency for reporting incidents.~~

~~A copy of the approved Business Emergency Response Plans and the approved Spill Prevention Control and Countermeasure Plans, if required, shall be filed with the Yolo County Health Department prior to the commencement of work within the channel.~~

~~3.5-3 Wastewater should not be directly discharged to Cache Creek. Measures such as berms, silt fences, sediment ponds, hay bales, and/or revegetation should be used to control erosion. Agricultural tailwater should be diverted to catchment basins prior to release to the creek.~~

~~3.5-4 Sediment fines generated by aggregate processing of in-channel sand and gravel shall be used for agricultural soil enhancement or -stream revegetation projects. In-channel sediment fines shall not be used as backfill material in off-channel habitat restoration due to potential high mercury content.~~

~~3.5-5 All internal combustion engine driven equipment and vehicles shall be kept tuned according to the manufacturers specifications and properly maintained to minimize the leakage of oils and fuels. No vehicles or equipment shall be left idling for a period of longer than ten (10) minutes.~~

~~3.5-6 Water quality data collected from Cache Creek shall be regularly evaluated by a trained professional to determine whether the use of chemicals in the habitat restoration areas is affecting water quality. If chemicals are used and a correlation between chemical use and the degradation of water quality is established, the use of chemicals in the habitat restoration areas shall be reevaluated.~~

~~3.5-7 For bank repair projects using fill, conduct appropriate leaching tests on fill materials to determine if it contains leachable constituents at concentrations of potential concern.~~

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.

~~Riparian woodland generally provides significant amounts of cover, roosting and nesting opportunities, and food for wildlife.~~ Prior to the 1850s, 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-1900s, 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 1900s, and which grew to industrial-scale operations in subsequent decades, further decreased riparian forests and native vegetation in general.~~However, the riparian habitat along Cache Creek has been severely reduced since historic times. The extent of the riparian forest prior to 1850 is not well documented for Cache Creek, but it has been estimated that there may have been between 800,000 and 900,000 acres throughout the entire Sacramento Valley, indicating that this habitat was fairly widespread prior to intensive settlement.~~

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. ~~Substantially more willow scrub and herbaceous (non-woody) vegetation was estimated to have remained, yet large stretches of the Creek were devoid of any significant vegetation. However,~~ 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, ~~However, the actual area of oak woodland was likely more on order of 2.5 acres,~~ 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 ac. 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: 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, nonnative 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 nonnative, 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 resprouted 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.

~~The Technical Studies identify that there are only about 125 acres remaining along Cache Creek within the plan area. The riparian woodland around Moore's Crossing is the most important habitat remaining within the plan area due to the abundance of native plant species and wildlife cover. This habitat is characterized by relatively young trees that do not reflect the mature riparian forest that has historically dominated this region, and many of the mature trees are in poor condition. Valley oak woodland, usually found on the upper terraces of Cache Creek, plays a similarly significant role to that of the riparian forest, but much of this habitat has been eliminated by land clearing. Approximately 76 acres remain along Cache Creek within the plan area. Together, these habitats account for some six percent of the total area of the channel. Much of the remaining habitat has a fairly low diversity of species, lowering its wildlife utility even further.~~

~~A substantial portion of the mature forest is threatened by a lack of readily available water. Typically dependent upon stream flow, the trees are now well above average groundwater levels due to streambed lowering, and they are unable to regenerate both the canopy and understory characteristics of a mature riparian forest. Although they continue to provide valuable nesting sites for birds that forage in the adjoining agricultural fields (especially Swainsons hawks), these areas are not fulfilling their full habitat potential.~~

~~The lack of riparian vegetation has consequences for other aspects of the creek system. Water moves promptly downstream rather than being delayed by vegetation so that the potential for groundwater recharge is reduced. High flow velocities also discourage fish populations. Marshland within the channel is limited which prevents adequate nutrient transformation for vegetation and wildlife. The absence of woody vegetation and steepness of the channel banks also contributes to the excessive erosion that is occurring in many reaches. Thus, reestablishment of the riparian corridor will not only improve conditions for wildlife, but will provide benefits for other resources that are also dependent upon the creek.~~

~~Tamarisk and giant reed are found throughout the plan area, and in some reaches of the Creek constitute the dominant plant species. These plants are not native to this area and are aggressive colonizers, thereby providing a threat to the existing riparian habitat. Although tamarisk provides some cover for quail and deer along Cache Creek, both it and giant reed provide far less food and cover for wildlife than native riparian species. Tamarisk is of special concern due to its tendency to build up salts in the surrounding soils. These weeds can also significantly alter stream flow. Both species require a large amount of water and can lower local surface and groundwater levels. In addition, they can also form dense islands in the streambed, resulting in the flooding of areas that are not usually inundated. Although found within the channel throughout the plan area, tamarisk and giant reed have primarily infested the reaches upstream of the Capay Bridge (County Road 85) and downstream of the Stephens Bridge (County Road 94B).~~

~~The reach of Cache Creek located between the Capay Bridge and the Dunnigan Hills presents several constraints to potential riparian revegetation, including: a lack of silt and organic debris, absence of a defined low flow channel, low groundwater levels and seasonal surface water supply, and extensive surface disturbance from in-stream mining. Although measures may be taken to address some of these problems, the channel flow characteristics in this reach may prevent it from becoming a riparian forest similar to that found in the Dunnigan Hills reach.~~

Wildlife and invertebrate species are also important components of the biological resources present within the ~~OCMP~~ 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 (*Accipter 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 nonnative 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; ~~and,~~ 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 reestablish 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*).

~~Eventually, the plan seeks to establish a continuous corridor of vegetation along Cache Creek throughout the plan area. One of the foremost considerations in achieving this goal is a more available supply of surface water. This may be accomplished by either coordinating revegetation efforts with agricultural drainage, or regrading the channel to create pools. Another approach would involve the Yolo County Flood Control and Water Conservation District. The District is currently applying for additional allocation rights for water from Cache Creek. An added increment of this water supply could be reserved for maintaining a summer surface flow in the low-flow channel, thus enhancing the potential for riparian habitat restoration.~~

This plan identifies a number of recommended sites along Cache Creek for habitat restoration (see Figure~~s~~ 9 ~~5 and 6~~). 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

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

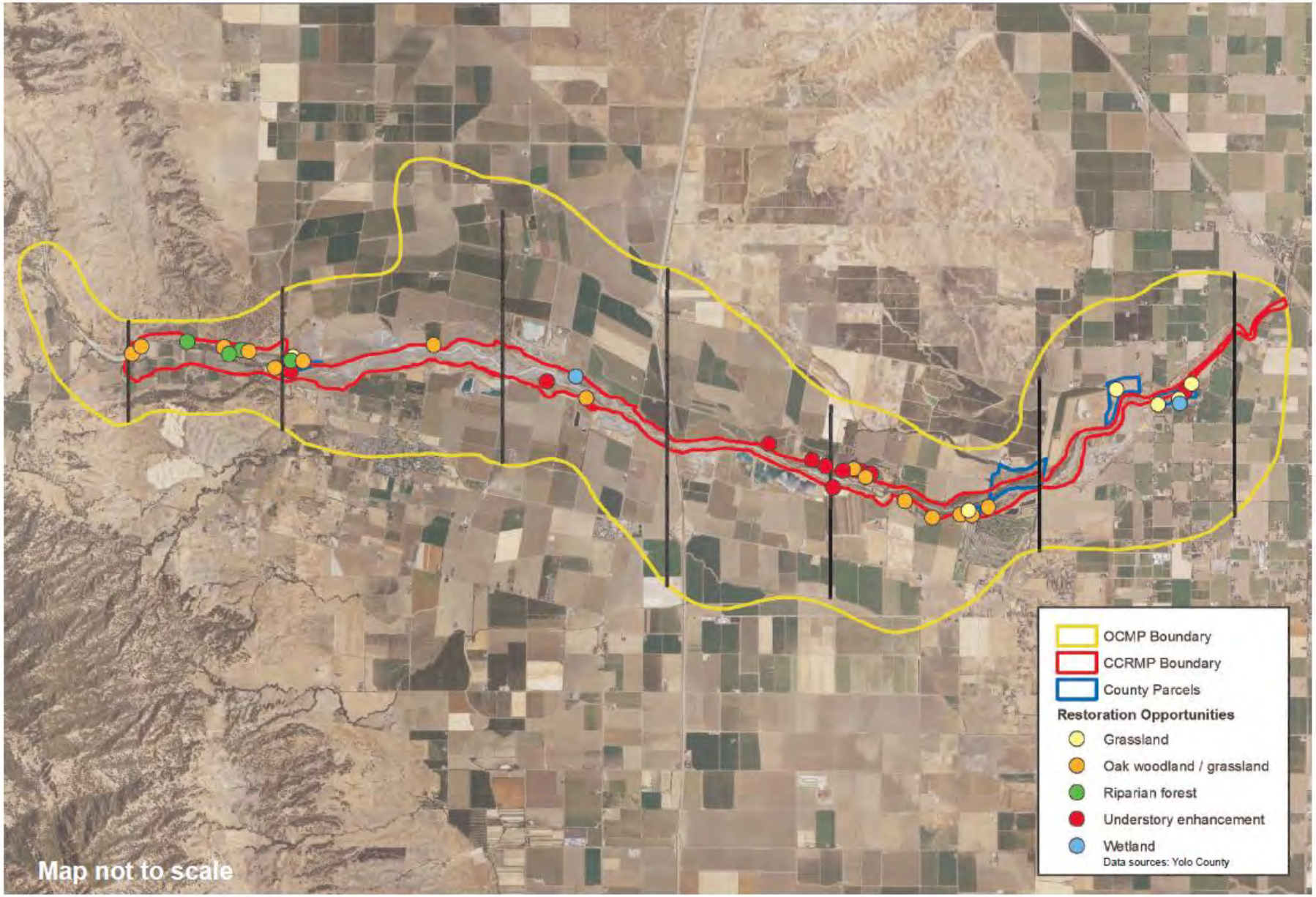
Cache Creek Area Plan Update - Herbaceous Habitat

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

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, purportedly 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.

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 ongoing 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 CR 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 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 nonnative 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~~nature~~ 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 replanting of oaks and other woody species should be investigated.

~~County Road 91B to County Road 94B: The primary emphasis is on removing or minimizing exotic, invasive shrubs, such as the giant reed and tamarisk, in order to maintain channel stability and to allow for the development of native vegetation. This reach is especially well suited for removing existing embankments that protected former mine sites and widening the channel. However, due to the high recharge value in this area, the recommended restoration projects will be coordinated with the Flood Control District so as not to preclude future recharge opportunities. Work should focus on the restoration of old existing in-channel pits. Where groundwater recharge is not feasible, the floor of the pit should be elevated and riparian forest planted. In-channel forest should also be created along the south portion of the channel, downstream of Road 94B, to provide additional bank stabilization.~~

~~County Road 91B to County Road 94B: The Dunnigan Hills reach already contains several sites that have naturally revegetated and created well-developed and diverse habitat. Some areas could be improved, however. The former Cache Creek Aggregates (Patterson) pit should be revegetated with oak woodland habitat, while shallow depressions should be created in portions along the south bank owned by Solano Concrete to allow for the development of riparian wetlands. A riparian forest has already been established on the north bank, west of the Moore Dam Sanctuary, but it is recommended that the levee be removed so that the area can be hydrologically connected to the creek.~~

~~Interstate 505 to County Road 91B: This portion of the creek serves as a transition zone between the barren, braided channel upstream, and the well-vegetated, narrow channel downstream. Two projects are proposed here. One is to remove the levee separating one of the old Solano sites on the north side of the channel and allow the natural deposition of material from the creek to improve the existing stunted riparian forest. The other is to plant additional riparian forest along the north bank of the channel, immediately~~

~~downstream of the I-505 Bridge, to close a gap in the habitat corridor, as well as to enhance the hydraulic transition near the bridge.~~

~~County Road 87 to Interstate 505: A low flow channel should be created in this reach, along with 50 foot wide revegetated zone of cottonwoods and willows on either side, as is being proposed for the Capay reach (see below). Levees should be removed to connect formerly mined pits on the north side of Cache Creek to the channel. However, similar to the Dunnigan Hills reach, this creek segment is known to have important recharge and recovery opportunities that should be considered. Furthermore, one of the pits contains an operating gravel processing facility owned by Teichert Aggregates that will likely not be abandoned for decades. There is a small portion of streambed next to the Teichert site that is already on a low terrace with good access to groundwater that would provide riparian forest habitat.~~

~~County Road 85 to County Road 87: 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 revegetation unless irrigation is used on an ongoing basis. However, this area also forms a significant gap in the wildlife corridor. Subsequently, restoration work will concentrate on establishing riparian vegetation along the low flow channel where more water is available. The low flow channel will meander and shift so that a series of narrow vegetation ribbons will eventually cover the floodplain in an alternating pattern of forest and open gravel bars.~~

~~Upstream of County Road 85: Due to the high flow velocities and widespread exposure of bedrock within the channel, there is currently little opportunity for in-stream revegetation in this reach. Efforts should focus on removing the extensive stands of giant reed and tamarisk within this reach. The reestablishment of native vegetation would be undertaken with the cooperation of local landowners along the south bank of the channel.~~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 s~~S~~everal of the reaches have included~~include~~ proposals to remove levees and connect formerly mined pits to the channel. In locations where this is still feasible as of 2015, t~~T~~his could be accomplished in a series of steps~~, as shown in Figures 7 and 8~~. 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 ~~stream~~ 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 ~~development~~ 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 ~~weeds~~ species across the CCRMP is likely an infeasible goal. Strategic investment of limited resources will be required in order optimize invasive species treatment efforts into the future.~~invasive weeds will be a high priority so that native vegetation has a chance to become established. In other areas, non-native weeds may be retained so that they can stabilize banks in some areas where native plants cannot grow. Generally speaking, the CCRMP calls for the widespread establishment of riparian woodlands. Restoration of this type of habitat would not only be consistent with historical conditions but would increase the presence of an ecosystem that is rapidly diminishing in California. Standards for developing habitat have been provided to guide revegetation projects and provide a measure of consistency in their implementation.~~

It is anticipated that much of the revegetation efforts along Cache Creek will be undertaken by ~~volunteer organizations such as~~ the Cache Creek Conservancy and other organizations. As such, the County will ~~have to~~ 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. ~~A similar approach will be necessary to link the efforts of individual land owners, such as those found in the Moore Dam Sanctuary and Gordon Slough area, so that gaps in the corridor can be identified and filled.~~ The County will also ~~have to~~ coordinate with other government agencies, such as the YCFCWCD~~Flood Control District~~ and the U.S. Army Corps~~Crops~~ 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 ~~environmental~~ ecological expertise will be approached to perform pro bono plant and wildlife surveys to supplement existing ~~for the County's database and~~ monitoring efforts.

4.2 GOALS

4.2-1 Provide for a diverse, native riparian ecosystem within the ~~Cache Creek channe~~CCRMP area that is self-sustaining and capable of supporting native wildlife.

4.2-2 Create a continuous corridor of riparian, upland, and ~~wetland~~ herbaceous vegetation ~~to link the foothill habitats of the upper watershed with those of the settling basin.~~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 ~~channel~~ 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~~planted.replanted.~~ Where vegetation has been removed within the channel to maintain or improve~~for~~ flood ~~protection~~ flow conveyance capacity and/or erosion control purposes, ~~replanting~~ restoration shall be done in nearby areas that do not adversely affect flood flow conveyance capacity.~~streamflows.~~

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 ~~channel~~.

4.3-3 Adopt standards for planning, implementing, and monitoring ~~and developing~~ habitat revegetation and restoration projects~~areas~~ in order to ~~assure~~ ensure consistency ~~and reasonable~~, maximize success, and account for future uncertainty due to climate change. ~~as well as provide information for public service groups seeking to undertake restoration projects.~~

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 ~~stream and~~ 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 ~~tamarisk, giant reed, and willow~~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~~, such as the giant reed and tamarisk, in areas where they inhibit the growth and development of native riparian vegetation~~ 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 YCFCWCD~~Yolo County Flood Control and Water Conservation District~~, Yolo Resource Conservation District, the California Department of Fish and Wildlife~~Game~~, the U.S. Fish and Wildlife Service, the U.S. Army

Corps of Engineers, the U.S. Bureau of Land Management, and ~~all~~ 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~~Cache Creek Resources Management Plan~~ and the Parkway Plan. Restoration plans shall complement the preservation and enhancement measures in the Yolo County ~~Natural Communities Conservation Program~~HCP/NCCP.

4.4-5 Establish a series of wildlife ~~p~~reserves (see Figure 9) to provide core areas for maximizing wildlife and fish habitat, to help protect areas of high-quality habitat ~~quality~~ 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 ~~p~~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 ~~riparian woodlands~~native woody vegetation over emergent wetlands in appropriate areas within the planning area~~Cache Creek channel~~. Riparian forest and scrub habitats have largely disappeared regionally and are much more difficult to ~~recreate~~ 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.

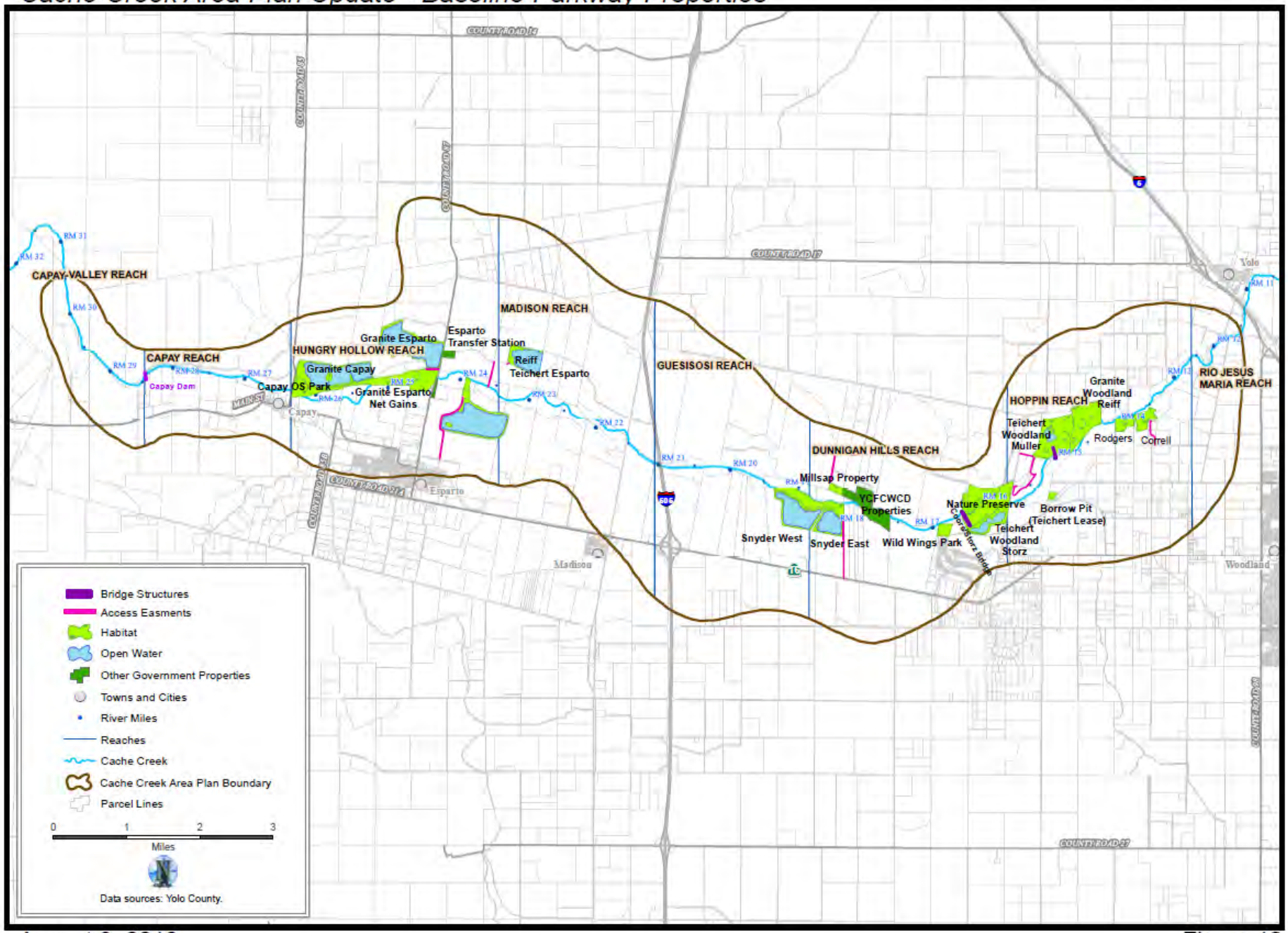
4.4-7 Solicit the assistance of community groups in carrying out ongoing monitoring programs. Examples may include enlisting the local Audubon Society to perform annual bird counts at specific points along lower Cache Creek; coordinating with UC Davis to create a program whereby students could obtain 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 ~~Yolo County~~ In-channel ~~Reclamation~~ Ordinance to provide specific guidelines for design, implementation, and maintenance of riparian habitat. (Complete)

4.4-10 Through development agreements with mining operations, require ~~i~~integration~~e~~ of in-channel revegetation plans ~~through development of a *Comprehensive, Integrated Revegetation Plan*~~ in order to reduce fragmentation by expanding and connecting~~connect disparate wildlife~~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 ~~i~~in-channel habitat areas ~~shall also be coordinated~~ with proposed wildlife mitigation and "net gain"

Cache Creek Area Plan Update - Baseline Parkway Properties



August 9, 2018

Figure 10

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. ~~The integrated plan should include measures to evaluate the feasibility of creating contiguous wildlife habitat by physically connecting individual wildlife areas via riparian corridors or some other connecting habitat.~~

4.4-11 Work with the aggregate industry to achieve multiple benefits,~~develop a regional Mitigation (Conservation) Banking Program,~~ 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).~~The program shall identify priority locations and create an ecologically functional pattern of wildlife habitat within the planning area that could be enhances through mitigation funds to improve habitat for special status species or sensitive natural communities. Augmenting existing restoration/reclamation efforts through establishment of a regional Conservation Bank could accelerate achievement of CCRMP goals and objectives and integrate well with those of the Yolo County Natural Communities Conservation Program (NCCP).~~

4.4-12 ~~Standards identifying~~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~~considered guidelines~~. 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 ~~host plants for VELB~~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~~s~~ 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 ~~"blanket"~~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 enhance~~s~~d, 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 ~~Investigate the feasibility of establishing a "safe harbor" agreement between resource agencies and local farmers to encourage the creation of new wildlife habitat on agricultural lands within the CCRMP planning area. Also evaluate the feasibility of conservation easements as an alternative to a "safe harbor" strategy on private property within the planning area.~~ The ~~Yolo County Resources Manager~~NRM shall coordinate the Yolo Habitat Conservancy ~~the development of any "safe harbor" initiative with all appropriate agencies~~ 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.)

~~4.5 PERFORMANCE STANDARDS~~ *(These have been integrated into the CCIP and/or In-Channel Ordinance)*

~~4.5-1 No new haul roads shall be constructed through established native riparian vegetation. Haul roads shall be realigned or redesigned to avoid established habitat.~~

~~4.5-2 No excavation shall take place within twenty five (25) feet of any mature trees to be retained within the channel.~~

~~4.5-3 Oaks and drought tolerant shrubs should be planted on streambank slopes due to the lack of water on the high elevations. Oaks and shrubs should be especially encouraged on slopes facing north or east.~~

~~4.5-4 Shallow terraces may be created along the banks of the low-flow channel from I-505 to the Capay Bridge, with cottonwood and willow pole cuttings planted on the benches. One alternative would involve digging short trenches diagonally to the low-flow channel (angled downstream), with prerooted willow and cottonwood cuttings planted on the upstream edge of the trench. Another would be to create in-channel riparian plots along this reach to trap bed materials to aid in creating the shallow terraces. These measures~~

would allow for the development of a ribbon of vegetation to establish along the low-flow channel in this area, thereby helping to connect the riparian corridor.

4.5-5 Planting shall be conducted immediately after grading, before invasive vegetation has become established. If undesirable vegetation does become established, it should be removed by mechanical means and approved herbicides, such as glyphosphate, under the supervision of a licensed applicator.

4.5-6 Dense vegetation shall be emphasized along the stream bank to create a distribution of velocities within the channel, with the highest velocities occurring within the low-flow channel. To ensure adequate water supply for new plantings, secure irrigation systems should be installed for revegetation projects within the planning area as needed.

4.5-7 Habitat areas located next to grazing lands shall be fenced in order to prevent vegetation disturbance.

4.5-8 Fertilizer shall not generally be used because its application favors non-native vegetation. Where appropriate, however, trees and shrubs may be planted with a slow release fertilizer.

4.5-9 All plant materials should be collected in the vicinity of the project site in order to maintain the genetic stock and provide the most site-adapted ecotypes. If seeding of native herbaceous species is proposed, seeds should be collected, cleaned, tested for viability, and stored appropriately by a qualified native seed supplier. Cottonwood cuttings shall be collected and contract-grown at a nursery with staff experienced in the propagation of native plants. Alternatively, cottonwood cuttings can be collected from vegetation in the project vicinity and stockpiled for planting within twenty-four (24) hours of collection. Willow cuttings can be collected from vegetation in the project vicinity and stockpiled for planting within 24 hours of collection. Other woody riparian species should be collected and contract-grown from local seed by a qualified native plant nursery.

4.5-10 Planting should be initiated in the fall after the first soaking rains. Container plants should be planted in holes at least twice as deep and wide as the plant container. The rootball should be thoroughly dampened before planting and the planting holes deeply irrigated prior to planting. After planting, the holes should be backfilled with native substrate material (with no mulch added) and thoroughly tamped to remove air pockets. Willow cuttings may be planted in clusters in planting holes prepared and backfilled in a similar manner. Trees, shrubs, and willow cutting clusters should be located in randomly spaced, naturally clumped patterns. Herbaceous seed mix (if used) should be hydroseeded (without hydromulch) or broadcast over planting area, , thencovered with blown rice straw meeting State "weed-free" standards at one ton per acre. Soil stabilizer or tackifier, such as Ecology Controls M-Binder, shouldbe included at 150 pounds per acre. Hydromulching is not recommended because of a history of poor results with native seedings

4.5-11 Existing hydraulic conditions shall be assumed for all proposed biotic reclamation activities. The County shall work with the the Yolo County Flood Control and Water Conservation District to explore opportunities for increasing surface flows during spring and summer. The TAC would be responsible for identifying and implementing new restoration opportunities resulting from the increased water availability. All plantings should be carefully selected based on the existing hydrology and water availability of the reclamation area.

Irrigation of tree and shrub plantings may be necessary for the first two or three summers in drier sites to allow the roots to develop sufficiently to tap into the summer ground water level. Irrigation may be necessary at least twice per month during dry periods for the first three years. Water requirements of young plantings should be evaluated as part of routine monitoring, with adjustments to the frequency and duration of irrigation made in response to indications of stress.

4.5-12 The site should be closely monitored for competing non-native vegetation. Non-native species can be sprayed or removed by hand as necessary to attain the success criteria, as defined in each site-specific plan.

4.5-13 The following guidelines shall be followed when developing wetland habitat areas:

(a) Limit dense stands of aquatic vegetation in shallow areas to lower mosquito harborage and enhance wave action. This will also serve as substrate for mosquito predators.

(b) The banks of areas that retain water after June 1 (the beginning of the optimal mosquito breeding season) shall be steep enough to prevent isolated pooling as the water level recedes, to allow for wave action and to provide access by mosquito predators. Shorelines shall be configured so as not to isolate small channels or shallow ponding areas from the main body of water, to provide continuous access by predators, especially mosquito fish.

(c) Seasonal marshes shall be designed to have at least four months of soil saturation or shallow inundation. Water depths shall not exceed two (2) feet of water.

(d) Marsh species shall be planted every six (6) feet, using plugs salvaged from marshes in the immediate vicinity or obtained from a nursery. Transplanting shall take place within twelve (12) hours after salvage and the root masses shall be kept continuously inundated from the time of transplanting.

(e) Wetland areas shall cover a minimum of one (1) acre. Side slopes shall be no steeper than 3:1 (horizontal:vertical). Small islands and complex shorelines shall be provided to create a diverse environment. Wetland designs shall include provisions for the wetlands to be partially drained periodically, in order to allow

for the reseeding of aquatic plants and to promote the decay of built up organic debris.

(f) Pit bottoms should be recontoured to create areas for waterfowl nesting and depressions to provide a more permanent water feature. Islands should generally be located on the upwind side of the water body to minimize exposure to the prevailing winds. Island slopesslops above the water level should be no steeper than 2:1 (horizontal:vertical). Emergent vegetation shall be placed around the edges of islands to reduce wave-related erosion. Shrubs shall be widely spaced. Trees and tall shrubs shall not be planted on the islands, since predators perch in them to prey on waterfowl.

(g) Appropriate species and densities for marsh restoration may include the following:

Species (common name)	Density (plugs per acre)
Creeping spikerush	200
Baltic rush	100
Tule	100
Bulrush	100
Three square	10
Beaked sedge	5
Scouring rush	5
Buttonbush	5

4.5-14 The following guidelines shall be followed when developing riparian woodland habitat areas:

(a) Riparian woodland shall be established only where there are coarse slopes containing soil types such as cobbly loam, gravelly loam, or other loamy textures. Where slopes contain significant clay layers, open woodland sor grasslands shall be restored instead.

(b) Trees and shrubs shall be planted in clusters to create alternate patterns of open and enclosed spaces.

(c) Appropriate species and densities for riparian woodland restoration may include the following:

Species (common name)	Density (number or pounds/acre)
Wild rose	36
Valley oak	33
Fremont cottonwood	26
Black willow	23
Red willow	23

Arroyo willow	23
Sandbar willow	23
Goodings willow	23
Native blackberry	19
Box elder	18
Wild grape	16
Dogwood	16
Oregon ash	16
Western sycamore	16
Blue elderberry	12
Mugwort	10
Mule fat	6
Creeping wildrye	16 pounds

4.5-15 The following guidelines shall be followed when developing oak woodland habitat areas:

(a) Trees and shrubs shall be planted inclusters of six (6) to seven (7) individuals, typically consisting of a single species. Some mixed groupings, such as valley oak and elderberry may occur where appropriate. GrayGrayGrayGray pine, however, shall be planted singly (not in clusters) at the higher elevations of the site. Clusters of trees and shrubs shall be planted from twenty-five (25) to fifty (50) feet apart, with native grassesin between.

(b) Appropriate species and densities for oak woodland restoration may include the following:

Species (common name)	Density (number or pounds/acre)
Valley oak	20
Wild rose	15
Blue elderberry	10
Coyote bush	10
Toyon	10
Redbud	10
Coffeeberry	10
Native blackberry	8
Interior live oak	6
California buckeye	5
Gray pine	3
Creeping wildrye	16 pounds
California brome	10 pounds
California barley	5 pounds
Pina bluegrass	5 pounds
Purple needlegrass	5 pounds

4.5-16 The following guidelines shall be followed when creating habitat areas within previously mined areas outside of the active channel:

(a) Basins that have floors close to the groundwater level should be restored to seasonal marsh and riparian wetlands. Those that are permeable, dominated by sand and gravel, should promote woodland habitat.

(b) Pit floors shall have sufficient topsoil and overburden to support the proposed habitat. Overburden and soil may be obtained from the diversion of agricultural tailwater, aggregate processing wash fines, of deposition by the creek. Areas to be planted shall be appropriately prepared prior to planting. If necessary, soils may be tested after preparation has occurred in order to determine the need for soil amendments.

(c) Pits should then be planted and irrigated until the plants have established. Agricultural tailwater is encouraged as an irrigation source. It would provide a valuable source of water for revegetation projects, and would also provide bio-filtering for the sediment and residue pesticides contained within the tailwater.

(d) Areas that will not be planted may be graded to create steep, barren slopes to provide habitat for the bank swallow.(e) Except in important recharge areas, levees may be removed, breached at the downstream end, or a culvert installed at the downstream end to allow for dynamic interaction with the variable water level in the creek. Natural flooding will provide additional water, increase the diversity of tree species through colonization, and allow for the accumulation of organic nutrients and sediment.

(f) Habitat plans shall take into account the range of expected water level fluctuations and shall adjust the siting and design of the pit accordingly.

(g) In areas where fluctuating groundwater levels may affect revegetation plots at wet pit sites, consult with the TAC hydrogeologist and biologist to develop a viable, site-specific planting area.

4.5-17 Topsoil and vegetation removed from the streambed shall be salvaged for use in restoration planting within the channel.

4.5-18 Where the low-flow channel is creating excessive bank erosion problems and its relocation becomes necessary, grading within the low-flow channel shall provide a smooth surface, without undulations. This will ensure the safe passage of fish and prevent them from becoming trapped in isolated packets of water.

4.5-19 Low weirs may be installed, outside of the low-flow channel, to provide shallow pools for encouraging the establishment of riparian vegetation. When establishing shallow pools out of the low-flow channel, but within the floodplain of Cache Creek, the County shall coordinate with the TAC and the California Department of Fish and Game to minimize the potential for native fish species mortality due to potential impediments to fish migrations.

4.5-20 The in-channel area located west of the Capay Bridge is the highest priority for tamarisk elimination. Weed control, using the most up-to-date technology, shall begin within the first year after ground disturbance in order to prevent tamarisk from outcompeting native vegetation. A combination of mulching and spraying is preferred. Chemicals should be applied to freshly cut stumps and must cover the entire cambium layer. Cut plants should be removed from the channel and either disposed of or burned. Cutting and chemical treatment is most effective during from July through "first frost" (November), when the plant enters dormancy. Application should be repeated to control shoots growing from root systems. All chemical spraying must be done by a certified herbicide applicator. All cut plants should either be disposed of or burned. Monitoring and mapping of the tamarisk removal shall be coordinated with the Yolo County Weed Management Area efforts.

In marshy areas, when chemical treatments are prohibited, tamarisk may be uprooted with a backhoe or tractor. This is best performed when the plants are flowering and more visible. When the soil is moist, saplings may also be removed by hand with relative ease.

4.5-21 Giant reed shall be removed from areas of high flow velocity, using the most up-to-date technology, especially within the channel area located west of the Capay Bridge. The most effective control is the chemical application of Roundup (away from water) and Aqua Master (near water) during March and April. Optimum results are achieved with total spray coverage. Alternatively, reed may be sprayed with follow-up removal of the dead plants. All cut plants should be either disposed of or burned. Applications should be repeated to treat shoots that resprout when re-growth is approximately 4 feet tall and 60% of the original stem density. All chemical spraying must be done by a certified herbicide applicator. Monitoring and mapping of the giant reed removal shall be coordinated with the Yolo County Weed Management Area efforts.

4.5-22 Where riparian reforestation is proposed in streambed areas located outside of the low-flow channel, cottonwood and willow cuttings should be placed within existing swales and other naturally-occurring low-elevation areas in order to provide them with sufficient water to survive the summer months.

4.5-23 The TAC shall evaluate the vegetative cover within the CCRMP on an annual basis. At a minimum of once every five years, the existing hydraulic model of the Cache Creek channel shall be updated based on current conditions, including estimated of channel roughness. If sensitivity analysis indicates that the existing vegetation is contributing to adverse channel roughness, the TAC shall recommend removal of vegetation within selected areas of the channel.

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). ~~Currently, there are no public recreational facilities located along Cache Creek within the plan area. However, plans are underway for a 41-acre open space park on land dedicated to the County by Granite Construction Company near the junction of County Road 85 and Highway 16 (see Figure 10.). Although there are~~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~~, the lower portions of the stream are predominantly characterized by agricultural and mining uses.~~ Due to the high proportion of land in private ownership, access to the creek is ~~severely~~ limited. ~~In-stream mining has historically compounded the problem, often creating an unattractive landscape where the use of heavy equipment generates noise and hazards for visitors to the creekbed.~~ Present recreational uses are generally limited to ~~general uses, such as~~ canoeing, rafting, hunting, and fishing.

Other recreational facilities ~~There are a number of recreational areas~~ within the immediate area~~,~~ include~~ing~~: 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. ~~None of these uses, however, provide direct access to the creek.~~

Recently trespass and illegal off highway vehicle (OHV) activity are significant management issues along lower Cache Creek. ~~According to local landowners, there is a great deal of unauthorized recreational usage. Off-road vehicles~~OHVs use formerly mined pits and streambanks, creating erosion~~s~~ and damaging riparian vegetation. Trespassing is frequent, including~~with people~~ poaching, camping, and loitering along the creek, resulting in~~leaving behind~~ 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~~Such a system would require~~ a more detailed analysis of the recreational needs of Yolo County which will include consideration of any~~and the~~ resulting environmental effects (including land use conflicts) of a regional parkway. ~~Future D~~development of ~~a~~the Cache Creek P~~p~~arkway P~~p~~lan will~~would~~ 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 ~~directly~~ addressing creek ownership and access issues. In the long run, planning efforts for this portion of Cache Creek should be coordinated with recreational plans ~~being~~ developed by the U.S. Bureau of Land Management for the upper watershed.

~~Until such time as a parkway plan is approved, however, t~~The CCRMP has resulted in several areas that will provide ~~designated six general areas for~~ future recreational use (see Figure 10). They ~~Sites~~ are located at regular intervals of approximately two miles along Cache Creek, in order to function as trailheads or staging areas for a ~~possible~~ system of bicycle, pedestrian, and/or horse paths. These r~~R~~ecreational areas are located~~were also sited~~ 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~~When specific sites~~ are dedicated to the County (or brought into the system through other means) ~~approved~~, the CCRMP recommends that they also be designated as open space~~, in the General Plan,~~ 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. ~~Over time, Cache Creek will~~ 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.~~would not only disturb nearby residents and business operations but may endanger the safety of violators.~~ Therefore, one of the primary goals of the County is to manage future public access, to minimize if not preclude ~~including any~~ 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 pm and 6:00am.

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~~Include~~ use ~~of~~ the "Open Space" designation for ~~the~~ areas where resource management and habitat protection is warranted.

5.4 ACTIONS

5.4-1 Continue to s~~S~~olicit the dedication of restored habitat areas and/or recreational areas to the County or an appropriate land trust, ~~such as the Cache Creek Conservancy,~~ 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~~recreation~~ P~~p~~lan ~~for~~for ~~Cache Creek,~~ 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 ~~possible~~ 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~~Cache Creek Resource Management Plan~~.

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, ~~TAC,~~ in consultation with the TAC, and stakeholders~~resources agencies~~, 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 ~~future recreation p~~Plan.

~~5.5 PERFORMANCE STANDARDS~~ *(These have been integrated into the Cache Creek Parkway Plan)*

~~5.5-1 Only those uses that are river dependent, such as fishing, canoeing, and nature observation shall be located on the creek. More active uses, including parking, restrooms, and picnic areas should be located in areas located away from sensitive habitat, preferably on land that has been reclaimed from sand and gravel mining.~~

~~5.5-2 Recreational uses shall be clustered at locations along the creek, in order to limit public access, minimize habitat disturbance, and provide efficient and cost-effective management by the County. All access, whether by road or by trail, shall be through an entry point which can be controlled.~~

~~5.5-3 Physically control access with gates and collect user fees to support operations and deter inappropriate activities. Limited public access will also reduce impacts to sensitive habitat and adjoining private uses. Additional options include permits, volunteer docents to patrol the site, and escorted tours.~~

~~5.5-4 Recreational facilities shall be located a minimum of one-hundred and fifty (150) feet from private dwellings, with a landscaped buffer provided to reduces noise and maintain privacy.~~

~~5.5-5 Educational and interpretive curricula shall be developed that will reach all segments of the community. The County shall rely heavily on compatible programs already developed by volunteers, schools, and nonprofit organizations.~~

~~5.5-6 Large-scale, high-intensity recreational uses, such as amusement parks, off-road vehicle parks, or uses involving motorized watercraft, are not compatible with land uses along Cache Creek.~~

~~5.5-7 The recreational use of off-road vehicles and all-terrain vehicles on public property shall be prohibited.~~

~~5.5-8 The hunting and/or discharge of firearms along Cache Creek shall be prohibited on public property.~~

~~5.5-9 Noise analyses shall be conducted for proposed recreational uses where medium to large groups would congregate in common use areas. The study shall identify likely sources of noise and ways to reduce levels to minimize annoyance at adjacent properties.~~

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 ~~associated with the final years of the Syar in-channel permit. Syar was the last operation to close their in-channel operations; they commenced off-channel operations in June of 1999~~ 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 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 US Army Corps and Engineers and US Fish and Wildlife Service since 2009.

~~In-channel mining is currently regulated under Chapter 3 of Title 10 of the Yolo County Code, while reclamation is administered under Chapter 5 of the same title. Although minor amendments have been made over the years, these regulations are essentially the same as they were when adopted in 1979. At the time of adoption, the mining and reclamation ordinances were considered to be interim measures which the County would use until a more thorough revision could be made as a part of the Resource Management Plan being developed by the Aggregate Technical Advisory Committee (AgTAC). However, that planning effort later was halted and the interim regulations have remained in place ever since. As a result, many of the operational and reclamation alternatives that were adopted in 1980 are still in effect today.~~

~~Most of the in-channel mining permits were approved in 1980, with the exceptions of several Teichert operations, specifically: Reiff/Esparto (1986), Muller (1989), and Coors-Fong (1989).~~

~~Figures from 1994 show that within the plan area, approximately 70 to 75 percent of the Cache Creek channel is being mined. The conditions of approval associated with these prior permits, though typical for the time, do not adequately reflect the increased level of concern an expanded body of knowledge regarding Cache Creek that has developed since. As described in the Technical Studies, in-stream mining has created a significant sediment deficit, removing more aggregate than has been annually deposited. Although not the only cause, this deficit has contributed to the lowering of the streambed, which has in turn increased scour and flow velocity, resulting in a generally imbalanced creek system. While a number of factors besides in-channel mining have played a role in creating these conditions, channel stability cannot be achieved unless the amount of in-stream mining is significantly reduced.~~

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, ~~Sand and gravel mining, operating under the guidelines~~ 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 ~~not only~~ help ensure the creek maintains ~~the~~ capacity to adequately convey high flows~~floods~~, and~~but~~ will ~~play a determining role in forming a low-flow channel and~~ slow~~ing~~ flow velocities, which ~~in turn~~ will create more beneficial conditions for the establishment of riparian vegetation. More vegetation will provide more habitat for wildlife, as well as assist in s~~f~~lowing surface water flows ~~and encouraging aggradation in some areas,~~ which will improve in-channel groundwater recharge. Increased groundwater supplies will lower pumping costs, thereby helping local agriculture. ~~Finally, t~~The resulting improvements overall, will create a more attractive and enjoyable environment for all stakeholders~~limited use by the public~~.

It is important that these activities be managed in a way that carries out the stated objectives. To do so ~~will~~ require~~s~~ a cooperative and mutually beneficial partnership between local landowners, aggregate companies, the County, and various other regulating government agencies. ~~The first step is to allow them to excavate within the active channel. This approach is necessary to implement the CCRMP and will be required as a part of any future off-channel approvals. Accomplishment of this would be a substantial net gain. Existing operations that mine outside of the active channel, such as Granite Construction and Schwarzgruber and Son, would not be affected.~~

~~The plan and its implementation may qualify for exemption from the Surface Mining and Reclamation Act. If, however, the CCRMP and CCIP are found to be subject to SMARA, the County would file as the applicant for a surface mining permit and reclamation plan for the area covered CCRMP plan boundary.~~ 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. ~~This would allow in-channel~~

~~excavation to occur near State and County bridges. The County would not acquire the land within the channel under this permit, nor would any exercise of eminent domain occur.~~ No mining within the channel would occur without the express consent of the affected landowner. Royalties would be paid to ~~any person who~~ owners~~d~~ 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~~for~~ their own properties.

As a part of managing Cache Creek, the County must~~would~~ 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 US Army Corps of Engineers, Biological Opinion for federally endangered species from the US 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 fo 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. ~~of jurisdiction to establish "blanket" permits for the portion of Cache Creek to be permitted. Of particular importance would be the U.S. Army Corps of Engineers (404 Permit), State Reclamation Board (Encroachment Permit), State Department of Fish and Game (Stream Alteration Agreement), and the Federal Emergency Management Agency (Letters of Map Amendment and Map Revision). Standard conditions will be sought to streamline the permit process and ensure a consistent multi-agency approach to managing the creek. Coordination with Caltrans would have to be on a project-by-project basis due to the nature of their approvals.~~

It is important to recognize ~~Finally, there is~~ the cost of doing the actual aggregate removal and channel shaping. The County does not ~~has neither~~have the funds ~~n~~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 ~~a portion of~~ 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 ~~all~~ applicable regulatory requirements, as well as ~~any other~~ recommendations made by the TAC~~Technical Advisory Committee~~. In return, ~~any~~ 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~~Cache Creek Resources Management Plan~~ and CCIP~~Cache Creek Improvements Program~~; 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 ~~"blanket"~~programmatic permits for the entire length~~reach~~ of the creek~~stream~~ located within the plan area. This will give the County more local control over management of the creek, while providing certainty for the TAC~~Technical Advisory Committee~~ 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 ongoing 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).

~~**6.5 PERFORMANCE STANDARDS**~~ *(These have been integrated into the In-Channel Ordinance or otherwise completed)*

~~6.5-1 All in-channel operations shall be limited to the hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, unless emergency conditions require otherwise.~~

~~6.5-2 If human skeletal remains are encountered during excavation, all work within seventy-five (75) feet shall immediately stop and the County Coroner shall be notified within twenty-four (24) hours. If the remains are of Native American origin, the appropriate Native American community identified by the Native American Heritage Commission shall be contacted, and an agreement for treating or disposing, with appropriate dignity, of the remains and associated grave goods shall be developed. If any cultural resources, such as chipped or ground stone, historic debris, building foundations, or paleontological materials are encountered during excavation, then all work within seventy-five (75) feet shall immediately stop and the Community Development Director shall be notified at once. Any cultural resources found on the site shall be examined by a qualified archaeologist and the information shall be submitted to the County.~~

~~Damaging effects on cultural resources shall be avoided whenever possible. If avoidance is not feasible, the importance of the site shall be evaluated by a qualified professional prior to the commencement of excavation operations. If a cultural resource is determined not to be important, both the resource and the effect on it shall be reported to the County, and the resource need not be considered further. If avoidance of an important cultural resource is not feasible, a mitigation plan shall be prepared and implemented. The mitigation plan shall explain the importance of the resource, describe the proposed approach to mitigate destruction of damage to the site, and demonstrate how the proposed mitigation would serve the public interest.~~

~~6.5-3 All unpaved roads shall be adequately watered to keep soil moist at all times, in order to control fugitive dust.~~

~~6.5-4 Operational areas and haul roads that are not required for future use of the site shall be ripped and prepared accordingly to prevent compaction and allow for revegetation.~~

~~6.5-5 Noise levels shall not exceed an average noise level equivalent (Leq) of eighty (80) decibels (dBA) measured at the outermost boundaries of the property being excavated. However, noise levels may not exceed an average noise level equivalent (Leq) of sixty (60) decibels (dBA) for any nearby off-site residences or other noise-sensitive land uses, unless emergency conditions require otherwise.~~

~~6.5-6 Final slopes for in-channel excavations shall conform with the channel slope and sinuosity guidelines shown in Figure 11 of the CCRMP. Excavations shall be sloped in a downstream direction, towards the low-flow channel. When recommended by the TAC, alternate grading plans may be approved.~~

~~6.5-7 In-channel excavations shall generally conform with the cross-section profiles shown in Figures 12 through 16 of the CCRMP. When recommended by the TAC, alternate grading plans may be approved.~~

~~6.5-8 No excavation shall take place within one hundred and fifty (150) feet of the centerline of the low-flow channel, where the creek is contained within a single channel. Where the creek is braided or contains multiple channels, no excavation shall take placed within one hundred and twenty-five (125) feet of each channel.~~

~~6.5-9 In-channel haul roads shall be located along the toe of the streambank, in order to provide additional bank stabilization and to minimize disturbance of the low-flow channel. Each operation may have no more than two (2) haul roads at one time that cross the low-flow channel. Construction of the haul roads shall not result in excavation of the toe of the streambank, and shall be designed to avoid existing or restored riparian habitat. Haul roads shall comply with all applicable requirements.~~

~~6.5-10 Approved channel improvement projects requiring excavation of channel banks and removal of riparian vegetation shall revegetate upon the completion of excavation activities or shall develop similar habitat at a suitable off-site location.~~

~~6.5-11 All work within the channel shall comply with the requirements of all agencies of jurisdiction, including but not limited to: the State Department of Fish and Game, the U.S. Army Corps of Engineers, the State Regional Water Quality Control Board, CalTrans, and the State Reclamation Board.~~

~~6.5-12 Where gravel bars are to be excavated, aggregate removal shall be limited to the downstream portion of the deposit and may not exceed seventy-five (75) percent of the length of the bar. Twenty-five (25) percent of the upstream portion of the gravel bar shall~~

~~be retained, in order to allow for the establishment of riparian vegetation. Complete removal of gravel bars may be recommended by the TAC only if hydraulic conditions related to the bar are recognized to threaten structures and property.~~

~~6.5-13 Aggregate material to be removed from the streambed shall be excavated as soon as is practicable after deposition, prior to the establishment of vegetation. No stockpiles shall be left within the channel after excavation has been completed.~~

~~6.5-14 Proposed off-channel excavations located within the streamway influence boundary shall be set back a minimum of seven-hundred (700) feet from the existing channel bank, unless an engineering analysis demonstrates that a small distance will not adversely affect channel stability within the reach. If the proposed engineering measures are demonstrated to be feasible, then the minimum setback distance shall be no less than two hundred (200) feet.~~

~~Approval of any off-channel mining project located within seven-hundred (700) feet of the existing channel bank shall be contingent upon an enforceable agreement which requires the project operator to participate in the completion of channel improvement projects, along the frontage of their property, consistent with the CCRMP and CCIP. The agreement shall also require that the operator provide a bond or other financial instrument for maintenance during the mining and reclamation period of any bank stabilization features approved for the mining project. The agreement shall also require that a deed restriction be placed on the underlying property which requires maintenance of the streambank protection by future owners of the property. Maintenance of the bank stabilization features following completion of reclamation shall be the responsibility of the property owner.~~

~~6.5-15 Streambed regrading after excavation shall leave behind an undulating surface outside of the low-flow channel, so that the resulting surface depressions expose the shallow water table and encourage the colonization of riparian trees. Features such as channels and pools maximize the diversity of environmental conditions for the establishment of riparian habitat, and are therefore encouraged.~~

~~6.5-16 Provide for the existing use permits that allow in-channel surface mining to be relinquished by the permit holders and the continued right to mine within Cache Creek terminated, prior to the commencement of newly permitted off-channel mining operations.~~

~~6.5-17 The County shall identify the costs of implementing the policies contained in the CCRMP, and determine a fair-share cost program for reimbursement by gravel operators and any other affected parties.~~

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 usesissues. 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 creekstream 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

As discussed earlier, the Test 3 BoundaryThe Channel Form Template is thea 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. out the transitions into and out of bridge crossings, so that the severity of these constrictions on the creek channel is lessened. 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. It is estimated that approximately 33 acres of existing farmland (11 acres of which are prime agricultural land) lie within the Test 3 Boundary and would therefore be lost to channel widening activities. However, farmland may be expanded in those areas where the bank is extended, reducing or offsetting expected losses. In addition, tThe erosion of streambanks has resulted in substantial lossremoval 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 will involves careful management of the creekstream by the County. Two of the primary goals in carrying out this management arewill be to minimize erosion and to allow for aggradation (as long as flood flow conveyancevolume 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. One of the most interesting proposals is a program that is currently

~~in the process of being developed by the State Department of Fish and Game and the U.S. Fish and Wildlife Service. The "Safe Harbor" program would encourage voluntary restoration or habitat enhancement activities, by limiting the land owner's future liability for any incidental take of listed species to that which existed at the time the agreement was reached. Thus, if a land owner agrees to create new habitat under a Safe Harbor conservation agreement, and then some years later decides to terminate the agreement and farm the created habitat, the owner would not be liable for the incidental taking of any species that had become established on the newly created habitat. This plan is still in the development stages and is currently proposed only for the San Joaquin Valley, but efforts should be made to extend the program to Yolo County.~~

~~On a more immediate level, g~~ Groups seeking to restore habitat along Cache Creek are encouraged to form partnerships~~should become partners~~ 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~~Department of Fish and Game~~ to ensure~~investigate the feasibility of developing a "Safe Harbor" program for~~ that agricultural operations are not adversely~~potentially~~ 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.

~~**7.5 PERFORMANCE STANDARDS**~~ (These have been integrated into the In-Channel Ordinance and/or CCIP)

~~7.5-1 Revegetation projects may be coordinated with agricultural drainage structures that empty into Cache Creek or previously mined areas separated from the creek, so that the sediment deposited can provide additional topsoil and so that riparian species requiring a more steady supply of water can be established.~~

~~7.5-2 Vegetated buffers should be placed between restored habitat areas and adjoining farmland in order to minimize the potential for riparian areas to serve as reservoirs for predators and insect pest. Said buffers will also reduce the effects of noise, dust, and spraying generated by agricultural operations on wildlife and riparian vegetation.~~

~~7.5-3 Species and water features included in habitat areas should be designed to discourage the intrusion of wildlife, insect pests, and weeds that would impair local crops.~~

~~7.5-4 Trees that are suitable for wildlife perching near agricultural fields dedicated to row crop production should be incorporated into habitat design in order to provide foraging habitat for Swainson's hawks and other birds of prey.~~

~~7.5-5 The Yolo County Community Development Agency, in consultation with the Yolo County Resource Conservation District Board, and with approval by the Board of Supervisors, shall present a request to the California Department of Fish and Game of initiate a "Safe Harbor" program for the CCRMP/OCMP planning area, or develop a functionally equivalent program.~~

~~7.5-6 All habitat restoration, creation, or enhancement plans proposed within the CCRMP channel boundary shall be reviewed by the County Agricultural Commissioner if requested by proponents of channel modification projects. The Agricultural Commissioner shall identify and recommend appropriate vegetative buffers between habitat areas and agricultural fields and effective management of site water resources (including appropriate integration of agricultural drainage features into habitat planning). Buffers that would result in partial or secondary loss of agricultural land shall not be recommended by the Agricultural Commissioner.~~

ACKNOWLEDGEMENTS

2019 Update

Updated acknowledgement will be inserted here

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 Sieferman	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
Donald Peart	District 5
Merrideth Stephens	At Large
Jeff Mervin	At Large

2002 Key Members of Staff

Vic Singh	County Administrative Officer
David Morrison	Resource Management Coordinator
Linda Fiack	Parks and Resources Manager (Present)

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.

Funding for this project was provided by R.C. Collet, Solano Concrete Company, Syar Industries, and Teichert Aggregates.

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To find out more about this Plan, or the process through which it was developed and updated, please contact:

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Exhibit 4 to Attachment B

~~*FINAL*~~*DRAFT REVISED*
CACHE CREEK
IMPROVEMENT PROGRAM (CCIP)
for LOWER CACHE CREEK

Yolo County

Updated _____, 2019
Amended March 15, 2011
Adopted August 20, 1996

***DRAFT REVISED*~~*FINAL*~~**

CACHE CREEK IMPROVEMENT PROGRAM
for LOWER CACHE CREEK

Yolo County

Updated _____, 2019 (Board Resolution x.x)
Amended March 15, 2011 (Board Resolution 11-15)
Adopted August 20, 1996 (Board Resolution 96-132)

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LIST OF FIGURES

NOTE TO READER: Figures and cover will be replaced with new clean updated graphics. Photographs will be added and the plan will be reformatted to make it more attractive and user friendly.

LIST OF TABLES

NOTE TO READER: Tables will be replaced and/or updated.

CHAPTER 1.0 INTRODUCTION

1.1 PURPOSE

The Cache Creek Improvement Program (CCIP) was developed by ~~the~~ Yolo County ~~Community Development Agency~~ to implement the goals, objectives, actions, and performance standards of the Cache Creek Resource Management Plan (CCRMP) ~~as it relates~~related~~s~~ to the stabilization and maintenance of the Cache Creek channel. ~~It has been adopted as a component part of~~It implements the CCRMP, and may be amended as needed, without a general plan amendment. The CCIP provides the structure and authority for a Technical Advisory Committee (TAC), and defines the procedures and methodologies for creek~~stream~~ monitoring, ~~and~~ maintenance, and stabilization activities. ~~, and identifies initial high priority projects for stream stabilization.~~

1.2 REGULATORY FRAMEWORK

One of the primary actions of the CCRMP initially ~~is~~was the elimination of commercial mining within the Cache Creek channel. Mining activities permitted in the past~~, under in-channel mining permits approved under the provisions of the Yolo County Mining Ordinance and the State Mining and Reclamation Act (SMARA), have~~ contributed to streambed lowering and the loss of riparian vegetation. Since creek instability is~~will~~ only ~~be~~ partially addressed by the elimination of in-channel commercial aggregate mining, the CCRMP ~~recognizes~~recognized~~s~~ the need for channel maintenance and improvement projects to promote stabilization of the creek channel and the protection of infrastructure elements along the creek. The CCRMP also ~~acknowledges~~acknowledged~~s~~ that the elimination of in-channel mining could result in sediment accumulation in the channel which could~~may~~ cause a reduction of channel capacity and increase in flood~~ing~~ hazard~~s~~. Modifications and maintenance of the Cache Creek channel are the obligation solely of individual landowners through an application process ~~would be managed~~ overseen by the County and the TAC subject to ~~and would occur under~~ the review and guidance procedures described in the CCIP. The improvements and maintenance projects recommended as a result of the CCIP process could require excavation and filling of areas under the jurisdiction of the following local, State, and Federal authorities:

Yolo County ~~Community Development Agency (YCCDA)~~

Any proposed improvements resulting in channel modifications within the 100-year flood hazard zone as defined by the National Flood Insurance Program shall require a Flood~~plain~~ Hazard Development Permit from the Yolo County Floodplain Administrator ~~(YCCDA Director)~~.

U.S. Army Corps of Engineers (COE)

Any proposed channel improvement project resulting in filling or excavation within "waters of the United States" shall require a Section 404 permit from the COE.

California Department of Fish and Wildlife (CDFW)~~Game (CDFG)~~

Any proposed channel improvement project resulting in disturbance of areas below the high water level of the creek shall require the applicant to secure~~negotiate~~ a Streambed Alteration Agreement with CDFW~~G~~ (Section 1601).

California Regional Water Quality Control Board (RWQCB)

Construction activities associated with channel improvement projects performed under the CCIP may require compliance with the requirements of the statewide General Permit for Storm Water Discharges Associated with Construction Activities. For projects meeting the criteria for permitting under the General Permit, the project sponsors would be required to file a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) to comply with the requirements of the General Permit.

Since 1996, ~~T~~the County has ~~is currently~~ worked~~ing~~ with the State and Federal agencies noted above to secure and implement~~determine the feasibility of obtaining~~ regional or "general~~blanket~~" permits for the CCRMP program~~area~~. These~~If obtained, the~~ permits have~~would~~ been administered by the County~~YCCDA~~ as part of the Flood Hazard~~plain~~ Development Permit process. A history of these permits through the date of this plan update is provided below:

USACOE RGP #58 Section 404 Discharge Permit – Authorized July 1997 to July 2002; reauthorized May 2004 to May 2009; reauthorization requested June 2011; action pending.

USFWS Biological Opinion (VELB) – Authorized September 1996; tied to 404 permit; reauthorization requested June 2011; action pending.

CVRWQCB Section 401 Water Quality Certification – Authorized July 1999 to July 2002; reauthorized August 2002 to May 2009; reauthorized April 2016 to April 2021 (WDID# 5A57CR00093).

CDFG Streambed Alteration Agreement Section 1601/1603 – Authorized July 1997 to June 2002; reauthorized August 2002 to August 2007; extended to December 2007; replaced August 2008 with Section 1602 MOU implemented through individual project permits; replaced November 2015 with Routine Maintenance Agreement (Notification No. 1600-2014-0054-R2) which expires after 12 years (November 2027).

CDOC SMARA Compliance (PRC Section 2715.5) -- Pursuant to CCRMP Action 2.4-15 the County submitted a request in the fall of 1998 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. The request was declined and the state determined the CCRMP was subject to SMARA, so a legislative solution was sought. In 1999 special legislation was passed to amend SMARA to recognize the CCRMP as the functional equivalent of a Reclamation Plan for purposes of SMARA compliance. 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.

1.3 Program Implementation History

1999 Mercury Lawsuit

On August 20, 1995, the Board of Supervisors approved the Cache Creek Resources Management Plan ("CCRMP"). Action 6.4-3 of the CCRMP stated as follows: "…County shall coordinate with other government agencies that have authority over Cache Creek to obtain "blanket" permits for the entire length of the creek located within the plan area."

As a part of the implementation of this Action, on July 1, 1997, staff submitted an application to the Central Valley Regional Water Quality Control Board ("RWQCB") for a 401 certification for the CCRMP area. On December 16, 1998, the RWQCB recommended approval of the Certification to the State Water Resources Control Board ("SWRCB"). Certification for the CCRMP area was formally approved by the SWRCB on June 11, 1999. The approved Certification included a requirement (Condition 2 of the Cache Creek Erosion and Sediment Control Demonstration Project) for the County to implement a water quality monitoring program approved by the RWQCB at the Cache Creek Nature Preserve wetlands site. The monitoring program was to include the collection and analysis of water column and bioaccumulation (tissue) data for the presence of mercury.

On July 12, 1999, the Citizens For Responsible Mining ("CFRM") filed a lawsuit in Sacramento Superior Court (Case No. 99CS01395) against the SWRCB for approving the Certification. A Settlement Agreement regarding the Lawsuit was subsequently executed between CFRM, SWRCB, and the County on February 11, 2000. One of the provisions of the Settlement Agreement required the County to develop a Mercury and Water Quality Monitoring Protocol to be applied to projects implemented in channel under the approved Section 401 Water Quality Certification, in a joint effort with the RWQCB, as provided for in Exhibit A of the Settlement Agreement. Exhibit A also required that the Protocol be developed by a specified technical team. Under the Settlement Agreement, the County was required to cover the reasonable costs of developing the Protocol. The contract for that work was approved by the County Board of Supervisors in late August 2000 approving a three-year scope of work to test and analyze fish, invertebrate, and water samples along lower Cache Creek.

The purpose of the work was to provide information about the possible presence and biological interaction of mercury in shallow wetland habitats. The testing and analysis was intended also to provide the information necessary to ensure that the wetlands at the Cache Creek Nature Preserve were properly managed to eliminate any potential bioaccumulation, should sufficient mercury levels be determined to be present. The results of this analysis were published as

Appendix F (Recommended Changes to Yolo County's Water Quality Monitoring Program for Lower Cache Creek) of the April 2002 Draft volume of the CCRMP Update EIR.

The settlement agreement and all requirements associated with it including interim participation on the TAC by a representative of the CVRWQCB expired in July 2002; however in the intervening time understanding, analysis, and regulation of mercury have continued.

2002 CCRMP Amendment

In 2002 in order to support requests for reauthorization of the various state and federal general permits necessary for implementation of the CCRMP/CCIP the County undertook an assessment of the effectiveness of the program. The County opted to demonstrate the effectiveness of the program through a Supplemental Environmental Impact Report (SEIR) in order to secure the necessary permit renewals. The project was defined in the CEQA document as "continued implementation of the CCRMP/CCIP".

The SEIR demonstrated that the 1996 program was working well. Amendments to the CCRMP were undertaken at the time to clarify components of the program, document the wetlands delineation, acknowledge recent changes in mercury regulation, and provide an overview on the status of implementation including where improvements could be made.

CHAPTER 2.0 CACHE CREEK IMPROVEMENT PROGRAM DESCRIPTION

2.1 PROGRAM ELEMENTS

The 1995 Technical Studies for the Cache Creek Resource Management Plan (CCRMP) included an extensive evaluation of existing and current hydrologic and hydraulic conditions along Cache Creek from the Capay Dam to just upstream of the I-5 bridge at Yolo, California. The results of the evaluation indicated that the Cache Creek channel hads been and was at the timeis currently in a state of hydraulic disequilibrium throughout much of this reach of the creek. The instability of the channel hads been caused by a combination of complex influences which have contributed to channel bed degradation and adverse lateral erosion. These influences included the reduction in channel width caused by the reclamation of floodplain areas to agriculture, construction of localized constrictions at bridge locations, prior in-channel aggregate mining of the channel bed, the diversion of streamflow for irrigation, and sediment deposition at dam sites. Updated technical evaluations completed in 2017 indicated that significant deposition of sediment has occurred in the CCRMP area and resulted in recovery of more natural channel sinuosity and slope in certain locations. While this recovery appears to be occurring faster than originally anticipated in 1996, To reduce the adverse effects of currentCache Creek still exhibits unstable hydraulic and sedinement transport conditions in the CCRMP area. , the Technical Studies proposed rRecommendationsrecommendations to improve channel stability along Cache Creek were identified in the 1995 Technical Studies and subsequently then refined by the 2017 Technical Studies conducted in support of the CCAP update.

The major recommendation from the 1995 Technical Studies was a proposed "reshaping" of the channel to develop more uniform hydraulic conditions and reduce the potential for adverse erosion. The 1995 Technical Studies proposed a conceptual channel configuration, referred to as the "Test 3" Run Boundary,model, which reflecteds more uniform channel conditions and included armoring of the channel bed underneath bridges to prevent scour. The Test 3 Run Boundarymodel would have served as a general goal for developing a more stable channel for Cache Creek. Projects implemented under the CCIP werewould required to be designed to support the development of this more stable condition.

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 has 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. For in-channel projects, which by definition are

preventative or restorative rather than undertaken for commercial gain, implementation of the Test 3 Run Boundary should be considered but is not always feasible. Language has been added to the In-Channel Ordinance to reflect this.

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, 2015 aerial photography, new HEC-RAS modeling, and over 20 years of monitoring data. The new HEC-RAS model is a two-dimensional model that reflects changes in topography and monitoring data collected as part of the program to allow for more precise simulation over the entire lower creek study area rather than in singular locations within individual reaches. The sophisticated mapping capabilities associated with the new HEC-RAS model did not exist in 1996. Evaluation of the Test 3 Run Boundary also recognized that the assumed channel bed hardening under the bridges was not implemented. The result was an update to the Test 3 Run Boundary called the Channel Form Template. The Channel Form Template replaces the Test 3 Run Boundary, but provides similar guidance for smoothing abrupt channel width transitions.

The three ~~major~~ key elements of the CCIP intended to promote a more stable Cache Creek channel are as follows:

Identification of ~~Major~~ Channel Stabilization Projects

The CCIP shall prioritize projects that provide more room for the river wherever possible, and smooth channel transitions in areas with hydraulic conditions that could cause excessive and damaging bank erosion or bed scour.~~identify major creek stabilization projects to be undertaken over the following five year period~~. Implementation of the projects is intended to guide development of a more stable channel form and reduce the adverse affects of channel migration, while providing protection for existing infrastructure components.

Identification of ~~Expected~~ Channel Maintenance Activities

Maintenance of the Cache Creek channel shall~~will be required to~~ promote improvements related to channel stabilization ~~projects~~ and reduce the potential for development of unstable channel conditions. The CCIP shall identify expected short-term and long-term channel maintenance activities.

Establishment of a Hydrologic Monitoring Program

Understanding~~Monitoring of~~ flow ~~discharges~~ and sediment transport in the Cache Creek channel is critical to designing and maintaining channel improvements. The CCIP shall provide a practical ~~monitoring~~ program for the evaluation of water flow in the creek and trends of sediment

transport and deposition. This may include monitoring and/or modeling as feasible and appropriate. The ~~monitoring~~ program shall also address changes in vegetation that could impact channel capacity and stability.

The hydrologic monitoring program shall also include those flooding events on Cache Creek which can result in major channel adjustments. The CCIP shall develop a program to mobilize technical personnel from the TAC during flood periods for inspection of channel conditions to monitor development of potential channel instabilities and flooding problems, and to survey water surface elevations to improve the calibration of the hydraulic model of the CCRMP area.~~.~~ Results from the flood watch program will also provide necessary information regarding project performance during floods and possible improved methods for maintaining and stabilizing the channel.

2.2 PROGRAM MANAGEMENT

Effective implementation of CCRMP requires coordinated management by an informed, experienced interdisciplinary group of professionals who are familiar with the processes and conditions within the Cache Creek system. Appropriate management structure and procedures are required to ensure continued collection of necessary information on channel conditions and prioritization of improvement and maintenance projects. The CCRMP establishes the ~~need for a~~ Technical Advisory Committee (TAC) for management of the CCIP. The following sections describe the management structure and responsibilities for the CCIP:

Natural Resources Manager~~Resource Management Coordinator~~

The Natural Resources Manager (NRM)~~Resource Management Coordinator (RMC), assigned by the Director of the YCCDA, will be~~ is responsible for management of all activities conducted by the TAC. The NRM has ~~RMC will have~~ the responsibility for overall management and coordination of the CCIP. The duties of the NRM~~RMC will~~ include coordination of the TAC with the regulatory agencies having jurisdiction over activities performed under the CCIP and with ~~other~~ members of the Cache Creek Stakeholder Group (described below) if one is established. The NRM~~RMC will~~ also has~~ve~~ the responsibility to coordinate any necessary permit applications and maintenance of required permits for the CCIP. The NRM~~RMC~~ will oversee the review and issuance of permits for channel improvement and maintenance projects.

Technical Advisory Committee

The Technical Advisory Committee will ~~be established to~~ provide scientific and technical review and oversight for all projects conducted under the CCIP. The TAC will collect and evaluate scientific data on hydrologic, hydraulic, sediment transport, and biological conditions within the CCRMP area. These data and analyses will provide the basis for identification of annual maintenance needs and priority projects and critical review of the design and construction of improvement projects.

The following tasks will be the responsibility of the TAC under the direction and supervision of the NRM~~RMC~~:

1. Implementation of a creek monitoring program;

2. Review of annual monitoring data;

3. Annual recommendations for channel maintenance activities that promote channel stability and environmental restoration;

4. Annual establishment of priorities for major channel stabilization projects;

5. Review of the design of projects requiring Flood Hazard~~plain~~ Development Permits within the CCRMP channel boundary;

6. Recommendations for periodic updates and refinements of existing hydraulic and sediment transport models, and annual update of online program data (CCAP Dashboard);

7. Review of riparian habitat restoration proposals and designs for consistency with the CCRMP and CCIP (see for example CCRMP Action 4.4-6);

8. Review of channel stabilization and annual maintenance activity performance;

9. Preparation of an annual report for submittal to the Board of Supervisors; and

10. Attendance at selected public meetings to describe channel management activities and the success of the improvement projects.

The science of ~~river~~ creek management is not so well advanced as to allow rigid formula-driven decision-making to dominate the planning and monitoring process in a dramatically changing ~~river~~ system such as Cache Creek. The members of the TAC must have a blend of specialized knowledge and experience that will enable them to develop environmentally sound and flexible strategies for balancing a wide range of resource needs. They must also have the skills to work effectively with a variety of stakeholders and the develop a shared vision of the creek's future. The TAC sha~~wi~~ll consist of a three-person interdisciplinary group comprised of the following:

1. A qualified river engineering specialist with expertise in environmental water quality analysis (hydraulic engineer);

2. A qualified fluvial geomorphologist; and

3. A qualified biologist or ecologist with experience in riparian restoration.

~~Nominations for a~~Appointments to the TAC shall be made by the County Administrator, or his/her designee. ~~will be approved by the Board of Supervisors. The TAC members may be compensated under a time-and-materials contract with the County, with a not-to-exceed amount.~~ The term of the TAC member contracts will be two years with the opportunity for unlimited extensions subject to~~pending~~ approval by the County Administrator~~Board of Supervisors~~. The TAC will be required to submit a yearly budget to the NRM~~RMC~~ for review and submittal for approval by the Board.

The TAC will be responsible for making recommendations related to the supervision of all three elements of the CCIP, based on the activities conducted by the TAC. However, Yolo County will be responsible for implementation of the NRM~~RMC~~ recommendations.

Cache Creek Stakeholders Group

The ~~RMC~~ NRM and TAC have broad responsibilities for decisions related to creek management. ~~However, t~~These decisions may benefit from ~~cannot be made without~~ organized input from interested agencies, citizens groups, and industry. Therefore, the CCIP includes the optional establishment of a~~the~~ Cache Creek Stakeholders Group (CCSG). The CCSG, if convened, will consist of representatives from various agencies and organizations and will provide a forum for the discussion of site-specific and general concerns regarding the resource management of Cache Creek. A ~~preliminary~~ list of potential participants, to be determined in the County's sole discretion. includes:

1. California Department of Fish and Wildlife~~Game~~;
2. Central Valley Regional Water Quality Control Board;
3. Yolo County Flood Control and Water Conservation District;
4. Yolo County Public Works Department;
5. Yolo County Office of Agricultural Commissioner;
6. Yolo County Resource Conservation District;
7. Yolo County Farm Bureau;
8. City of Woodland;
9. California Department of Water Resources;
10. Cache Creek Conservancy;
11. California Department of Transportation;
12. California Resources Agency;
13. California Department of Conservation;
~~14. Cache Creek Basin Coalition;~~
~~15. League of Women Voters;~~
16. Yolo County Aggregate Producers ~~Association~~;
17. U.S. Army Corps of Engineers;
18. Property Owners along Cache Creek;
19. Communities of Capay, Esparto, ~~and~~ Madison, and Wild Wings;
~~20. Friends of Cache Creek;~~
21. U.S. Bureau of Land Management; and

22. Other interested stakeholders~~Western Yolo Grange.~~

This list is advisory and may be modified by the County during implementation as appropriate. ~~Agencies or organizations identified in the above list which do not wish to participate in the CCSG should contact the YCCDA. Other groups not identified on the list which would like to participate should also contact the YCCDA.~~

2.3 PROGRAM IMPLEMENTATION

Implementation of the CCIP will require several important programmatic and procedural steps. The following sections describe the implementation process and procedures:

Implementation of Monitoring Program

The TAC will initiate and perform the monitoring program described in Chapter 6. The monitoring program will consist of annual collection of stream discharge and available sediment transport data, ~~and~~ annual analysis of changes in channel morphology, and annual analysis of changes in riparian vegetation and other biological resource elements (e.g., wildlife) as appropriate. All data and analysis will be summarized in an annual report submitted to the Board of Supervisors.

Notification off~~or~~ Recommended Channel Improvement Projects

On an annual basis, the TAC will identify priority channel improvement projects (separate from annual maintenance) on the basis of the results of the Cache Creek monitoring program. In an annual report to the Board of Supervisors, the TAC will describe the need for and purpose of identified priority projects. The report will describe the specific location of the projects ~~(identifying landowners)~~ and the general aspects of proposed improvements. The NRM will annually send notification regarding the availability of the report to landowners along the creek, encouraging them to consider implementation of identified channel improvement projects for/on the property they control. ~~With authorization by the Board, the RMC will submit a letter to landowners requesting participation in the implementation of the projects. The letters will describe the need and scope of the identified projects. The letters will also detail the type of permitting required for the projects and available resources for implementation of the project. Available resources may include hydrologic and hydraulic data compiled by the TAC which may be important for project design, design recommendations, or funding sources for implementation of all or parts of the recommended projects.~~

Permitting

All landowners proposing ~~channel substantial~~ channel modification projects within the CCRMP in-channel boundary will be required to submit applications to the County~~YCCDA~~ for a Flood Hazard~~plain~~ Development Permit. The permit applications will be reviewed by the County Floodplain Administrator and the TAC. The review will include consideration of potential effects of the proposed project on hydraulic conditions upstream and downstream of the proposed

project site, as well as ~~the~~ consistency with the CCRMP, CCIP, and requirements of jurisdictional agencies that have issued "general~~blanket~~ permits" for the area. Following their review, the TAC will provide recommended changes in project design, if necessary. Prior to issuance of any FHDP for proposed in-channel activities the County shall consider whether these recommendations should be integrated into project design. ~~Upon incorporation of the TAC recommendations into the project design, a Floodplain~~ Flood Hazard ~~Development Permit will be issued~~. Conditions of the permit shall~~will~~ require that completed projects be surveyed to provide a record of as-built conditions.

Regulatory Coordination

Successful implementation of the program requires the ongoing maintenance and renewal of general permits, described earlier, issued by various state and federal agencies including Section 404 (discharge) from the USACOE, Section 401 (water quality) from the CVRWQCB, and Section 2081 (streambed alteration) from the CDFW. These permits are critical for implementation of the CCRMP and CCIP. ~~During the first year of implementation of the CCIP, the YCCDA, with support from the TAC, will pursue issuance by the COE of a general Section 404 permit for improvement projects conducted under the CCIP. The YCCDA will also petition the CDFG for issuance of a general permit for Section 1601 Streambed Alteration Agreements and Section 2081 Permits for CCIP projects. In addition, the RWQCB will be approached for the issuance of a General Permit for Storm Water Discharge. The issuance of these general permits would streamline permitting process for channel improvement and habitat restoration projects. Under these conditions, the County would be given authority to approve projects that are consistent with the provisions of the CCRMP and CCIP.~~

Funding

~~The i~~Implementation of the CCIP shall be funded in part ~~would be funded initially~~ through fees generated by a surcharge on the weight of aggregate resources sold (not mined) within the County. As established in the Gravel Fee Ordinance ~~A~~a ~~$0.10~~ surcharge would be placed on each ton of processed aggregate in order to fund the CCRMP/CCIP. In addition, the County shall aggressively pursue other potential sources of funding, including user fees, benefit assessments, and state and federal grants for watershed management. The fees and other funding would be collected by the County Administrative Office (CAO) and placed in an interest-bearing account held by Yolo County, separate from the General Fund. The funds would be administered by the CAO with approval by the Board of Supervisors.

Implementation Schedule

The following sample~~preferred~~ schedule will guide~~be met by the TAC for each year of~~ program implementation~~ unless high flow conditions preclude initiation of annual channel morphology monitoring~~:

15 January	Submittal of TAC annual progress report on previous year's monitoring results and completed channel improvement projects to Board of Supervisors.
15 February	Submittal of annual progress report to the Office of the Chief Clerk, California State Assembly, pursuant to AB 1585, Chapter 7, Statutes of 2010 and Government Code Section 9795.
15 March	County to coordinate implementation of priority projects as identified in annual report.~~Notification by TAC to landowners of high-priority recommended channel improvement projects.~~
~~1 April~~	~~Completion of annual aerocartography.~~
~~March/April~~	~~Discussions between TAC and interested landowners regarding potential projects, including maintenance activities.~~
April/May	Annual creek walk
~~1 May~~	~~Completion of Digital Terrain Model and channel cross-section and analysis of model by TAC.~~
31 May	Deadline for submittal of applications to County~~YCCDA~~ for Flood Hazard~~plain~~ Development Permits (FDP) related to channel modifications within the CCRMP planning area during the summer and fall.
30 June	Completion of TAC and County~~YCDPW~~ review of FHDP applications for proposed in-channel projects~~channel modification designs and recommendations for approval of FDPs~~.
30 August	Completion of aerial photography and LiDAR (every five years or in water years with peak flows exceeding 20,000 cfs).
1 July~~y~~ to ~~/~~31 Oct~~ober~~	Construction/Implementation of channel improvement projects[1].

[1] Formal construction season determined by applicable state/federal permits.

30 November	Completion of Digital Terrain Model analysis by TAC (every five years or in water years with peak flows exceeding 20,000 cfs).
1 Oct to 30 Sep	Ongoing TAC monitoring of stream discharge, sediment transport, flood conditions, and channel morphology during each water year.
1 November	Termination of in-channel improvement projects (may not apply to all projects depending on conditions of approval).
~~January-December~~	~~TAC monitoring of stream discharge, sediment load, flood conditions, and channel morphology.~~

CHAPTER 3.0 CHANNEL~~MAJOR~~ STABILIZATION PROJECTS

3.1 INTRODUCTION

The following discussions outline a plan for improving the overall stability and ability to maintain~~ability of~~ Cache Creek. The Cache Creek Improvement Program will be achieved through a series of steps orchestrated by the TAC. Steps include: 1) ~~design and~~ implementation of ~~localized~~ a channel management corridor that~~stabilization projects to~~ promotes "self improvement and increased stability" of the creek's morphology; 2) implementation of a comprehensive annual monitoring program (described in Chapter 6), and 3) implementation of channel maintenance activities (Chapter 4). ~~The plan basically calls for the design and implementation of a series of localized stabilization projects integral to the initiation of a more stable and homogeneous channel configuration.~~

The Technical Advisory Committee (TAC) will be responsible for collecting the required monitoring data and prescribing when and how further in-depth hydraulic engineering analyses and design activities will be carried out. As discussed in Chapters 2, 4, and 6 in this document, the TAC will identify and prioritize stabilization and maintenance projects along the creek. Engineering design of stabilization projects can be performed by the private land owners or public agencies. Through the processes of monitoring, ~~maintenance~~ and implementation of creek stabilization and maintenance projects developed by the TAC, the CCIP shall be used to ~~intends to~~ promote adjustments in the creek which meet the stated objectives of the CCRMP while allowing flexibility for the creek to recover and restore itself through natural processes acting in the absence of commercial in-channel mining ~~fashion its own recovery and restoration~~ over time.

The creek is a dynamic system that ~~is currently~~was substantially impacted by a variety of influences, including in-channel mining prior to 1996 (NHC, 1995). While significant sediment deposition has occurred and channel sinuosity has increased in the CCRMP area since 1996, the system is still in a state of dis-equilibrium. Implementation of the CCRMP and CCIP will continue to improve channel stability over the long term, but significant channel adjustments can be expected under present and future conditions, especially during periods of high flow. It is anticipated that channel maintenance requirements under the CCIP will decrease as the channel becomes more stable over time. However, some degree of channel maintenance will be required for the foreseeable future to ensure that existing flood flow~~carrying~~ capacity is preserved, and to reduce the risk of bank erosion, lateral channel migration, and significant degradation or aggradation of the ~~stream~~ creek bed in specific locations.

3.2 SUMMARY OF EXISTING CONDITIONS BY REACH

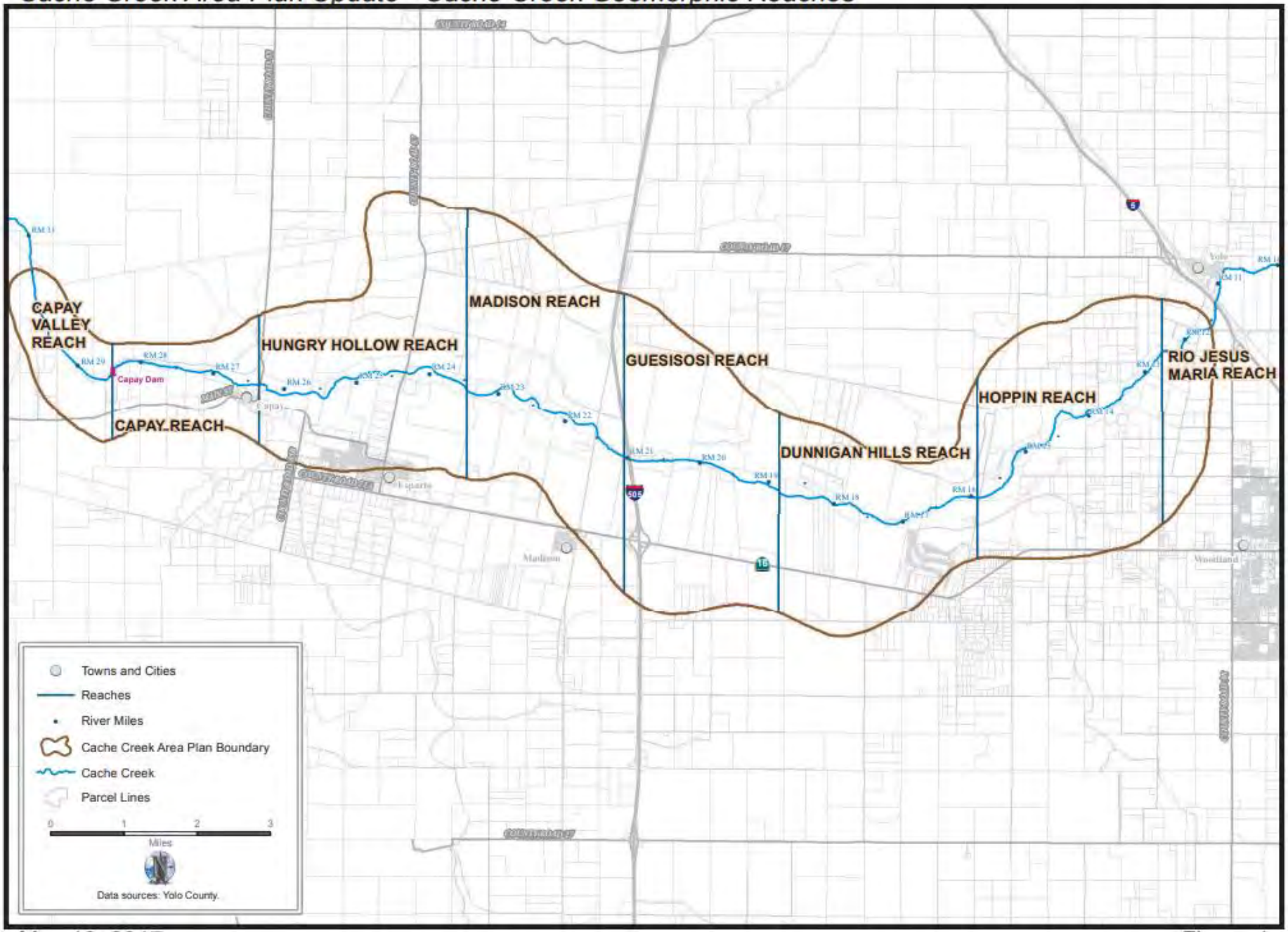
From its origin near Clear Lake to its terminus in the settling basin, Cache Creek ~~-~~exhibits great diversity in geologic and physiographic characteristics, with extreme swings in hydrologic and geomorphic processes from year to year. As described in the 1995 Technical Studies and reaffirmed in the 2017 Technical Studies, the historical geomorphic characteristics of Cache Creek from Capay Dam downstream to the settling basin were considerably different from today. The 1995 Technical Studies~~Streamway Investigation (NHC,1995)~~ identifieds nine geomorphically distinct ~~sub~~reaches in the 35 miles from upstream of the Capay Dam to the Settling Basin, as shown in Figure 1. The 2017 Technical Studies reaffirmed these as relevant geomorphic designations. From upstream to downstream the nine geomorphic ~~sub~~reaches are referred to as follows:

1. Capay Valley (~~Subr~~Reach 9), upstream from the Capay Dam (Upstream RM 28.3)
2. Capay (~~Subr~~Reach 8), from the Capay Dam to County Road 85 (RM 28.3 – 26.3);
3. Hungry Hollow (~~Subr~~Reach 7), from County Road 85 to County Road 87B(RM 26.3 – 23.5);
4. Madison (~~Subr~~Reach 6), from County Road 87B to Interstate 505(RM 23.5 – 21.1);
5. Guesisosi (~~Subr~~Reach 5), from Interstate 505 to a point upstream of Moore Crossing (RM 21.1 – 18.9);
6. Dunnigan Hills (~~Subr~~Reach 4), from a point upstream of Moore Crossing to County Road 94B (RM 18.9 – 16.1);
7. Hoppin (~~Subr~~Reach 3), from County Road 94B to County Road 97 (RM 16.1 – 12.9);
8. Rio Jesus Maria (~~Subr~~Reach 2), from County Road 97 to County Road 102 RM 12.9 – 5.4); and
9. Settling Basin (~~Subr~~Reach 1), from County Road 102 to the Bypass (RM 5.4 – 0).

The channel boundary, as defined in the CCRMP, extends from the Capay Dam downstream to a point near the I-5 bridge and the town of~~near~~ Yolo, a distance of approximately 14.5 miles (16.8 river miles). ~~The approximate lateral extent of the channel boundary of the study area coincides with the 100-year floodplain boundary defined in the Corps of Engineers' *Westside Tributaries Study*, 1994 or the channel banks. Therefore~~, T~~t~~he CCRMP channel boundary falls within ~~Subr~~Reaches 2 through 8~~, 7, 5, 4, 3, and the uppermost portion of Subreach 2~~ (see Figure 1).

~~Table 1 summarizes the present reach-averaged characteristics of each of the main subreaches in the study area, including reach-averaged hydraulic characteristics for 100-year flow conditions. Figures 2 and 3 show how the average channel widths and thalweg elevations under the bridges have narrowed and deepened, respectively in each subreach since the turn of the century. Section 3.2 in the Streamway Study (NHC, 1995) summarizes the present geomorphic and hydraulic characteristics of each of the subreaches. Tables 2 through 9 below summarize present existing conditions for each of the major subreaches in the study area.~~

Cache Creek Area Plan Update - Cache Creek Geomorphic Reaches



May 10, 2017

Figure 1

3.3 BACKGROUND

While significant sediment deposition and channel adjustment has occurred in the CCRMP area since 1996, the current Cache Creek channel system remains out of balance with respect to flow, sediment load, and channel conditions. ~~The present Cache Creek channel system is out of balance with the flow and sediment loads entering it. If there is too much water in a river system and not enough sediment, scour will lower the streambed and/or erode the adjoining banks. If there is too much sediment, and not enough water, the creek will meander and flood.~~ Bridges and ~~in-channel~~ levees continue to pose~~create~~ significant hydraulic controls (constrictions) in the system~~.~~ and f~~F~~low velocities can be~~are~~ significantly greater through constrictions than in the wider portions of the creek upstream and downstream of bridges. These differences in hydraulic conditions at bridges~~This~~ create~~s~~ local high energy zones that contribute to channel bed~~where~~ scour and bank erosion.~~ing is common and channel bed lowering occurs due to scour.~~ The current~~present~~ channel configuration continues to confine~~s the~~ flow energy during~~for~~ large flood events to a ~~much~~ narrower channel than existed~~had occurred~~ historically. Reduction of floodplain storage area and disconnection of the channel from its historical floodplain continues to alter local and reach-scale hydrology (including flood peak volumes and travel time) from historical conditions. Since 1996, the active channel has migrated into levees and channel banks in many reaches, indicating that the channel is adjusting by increasing in width. ~~blockage of natural flood water escape routes have altered the local hydrology (flood peaks and travel time). In most subreaches, the channel is attempting to adjust itself to be wider than the current widths.~~

The increased hydraulic stresses within the creek system relative to historical conditions may limit the type and survival rate of some vegetation species formerly found in CCRMP area and associated floodplain. Since the elimination of in-channel commercial mining in 1996, monitoring of channel configuration and topography has shown that the creek is developing a more stable configuration with sinuosity and slope conditions evolving towards more natural conditions. However, the creek is still adjusting and it will still take decades to establish a new equilibrium. As in-channel maintenance projects and ongoing off-channel mining operations continue, opportunities to reconfigure the channel to smooth out abrupt changes in capacity and to reduce constrictions should be undertaken. ~~River discharge within the confined banks, flow depths and velocities have increased through the study reach since the early 1900s, thus increasing the hydraulic stresses on the bed and banks. Increased hydraulic stresses within the channel may limit the type and survival rate of some vegetative species formerly found in the channel. Continuous long-term sediment transport simulations indicate that the creek will work on its own toward a more stable configuration (channel slope and compound cross sectional shape), but the new equilibrium may take decades to establish itself. To improve channel stability in a shorter period of time, it is necessary to change the present in-channel mining procedures (see recommendations 1 through 8 in Chapter 6 of the Technical Studies) and reconfigure the channel to smooth out abrupt changes in capacity and to reduce constrictions.~~ Once major constrictions are removed or improved and channel smoothing and widening projects are complete, annual anticipated channel maintenance requirements will decrease as the creek becomes more stable over time. ~~This chapter of the CCIP describes types of channel improvement projects that will be considered by the TAC.~~

3.4 MANAGEMENT OF CHANNEL FORM (EXPLANATION OF THE TEST 3 RUN BOUNDARY~~CONCEPT~~ AND CHANNEL FORM TEMPLATE)

Test 3 Concept

The 1995 Technical ~~Streamway~~ Studies ~~(NHC, 1995)~~ described a series of hydraulic~~numerical~~ (computer modeling) sensitivity analyses that were performed to test the effects of widening and smoothing the channel. The Test 3 Run Boundary~~conceptual configuration~~ was ultimately recommended by the 1995 Technical Studies and integrated into the CCRMP as the appropriate management target for channel form. The ~~Test 3~~ channel configuration embodied in the Test 3 Run Boundary was~~is~~ conceptual~~;~~ ~~at this time and~~ the sensitivity results presented in the 1995 Technical Studies were~~are~~ not intended for design purposes. The goal of the Test 3 Run Boundary was to ~~By~~ resculpt~~ing~~ the ~~present~~ channel shape to slightly widen constrictions, smooth out irregular bank lines, and eliminate abrupt changes in channel widths ~~(see Figure 4)~~, so that the hydraulic capacity and sediment transport characteristics would be~~are~~ smoothed to create a more stable and balanced creek system. Bridge crossings tend to be the most constricting features along the creek. The Test 3 Run Boundary~~concept also~~ called~~s~~ for smooth channel transitions into and out of the bridges to reduce energy losses and local scour. It assumed that fixed (hardened) bed elevations at bridge openings would be implemented a a part of then-planned major stabilization projects. The Test 3 Run~~Conceptual~~ Boundary provide~~s~~ a target channel shape for creek~~future~~ stabilization plans. ~~Reshaping and smoothing of the channel will help return the channel (on a reach by reach basis) to a form more similar to its historical morphology. In the long term, the Streamway Studies and CCRMP recommend that in-channel extraction be limited to the volume of sand and gravel delivered annually to the study reach. Also recommended as part of the Test 3 concept is abandonment of the theoretical thalweg concept and 1979 in-channel mining boundary. It is suggested that the old creek management criteria be replaced with target channel slopes and sinuosities listed in Table 10.~~

The Test 3 Run Boundary recognized that t~~T~~arget slopes and sinuosities would~~may~~ change over time as the channel adjusts to reshaping projects~~,~~ ~~and~~ regular maintenance, and natural events. Recommendations regarding where, when, and how adjustments to specific channel dimensions and hydraulic characteristics would~~might~~ be implemented would~~will~~ be made by the TAC following the evaluation of long term monitoring information (refer to Chapters 2, 4 and 6 ~~below~~). ~~Fixed standards and channel shapes should be avoided. It is impossible to anticipate exactly where and how the creek will respond to resculpting and smoothing projects as well as reduced in-channel mining. Management will focus on maintaining appropriate stable slopes and channel capacity rather than specific elevations.~~

~~A complete systems approach for the development of a channel improvement and stabilization plan is essential. All of the subreaches must be assessed as integral parts of the creek system, all connected together hydraulically with feed forward and feed back mechanisms relating to what has, or is occurring upstream or downstream from a particular location on the creek. The need and benefits of applying a complete systems approach for project design, monitoring and maintenance was described thoroughly in the Technical Studies (NHC, 1995). Current unstable~~

~~channel conditions reflect the consequences of not having an integrated management program of channel modification activities.~~

The Test 3 modeling demonstrated what were considered at the time to be "much improved conditions over present conditions," This meant that the modeling showed the Test 3 Run Boundary as having sediment supply closer to equilibrium with sediment transport capacity, and the elimination of sediment supply and transport imbalances at bridges largely because the channel bottom was assumed to be hardened.

It was recognized in 1996 that m~~M~~ajor channel smoothing and shaping projects would~~may~~ be too extensive to implement simultaneously and would~~may~~ require phased implementation. ~~Starting with the highest priority projects first, the overall creek improvement plan should be carefully implemented, phase by phase, with ongoing monitoring to record how well the various phases and projects work towards improving channel stability.~~ The CCRMP establishes a mechanism for implementation of large segments of the channel improvements ~~proposed under this program,~~ through Development Agreements or other arrangements with off-channel aggregate producers. Through the notification process described in Chapter 2, it was anticipated that the TAC would~~will~~ promote and facilitate localized channel improvement projects.

Channel Form Template

While the Test 3 Run Boundary has been implemented with all applicable projects constructed since 1996, channel bed areas at bridges have not been hardened, and extensive smoothing of the channel boundary has not occurred. Because these major stabilization projects have not been realized, the Test 3 Run Boundary has not been fully achieved as envisioned. Despite the fact that these changes have not been implemented, channel evolution towards more stable conditions has occurred since 1996, and channel bed elevations at bridges have not experienced the extensive lowering from scour predicted by the Test 3 modeling on a long-term basis. Furthermore, significant aggradation has occurred in many places throughout the CCRMP area, resulting in more natural, active channel slope and sinuosity conditions.

As a part of the 2017 Technical Studies, the Test 3 Run Boundary was reviewed with a goal of refining it based on the latest available modeling techniques and over twenty years of observations of creek channel evolution without in-stream gravel mining. The Channel Form Template (Figure 2) replaces the Test 3 Run Boundary but carries forward many of the concepts of the original HEC-2 modeling upon which the 1996 CCAP relied.

The boundary of the Channel Form Template was determined using the new hydraulic model of the creek system and observations of channel change between 1995 and 2016. It reflects the following:

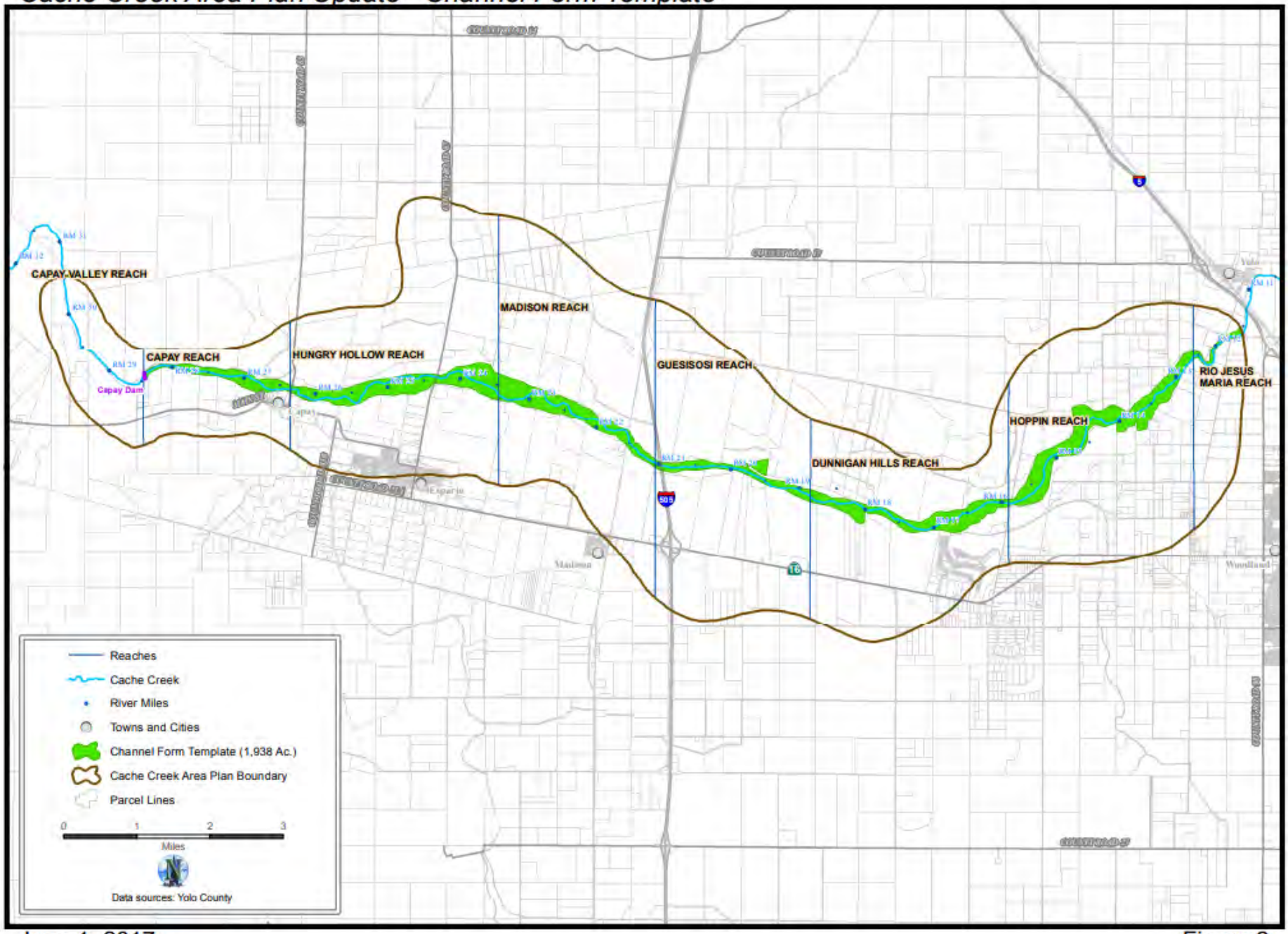
- At bridge crossings, the Channel Form Template follows the bridge abutments and generally tracks with the Test 3 Run Boundary at the bridge openings.
- Where there are existing spur dikes near bridge crossings, the Channel Form Template follows the endpoints of the training structures as they existed in 1996.

- The Channel Form Template generally follows existing top-of-bank lines where the latest modeling shows that 100-year flow is contained by such banks.
- Where the 100-year flow inundation boundary falls within the existing channel banks, the Channel Form Template tracks the outer bank line if the land between the inundation boundary and the outer high bank line is undeveloped and contains natural vegetation features.
- Where the 100-year flow inundation boundary falls outside the existing high bank, the Channel Form Template aligns with the inundation boundary unless such a location is near a bridge crossing or other location where a transition to a narrower channel is necessary.
- Similar to the Test 3 Run Boundary, the Channel Form Template smooths abrupt changes in channel width.
- Hydraulically-connected off-channel areas (e.g. the Woodland-Reiff breach site and reclaimed pit) are included in the Channel Form Template to allow room for flood detention, floodplain inundation, and other beneficial processes that could lessen erosion in downstream reaches.

Management of the Channel Form Template is similar to management of the Test 3 Run Boundary. For areas within the Channel Form Template boundary, natural channel processes should be allowed to occur and drive more natural channel evolution towards smoother transitions where there are abrupt changes in channel width. Immediately adjacent to or beyond the Channel Form Template boundary, interventions are allowed, and in some cases encouraged, to protect the multiple benefits and uses of the CCRMP area. When aggregate mining operators expand their facilities or otherwise require permitting from the County under the OCMP, the Channel Form Template shall be implemented.

Major channel smoothing and shaping projects have not been implemented extensively since 1996, and future implementation will likely remain relatively limited due primarily to challenges related to state and federal permitting, and to a lesser extent to the varying interests of private ownership along both banks. The CCRMP establishes a mechanism for implementation of some channel improvements proposed under this program, through Development Agreements or other arrangements with off-channel aggregate producers. Through the notification process

Cache Creek Area Plan Update - Channel Form Template



June 1, 2017

Figure 2

described in Chapter 2, the TAC will promote and facilitate other localized channel improvement projects with other property owners.

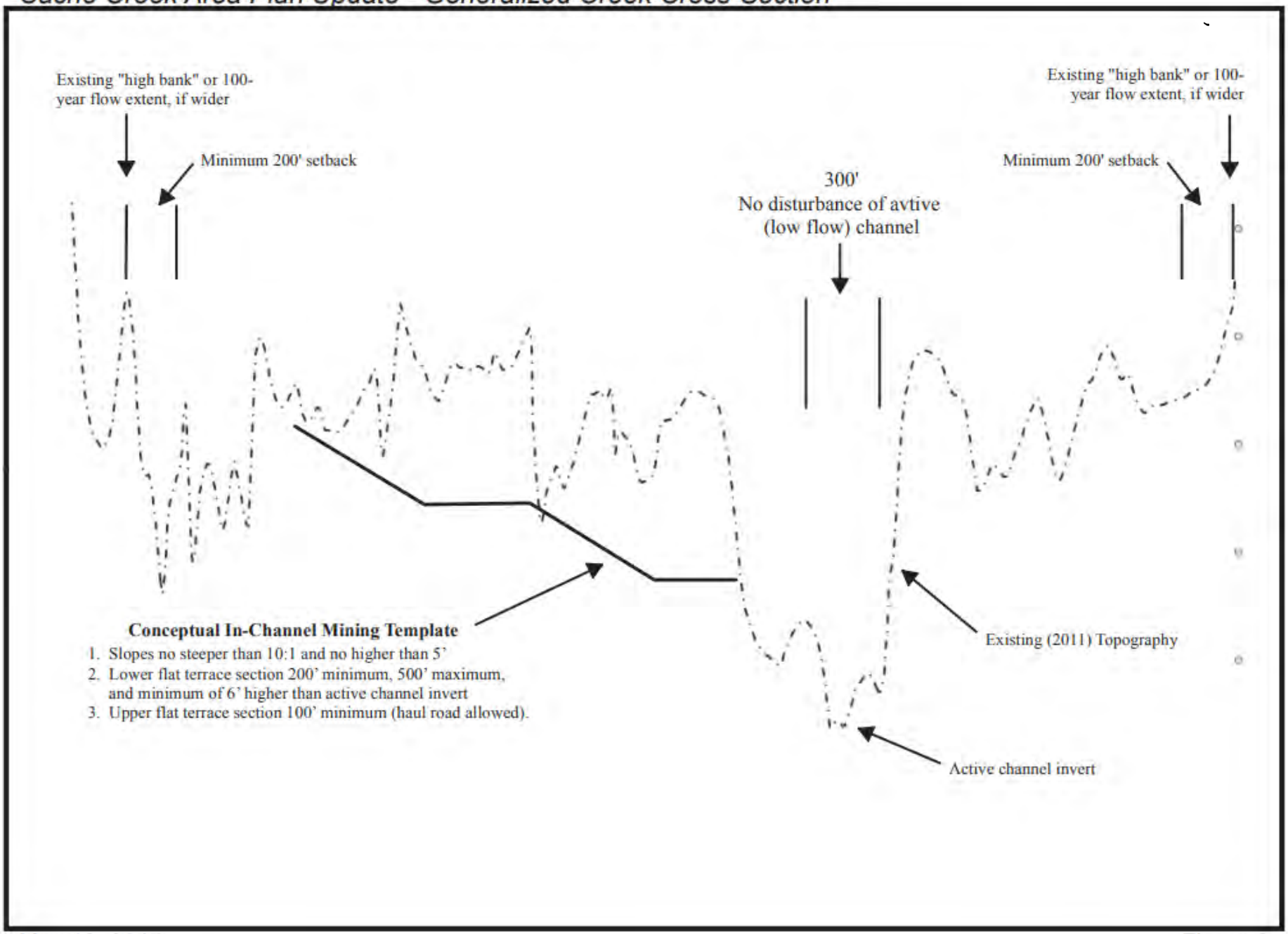
3.5 DESIRABLE (TARGET) CHANNEL CHARACTERISTICS BY REACH

The ~~100-year~~ channel characteristics for each subreach were originally developed in the 1995 Technical Studies.~~Streamway Investigation for the Conceptual Test 3 channel configuration~~ and updated in the 2017~~6~~ Technical Studies. The~~se~~ hydraulic characteristics in 1995 and 2015, along with recommended channel slopes and sinuosities are listed in Table 1 (Summary of Reach Characteristics)~~0 as initial target channel characteristics recommended under the CCIP~~. As previously stated, ~~these target~~ values are targets that may be adjusted over time by the TAC, depending on how the creek responds to projects that are implemented under the CCIP. Regular monitoring and analysis is required (see Chapter 6). Creek management and maintenance will focus on maintaining the targeted channel slopes and sinuosities rather than specific elevations. ~~Significant efforts will be made to stop further channel bed lowering in all subreaches.~~ Figure 3 is a conceptual template that may be adapted to specific sites where removal of in-channel material has been identified to improve channel conditions. ~~Suggested adjustable mining templates for areas where the channel is wide, narrow channel areas with adjacent off-channel aggregate extraction pits, and areas where the channel is narrow are shown in Figures 5, 6 and 7, respectively. The template shown in Figure 5 is applicable to channel sections found in subreaches 6, 7, and 8. The template shown in Figure 6 is applicable to channel sections found in subreaches 3, 4 and 5, while the Figure 7 template is applicable to conditions found in subreaches 2 and 8.~~

Table 1, Summary of Reach Characteristics

	2017		2011		1995		1905		Target	
Reach	**Sinuosity**	**Slope**	**Sinuosity**	**Slope**	**Sinuosity**	**Slope**	**Sinuosity**	**Slope**	**Sinuosity**	**Slope**
Capay Reach	1.18	0.0015	1.09	0.0015	1.06	0.0019	1.11	NA	1.04	0.0019
Hungry Hollow Reach	1.18	0.0022	1.15	0.0023	1.20	0.0023	1.06	0.0015	1.10	0.0020
Madison Reach	1.08	0.0018	1.11	0.0018	1.08	0.0022	1.04	0.0018	1.15	0.0020
Guesisosi Reach	1.20	0.0013	NA	0.0014	1.18	0.0013	1.02	0.0014	1.05	0.0013
Dunnigan Hills Reach	1.08	0.0016	1.16	0.0016	1.09	0.0020	1.03	0.0014	1.05	0.0017
Hoppin Reach	1.07	0.0012	1.17	0.0013	1.07	0.0015	1.01	0.0010	1.15	0.0013
Rio Jesus Maria Reach	1.05	0.0013	1.05	0.0014	1.06	0.0013	1.00	0.0016	1.18	0.0013

Cache Creek Area Plan Update - Generalized Creek Cross-Section



May 10, 2017

Figure 3

~~All of the bridges within the CCRMP study area, with the exception of those bridges cross the narrow channel near Yolo, have experienced damage due to channel degradation and other problems. Several bridges have had multiple failures.~~ There are four bridges that cross Cache Creek within the plan area, all of which have been subjected to erosive forces from the creek:

Capay Bridge at CR 85
Esparto Bridge at CR 87
I-505 (state/federal)
Stevens Bridge at CR 94B

The Madison bridge at CR 89 collapsed in 1978 and was never~~has not been~~ replaced. Structural damage to the Capay bridge resulted in closure of the bridge to all traffic and pedestrians following high flows in March of 1995. ~~The Madison bridge collapsed in 1978 and has not been replaced.~~ All of the bridges in the CCRMP study area are critical components of the County's transportation system and damage to them represents substantial inconvenience to residents and significant economic impacts to the County. As described in the 1995 Technical Studies, bridges have an effect on the overall channel stability throughout the study area. They form high flow constrictions in the channel resulting in localized rapid changes in channel flow capacity~~conveyance~~ and sediment transport capacity. These abrupt changes in flow and sediment transport capacity could result in alternating areas of scour and deposition that lead to progressive changes in the channel ~~well beyond~~upstream or downstream of the immediate area of the bridge.

The 1995 Technical Studies demonstrated the benefits of widening narrow bridge openings but acknowledged the financial constraints on the feasibility of lengthening several bridges. Therefore, the CCRMP recommends that changes to bridges ~~proposed by bridge owners are~~be designed to~~incorporate designs and construction of~~ smooth channel transitions into and out of bridge openings to improve local hydraulic conditions and reduce the abrupt changes that presently occur. The 2016 Channel Form Template provides guidance on smoothing these transitions. ~~An example of a generalized transition treatment for bridges is presented in Figure 8.~~ While bridge projects are outside the purview of the CCAP, ~~T~~the TAC will ~~coordinate~~ assist with technical review of the design of individual bridge treatments ~~with~~ should County, State, and/or Federal agencies implement project(s) at bridge transitions.~~interests.~~ The Channel Form Template should be amended as appropriate to reflect creek modifications over time.

3.6 PRIORITY PROJECTS

The TAC is required to produce an annual report that identifies maintenance projects and other priority improvement projects necessary to help stabilize the creek. The requirements of this report are discussed in further detail in Chapter 6.0. These reports are retained by the County and are available for review at the County's CCAP website: http://www.yolocounty.org/general-government/general-government-departments/county-administrator/county-administrator-divisions/natural-resources/the-cache-creek-area-plan-ccap-

~~Chapter 6 presents program descriptions for flood watch and annual monitoring activities. Perhaps the most important CCIP project is the installation of flow gages and the implementation of the annual monitoring program. Dependable data are critical to the design and implementation of any major channel stabilization project. It is therefore suggested that the tasks and program components described in Chapter 6 be considered as components of a high priority project.~~

~~Present and future channel stability problems continue to occur where channel capacity and hydraulic conditions change abruptly. Noticeable scour occurs through narrow constrictions and significant deposits of sediment occurs immediately upstream or downstream from constrictions resulting in potential deflection of flows at banks or important structures. The primary locations where these problems occur are in the vicinity of bridges. Therefore, all bridge locations are considered high priority sites for major stabilization projects.~~

~~Figures 9 through 12 present sketches of four different channel transition and stabilization projects prepared for the Capay bridge (Road 85). Figures 9, 10 and 11 show different methods of protecting the bridge abutments and providing three different methods for stabilizing the eroding north bank. Alternatives shown in Figures 9 through 11 are for an assumed bridge of the same length (opening) as the present bridge (Alternatives EBL1 – EBL3: *existing bridge length*). A key component of these project alternatives is the selective bar excavation along the right bank, upstream from the bridge. The point bar continues to grow in size and elevation, thus encouraging the creek to attack the left bank upstream from the bridge. Figure 12 presents a sketch of a channel transition project at the Capay bridge for a bridge lengthened by 150 feet to the north. As demonstrated in the Streamway Report (NHC, 1995) enlargement of bridge openings greatly improves the hydraulic characteristics and channel stability in the vicinity of the bridge.~~

~~Figures 13, 14, and 15 present generalized sketches of channel transition projects for the I-505 bridge, Stephens bridge (Road 94B), and Esparto bridge (Road 87), respectively. Each bridge transition project consists of channel smoothing upstream and downstream from the bridge. Channel transitions are created by building flow deflection works (spur dikes or groins) and/or biotechnical features that will equally guide high energy water to the bridge without an abrupt change in channel conveyance upstream or downstream from the bridge. Scour control (sills, aprons, rock donuts or mattresses) in the immediate vicinity of the bridges may be required for some sites, but design analyses are required to determine where and to what extent scour controls are required.~~

~~There are several locations in the CCRMP study area where past gravel excavation has occurred and low in-channel levees remain. Some of the levees are located downstream from significant high flow velocity areas at channel constrictions, creating hydraulic instability. The tendency for low-flow channels in these areas to braid or meander significantly presents potential streambank erosion hazards. Figures 5 through 7 present flexible maintenance mining templates which could be implemented in such locations. Partial removal of the low levees and regrading behind them provides the opportunity to establish the targeted compound channel shapes and dimensions~~

~~recommended by the CCRMP. These areas are considered high priority project locations. Opportunities for groundwater recharge and reestablishment of valuable riparian features should be considered at all project sites. Figures 16 and 18 present plan view sketches of possible channel sculpting and smoothing projects located downstream from the Stephens and Esparto bridges, respectively. They consist of removal of portions of the existing low in-channel levees left from previous mining and the construction of terrace features adjacent to the channel banks. Figures 17 and 19 show cross section sketches of these two project areas. The proposed channel sculpting and smoothing complies with the target channel templates presented in Figures 5 and 6.~~

CHAPTER 4.0 CHANNEL MAINTENANCE

This section describes expected channel maintenance activities under the CCIP. Channel maintenance activities are in addition to the recommended activities described in the previous section as ~~high~~ priority channel improvement projects, and are based on the same objectives for creek~~stream~~ stability. In general, channel maintenance activities are smaller in scale than improvement projects, and would be performed to address local conditions that need to be corrected to prevent larger creek~~stream~~ stability problems.

4.1 ANTICIPATED NEED FOR CHANNEL MAINTENANCE

Implementation of the CCRMP and CCIP has~~will~~ improved channel stability ~~over the long~~since ~~term~~1996 ~~term~~, but significant additional channel adjustments caused by winter and spring high flows and sediment transport~~can~~ should be expected ~~under present conditions~~, especially during periods of ~~high~~ flow greater than 20,000 cubic feet per second. It is anticipated that channel maintenance requirements will decrease as the channel becomes more stable over time. However, some degree of channel maintenance will be required for the foreseeable future to assist with flood management, to ensure that existing flood flow capacity is not diminished ~~flood carrying capacity is preserved~~, and to reduce the risk of bank erosion, lateral channel migration, and significant degradation or aggradation of the streambed in specific locations.

The 1995 Technical Studies~~Streamway Study (NHC, 1995)~~ illustrated ~~the~~ non-uniformity in sediment transport capacities of the channel under then-present conditions. The updated 2017 CCRMP hydraulic model shows persistence of non-uniform hydraulic and sediment transport conditions in parts of the creek system.~~present conditions.~~ Even in the absence of aggregate extraction or other human influences, the channel can be expected to make significant adjustments by eroding or depositing sediments at various locations in the bed of the creek~~stream~~. ~~-~~These processes may lead to local changes in channel form and lateral instability. Although the channel might eventually adjust on its own to a more stable form, correction of the current imbalances in sediment transport capacity would likely take a very long time. ~~The improvement projects prioritized in Chapter 3 are intended to reduce the rapid changes in transport capacities that presently exist and thereby promote a more stable stream system. However, these projects will not immediately improve all areas of the stream, and the projects may not all be implemented for several years.~~ Therefore, ~~During the first 5 to 10 years of CCIP implementation, fairly substantial requirements for~~ channel maintenance should be implemented as needed~~be anticipated~~ to prevent sudden changes in the channel and erosion of its banks, and to help guide the creek~~stream~~ toward a more stable form.

The monitoring program described in Chapter 6 is designed to provide information that will assist in making decisions regarding channel management~~maintenance~~. Water and sediment discharge data will continue to be collected to better understand creek hydrologic and sediment transport processes, topographic data will continue to be collected to monitor changes in channel form and elevations, vegetation conditions will continue to be monitored, and the TAC will continue to make an annual evaluation of bed and bank stability in an annual monitoring report to the

Board of Supervisors. This monitoring program will be used as the basis for making decisions regarding channel maintenance activities.

4.2 TYPICAL CHANNEL MAINTENANCE ACTIVITIES

~~The Streamway Study presented a Test 3 Concept (described in Chapter 3) to characterize the types of improvement projects that might be effective in improving channel stability. In addition,~~The generalized typical creek cross section template~~s~~ (Figure 3) ~~In addition, typical stream templates were presented that~~ prescribe~~d~~ proposed limits on channel shaping and smoothing within the channel to improve stability. ~~These~~ This ~~templates~~ template~~s~~ ~~have~~ has been incorporated into the Floodway and Channel Stability~~Aggregate Resources~~ Element of the CCRMP ~~(refer to previous section of this report)~~. Removal of in-stream sand and gravel ~~beyond these purposes~~ is restricted to maintenance activities including maintenance of flood flow capacity, erosion protection, channel stabilization, protection of existing structures and infrastructure, riparian restoration, and to implement the Channel Form Template. In-stream excavation for any other purposes is precluded by the CCRMP. Use of the template~~s~~ to guide channel maintenance activities will result in formation of a more compound channel than presently exists. Specific maintenance activities will be recommended by the TAC based on an annual inspection and analysis of monitoring data. ~~However, it is possible to describe in~~ The following general ~~terms the types~~categories of activities are anticipated:

1. *Gravel Bar Skimming to Maintain Flood Flow ~~Hydraulic~~ Capacity or Reduce the Probability of Bank Erosion*

   The deposition of sediments in bars may reduce overall channel capacity, especially if dense vegetation develops on the bar. In some areas of the channel, reduction of capacity may not be adverse, or may even be beneficial. However, where existing flood flow~~channel~~ capacity would be ~~come~~ reduced ~~below the level of the 100-year flow, or where it would be reduced from a present capacity below this level~~, aggradation in the channel would not be acceptable, unless the loss of capacity is compensated by other channel modifications. Bar formation also influences the distribution of flow in the channel, and growth of bars on the inside of a bend can result in erosion of the opposite bank. In this case, skimming of the bar to reduce its size and height can reduce erosive force on the opposite bank. Mid-channel bars can result in erosive pressure on both banks. Care must be taken to ~~make relatively minor changes in bar size~~protect features of bars to ~~avoid~~ minimize the ~~possibility of~~potential for major channel adjustment that could ~~relocate~~ transfer erosion or capacity problems to another location.

   Originally the CCRMP anticipated the removal of approximately 1.2 million tons of material associated with major shaping within the creek during the first five years of implementation, and approximately 210,000 tons per year of ongoing maintenance (the rough equivalent of five to seven acres of work over a half mile area). In 1997, according to County records, approximately 40,000 tons were removed. In 1998 approximately 332,423 tons were removed. In 1999 no tonnage was removed. After 1999 there is no

record of any excavation associated with in-channel projects implemented from 2000 to present. Implementation of the CCRMP was halted in 1999 during the resolution of a lawsuit related to mercury (see discussion of History in Chapter 1.0, Introduction). It was not resumed due to the philosophy of staff implementing the program at the time. More recently it has been precluded by expiration of the state and federal general permits.

2. *Vegetation Removal to Maintain Hydraulic Capacity or Reduce the Probability of Bank Erosion, or to Remove Undesirable Species*

Vegetation can potentially ~~retards~~decrease flow velocities and reduce~~s~~ hydraulic capacity. The effect of vegetation is normally beneficial in reducing velocities and protecting streambanks from erosion. However, the presence of vegetation in the center of a channel may have ~~has~~ a significant effect on hydraulic capacity and can adversely affect flow distribution in the channel in a manner similar to mid-~~-~~channel bars. Where hydraulic capacity is a concern, vegetation should be limited to the terraces of the channel, or to relatively narrow strips along the thalweg. Bar formation and vegetative growth are often interdependent. The formation of a bar provides sites for colonization by vegetation, which may reduce~~s~~ flow velocities and promotes further development of the bar. This process is a normal part of creek behavior, but can in some instances result in undesirable reductions in capacity or erosion of channel banks. Removal of vegetation or reduction of vegetation densities may be sufficient to prevent further bar formation or to promote scour of the bar surface by the creek. Undesirable species such as ~~giant reed~~ arundo and tamarisk are invasive in the Cache Creek watershed and are extremely resistant to scour. Vegetation removal may involve selective clearing and thinning by hand and machine, and chemical control of dense stands and/or undesirable species. Control of these species by chemical means is necessary in any location where dense stands would result in adverse changes in hydraulic capacity or bank erosion potential. (See Actions 4.4-2 and 4.4-3 of the CCRMP.)

3. *Minor Bank Protection Works*

It is expected that bank erosion will occur in multiple locations along the channel on a small scale, as well as in a few locations on a larger scale. The larger problems, especially in the Jesus Maria Reach, are beyond the scope of channel maintenance solutions. However, smaller scale problems can be addressed in the channel maintenance program. While revetment may be necessary in some instances, maintenance activities should focus on changing hydraulic conditions that lead to the problem by promoting lower velocities close to the bank, and protecting banks with native vegetation or bio-technical erosion control techniques. Minor grading work, combined with strategic planting in suitable locations, can be used to promote the compound channel shape illustrated by the conceptual template~~s~~, reducing bank heights and resulting in lower velocities in the near-bank area. Maintenance activities need not always provide fail-safe protection against bank erosion, but rather should promote hydraulic conditions that reduce the potential for erosion. Experimentation with techniques that combine minor grading,

native revegetation, and bio-technical protection techniques should be promoted. These types of projects may provide opportunities for landowner or citizen group participation. Included in this category are smaller revetments and smaller groins/spur dikes both for bank protection and channel shaping.

4. *Removal of Debris at Bridges or Upstream of Bridges Susceptible to Debris Accumulation*

   Debris is transported downstream in the Cache Creek channel during high runoff. In major floods, debris collection on bridges can significantly reduce hydraulic efficiency of the bridge opening and result in locally high velocities and bed scour. Problems with the stability of bridge foundations, abutments, and channel banks can result. A small amount of debris collected on a bridge can promote rapid accumulation of additional debris during flood flows, resulting in a situation that prevents debris removal until after the event has passed. Normal maintenance activities should include removal of debris from the bridge area, and from channel areas upstream of bridges. Bridges with narrow spans between piers and which are skewed to the flow are particularly susceptible to debris accumulation.

~~*Maintenance of a Defined Low Flow Channel*~~

~~Under present conditions, the low flow channel of the creek is often obliterated or modified by aggregate extraction operations. This situation results in instability of the channel as flows increase in the fall and winter. The 1995 Streamway Study recommends recommended maintenance of a low flow channel through controlled releases of water from upstream locations and by avoiding disturbance within 300 feet of the low flow channel. In addition, excavation in-channel maintenance mining is not permitted byper the conceptual design template must protecttemplates below a level of six feet above the thalweg elevation at the upstream and downstream extent of the excavation. These recommendations will allow a more stable, naturally armored main channel to develop. In some areas, this low flow channel may be temporarily filled with sediment deposits or vegetation in response to hydrologic conditions or channel conditions upstream. In these cases, additional in-channel maintenance mining that adheres to thea low flow channel should be maintained by excavation, in a form similar to the conceptual maintenance mining templates may be required.~~

~~Excavation is not permitted by the templates below a levee six feet above the thalweg elevation, except where the build up of aggregate material would reduce channel capacity to below the 100-year flood capacity. Adjustments to the recommended cross-section templates may be necessary to permit aggregate removal under these circumstances.~~

5. *Non-Project ~~Internal~~ Levee Maintenance ~~Repair~~*

   Maintenance of Cache Creek flood control levees in the Hoppin and Jesus Maria reaches is the responsibility of the Department of Water Resources. Levees (including remaining in-channel levees) associated with active and inactive mining operations will also require

maintenance from time to time. In most cases this maintenance will restore the structural integrity and level of protection of levees impacted by high flows. However, it is possible that at some reclaimed mine sites (like Granite Woodland Reiff), levee breaches will need to be maintained to provide controlled connectivity between Cache creek and off-channel habitat areas. ~~In addition to these flood control levees, many internal levees are located on Cache Creek that were constructed to isolate gravel extraction pits from the main channel. Although it may be desirable to eventually remove or lower many of these levees as vegetated terraces are created in the restored pits, their immediate removal or failure could result in stream stability problems. Therefore, minor repair of these levees should be anticipated in the short term, to prevent rapid transitions in stream width at elevations associated with discharges less than the 2 to 5 year event.~~

The categories of c~~C~~hannel maintenance activities described above involve working in the creek with heavy equipment, and therefore are subject to permitting constraints. Typical activities may include grading with dozers, hydraulic excavators, or scrapers; removal of aggregate materials from the channel by truck or scraper; removal and disposal of vegetation; removal of debris; and planting or placement of bio~~-~~technical erosion control materials.

Rights-of-way or rights-of-entry will be required for channel maintenance work. ~~The TAC will coordinate the necessary landowner agreements and easements.~~ It is anticipated that most, if not all, channel maintenance work will be landowner initiated. The County~~TAC~~ will consider possibilities for cooperative design, financing, and construction of channel maintenance activities with interested landowners, and will serve as a technical resource for landowners planning these types of projects. The County~~TAC~~ will attempt to secure grants and other alternative funding for this and other components of the CCIP

CHAPTER 5.0 DESIGN GUIDELINES FOR CHANNEL STABILIZATION AND MAINTENANCE

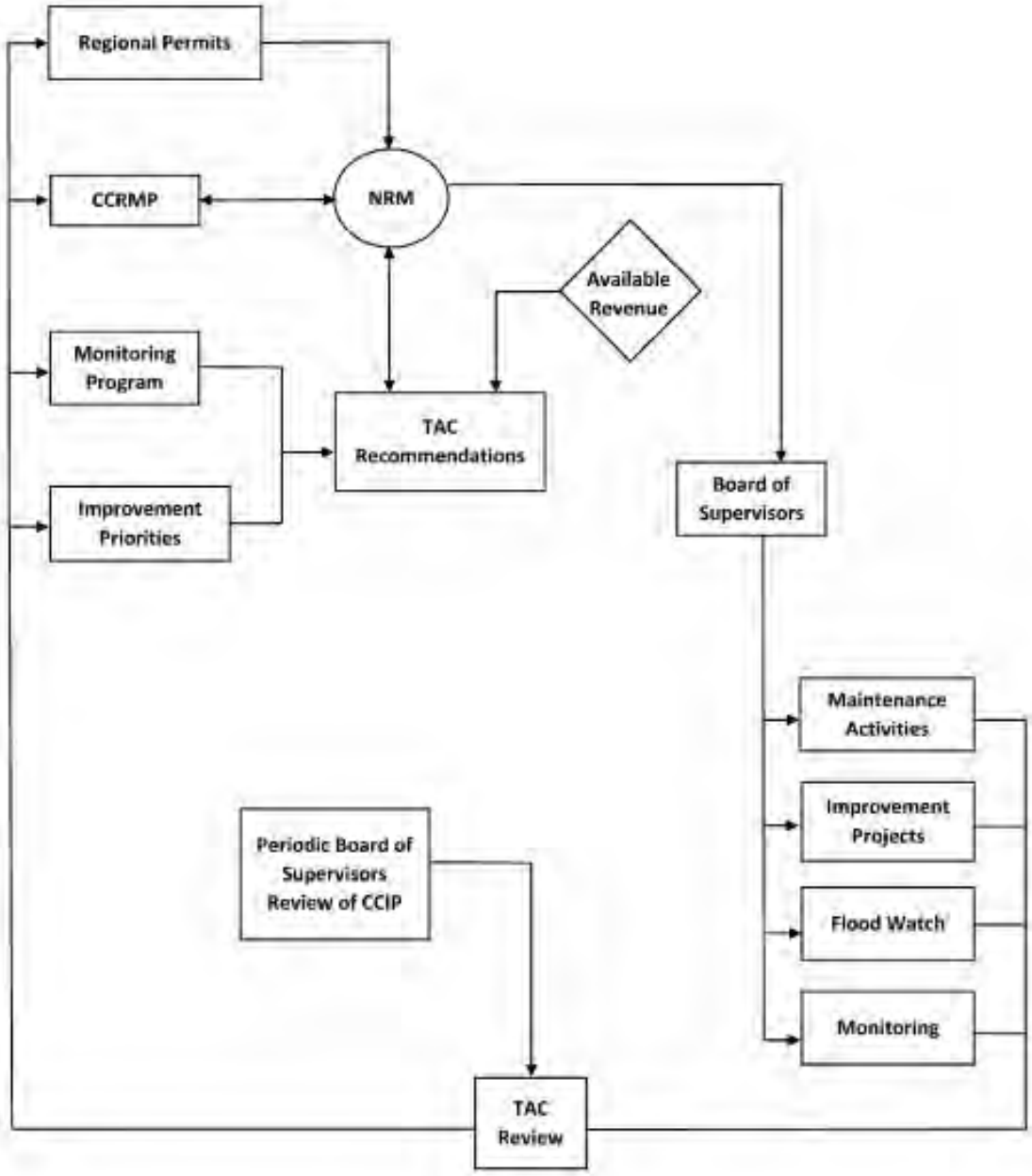
5.1 REVIEW PROCESS FOR CHANNEL STABILIZATION AND MAINTENANCE

The role of the TAC in the CCIP program is presented schematically in Figure 4~~20~~. The TAC will meet regularly to review~~discuss~~: 1) maintenance activities; 2) improvement projects; 3) ~~information from the~~ monitoring program~~,~~ data; 4) creek conditions and project priorities; and 5) in-channel activities and permit applications. ~~2) feedback and requests from the CCSG, and 3) recommendations and concerns from the Board of Supervisors.~~ Following review of annual maintenance activities, proposed improvement projects and annual monitoring information, the TAC will prepare recommendations for the coming construction and maintenance season. Depending on the amount of change in channel conditions observed from previous years, the TAC may recommend updating the County's ~~numerical~~ hydraulic models and re-evaluating the hydraulic and/or sediment transport characteristics through the study area. Results from the TAC's annual inspection, review of ~~the annual~~ aerial photos and review of updated hydraulic and sediment transport information will support the TAC's recommendations to the Board for various maintenance and channel improvement projects. Overall the role of the TAC is to integrate observations from the annual creek walk, the latest topographic and aerial photos, and hydraulic modeling, to assist with the prioritization of channel maintenance/improvements, and implement these activities guided by generalized cross-section templates and best practices for bank stabilization.

Significant channel improvement projects, such as those described in Chapter 3, will require detailed engineering design and must consider results from the hydraulic model for the CCRMP area. All projects ~~proposed by individual landowners which~~that would result in modifications to the channel within the 100-year flood hazard zone as defined by the National Flood Insurance Program ~~would~~ require a Flood Hazard~~plain~~ Development Permit (FHDP). Designs for these projects shall be~~would~~ be submitted to the Yolo County Community Services~~Development~~ Agency (or appropriate equivalent). The design of the projects would be reviewed by the TAC for conformance with the CCIP, and by staff for conformance with applicable state and federal permits, prior to approval of the FDP for the proposed project. Major projects may require the application of refined hydraulic and sediment transport models to specific creek reaches to develop design parameters. The TAC will make available flow and sediment discharge data collected under the CCIP, current versions of hydraulic and sediment transport models, and information on channel stability trends in the vicinity of the proposed project.

Annual channel maintenance activities will be smaller in scope than the significant channel improvement projects and can be accomplished based on the application of appropriate design parameters and best practices in the industry.~~a set of adopted standards. The TAC will develop~~

Cache Creek Area Plan Update - Schematic of TAC Role in CCIP



NRM = Natural Resources Manager

October 8, 2018

Figure 4

~~and adopt a set of standards within one year of its formation.~~ The design guidelines described below shall guide the TAC review. ~~will form the basis for development of the standards.~~

5.2 DESIGN GUIDELINES

This section describes design guidelines based on results of the 1995 Technical Studies~~Streamway Study~~, evaluation of changes in channel conditions between 1996 and 2016 as presented in the 2017 Technical Studies, and best management practices for creek stabilization ~~standards of~~~~best management practices~~ ~~practice~~. The section applies to both ~~major~~ channel stabilization projects and channel maintenance activities.

Channel Stabilization

~~Present~~ Current conditions on Cache Creek ~~involve radical changes~~include discontinuities ~~–~~in hydraulic conditions and sediment transport capacity~~ along the stream's course~~. These ~~changes and the constant disturbance induced by mining near the thalweg of the stream~~discontinuities can result in both vertical and lateral instability.

Many channel stabilization and erosion control techniques are available for controlling bed and bank erosion that occurs along alluvial ~~streams~~creeks. The literature is voluminous regarding these measures, often referred to as *erosion control countermeasures.* A countermeasure is defined as a technique used to control, inhibit, change, delay, or minimize creek~~stream~~ stability problems. Countermeasures can be installed at the time of the initial development of a channel improvement project or retrofitted to resolve stability problems as they develop. Retrofitting and sound maintenance practices are practical because it is difficult to predict the location, magnitude and nature of potential instability problems. When selecting a countermeasure, it is necessary to evaluate how the creek might respond to the countermeasure at the site ~~and~~ as well as up~~–~~stream and~~or~~ downstream ~~from~~ of the site. A ~~very~~ brief summary is presented here of some of the more viable methods for channel stabilization and erosion control for Cache Creek. ~~Sketches of the some of the methods are provided for the convenience of the reader.~~

Creek~~Stream~~ stabilization and erosion control measures can be grouped into at least seven categories: *discharge control, revetments, dikes, vegetation (and biotechnical methods), alignment adjustments, bank drainage, and bed scour controls.* The following references provide guidance on design and implementation of these measures:

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044574.pdf

https://www.fs.fed.us/biology/nsaec/assets/yochumusfs-nsaec-tn102-2gudncstrmrstrtnrhbltn.pdf

1. *Discharge control* requires that the erosive ~~stream~~ flows ~~is~~are routed through an upstream detention facility (dam or reservoir) to reduce the rate of flow, thus reducing

the flow's erosion ~~power~~potential. ~~-~~These types of projects are less likely to be undertaken because of state and federal permitting requirements. These are likely to be major projects that involve the impoundment of water (e.g. dams or reservoirs). Generally, areas with steep banks or canyons are the most likely locations for these types of projects and there are no areas like this along the creek from Capay to Yolo. It is possible that discharge control upstream of Capay could have beneficial effects for the downstream reaches covered under the CCRMP.

2. *Revetments* ~~(Figures 21 and 22)~~ include placing stone or concrete (see CCRMP Performance Standard 3.5-7) on the channel bank to resist the erosive forces of the flow. These types of "pre-emptive" projects are likely to be useful within the Plan area at locations where stream energy scours down and undercuts the bank toe, which then slumps allowing the creek to advance laterally.

   A windrow revetment is one example. This consists of a pile of stone or concrete built on the high bank above the water line. If the creek meanders, the pile is released onto the bank. Another example was utilized by the Collet operation in 1980 at a location approximately one mile upstream of the nature preserve where the creek was threatening the Moore Canal. The operator received approval to cut a keyway (trench) for installation of stone below grade to keep the creek from undercutting the canal.

   The work involves using an excavator in the creek to dig a trench perpendicular to the flow. The trench is filled with large material (stone or recycled concrete). Dump trucks are needed for hauling. There is no large material naturally occurring in Lower Cache Creek. The largest material is 12 to 14 inches in the upper creek area which is not large enough for high velocity major events but would work for low flow events. Options include importation of large rock from out of the area ("non-native natural material) or use of recycled concrete consistent with applicable local and state regulations. Recycled large material can be faced with smaller cobble for a natural appearance.

3. *Dikes*, commonly referred to as groins or spur dikes ~~(Figures 23 and 24)~~, direct flow away from eroding surfaces or reduce the erosive forces along the channel bank by diverting the stronger currents. *Permeable dikes* and *groins* are often called *flow retarder structures* ~~(Figure 25)~~. Rock dike groins and revetments can be successfully combined to slow velocity, pick up fines, and create a planting medium which supports natural revegetation. These projects are not done while the water is flowing. Construction requires rerouting the creek using a diversion channel or temporary dam and pipe/pump depending on flows.

4. *Vegetation* can be substituted in place of stone, concrete, timber or other materials for some erosion/stabilization sites ~~(Figure 26)~~. It is often advantageous to combine structural (stone or concrete) features with vegetative alternatives in the form of "*biotechnical solutions*" ~~(Figure 27)~~ to erosion and/or stabilization problems. The success

of vegetative measures depends on the survival of the vegetation and substrate stability. The vulnerability of vegetation should be considered in site selection.

Use of vegetation-only controls are unlikely to be effective in Cache Creek. Under high flow conditions the improvements are likely to be washed out. The combination of vegetative solutions with "hard points" to slow velocity and protect plantings effective in lower Cache Creek, particularly in the lower downstream reaches where material is finer grain and there is more water closer to surface. Upstream the water table is lower and the material is coarser which makes establishment of vegetation difficult.

This work is primarily done by hand although preparation work may be done with equipment such as a bull dozer, excavator, and/or motor grader. The scale of these projects is typically smaller -- two to three days over 50 to 200 foot areas is typical.

5. For some problems *alignment adjustments* are appropriate. The creek will naturally meander over time. Creek realignments involve repositioning the creek to protect infrastructure, agriculture, or mining operations. Care must be exercised, however, to ensure that the realignment does not result in the relocation of the problem ~~elsewhere~~. Creek realignments usually require placement of spur dikes, groin fields and revetments to encourage the main thread of the creek's flow path to relocate.

6. *Bank drainage.* There are many locations along the study area of Cache Creek where rather significant gully erosion is occurring at locations where floodplain drainage enters the creek. This situation can also contribute to further saturation of the banks which increases the likelihood of bank failure due to mass wasting. Upper bank drainage should be collected and allowed to enter the creek in erosion resistant channels or inlets.

7. *Bed scour controls.* Channel incision and scour are very complex processes. Channel bed incision (erosion) occurs in locations where the hydraulic energy (flow) exceeds the ~~ability~~ resistive strengths of the creek bed ~~to remain stable~~. Rock, concrete, soil cement or biotechnical bed armoring procedures can help control bed erosion. Applications of channel bed *erosion control mattresses* ~~(Figure 28)~~ are common at bridge crossings where rapid flow acceleration results in local bed scour.

The construction of check dams or grade controls using large stone to create an at-grade sill could be effective to hold the elevation and protect the piers at bridges. A similar project was undertaken by the NRCS upstream of the Capay bridge in 1995 when the West Adams canal was threatened. A large amount of riprap was placed as an emergency measure during high flows. The project was successful and remains in place today obscured by vegetation and hidden from most views.

Selecting Countermeasures

Selection of an appropriate countermeasure to resolve a specific channel stability problem is dependent on many factors, including the erosion mechanism causing the problem, local and regional creek characteristics, construction and maintenance requirements, potential for vandalism, and costs. Creek characteristics that most influence the selection of countermeasures include: channel width; bank height, configuration and material properties; vegetative cover; channel bed sediment transport characteristics; channel bend radii; channel velocities; and flow depth.

5.3 CONDITIONS, TECHNIQUES, AND COUNTERMEASURE DESIGN CONSIDERATIONS

The two references provided above provide a~~A~~pplicable repair and maintenance techniques for various problem types and physical/hydrologic settings. ~~are summarized in Table 11. For example, bank erosion due to contraction at bridges is a problem type, and guide banks, bank revetment, bridge widening, and smooth channel transitions are applicable techniques. Table 11 lists typical channel stability problems found on Cache Creek in the first column. The second column suggests different countermeasure techniques to correct erosion and stability problems. The third column lists specific references where design criteria and design procedures are specified. The last column indicates whether these problems and solutions are categorized as significant priority type projects, or projects of lesser magnitude that can be accomplished through the annual maintenance program. Specific design dimensions for stabilization countermeasures listed in Table 11 cannot be anticipated and will require site-specific design by the TAC.~~ As described in Chapters 3 and 5, the TAC will review annual needs for maintenance and improvement projects. As directed by the County, ~~T~~the TAC, with the assistance of consultants as needed, may~~will~~ develop specific project designs in accordance with the goals of the ~~Test 3 concept~~Channel Form Template and the CCRMP.

5.4 SUMMARY OF RECOMMENDED DESIGN GUIDELINES

Recommended design guidelines were~~are~~ presented originally in the 1995 Technical Studies and carried over into the ~~Technical Studies Report and the~~ CCRMP. The guidelines, updated based on the 2017 Technical Studies, are summarized below:

1. Design and implement priority projects (see also discussion in Chapter 3) that promote beneficial adjustments in the creek which meet the stated objectives of the CCRMP, while allowing flexibility for the creek to shape its own recovery and restoration over time.

2. The TAC shall review topographic data and such other information as is appropriate to determine the amount and location of aggregate to be removed from the channel. Aggregate removal from the channel shall only be recommended in order to: 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 recreation and open space uses consistent with the Parkway

Plan. Except to implement the Channel Form Template, annual aggregate removal shall not exceed the average annual amount of sand and gravel deposited since the last prior year of removal in the CCRMP area, as determined by comparison of channel topography data. Recommendations shall take into consideration the desires of the property owner where excavation is to take place, as well as the concerns of property owners in the immediate vicinity.

3~~2~~. Since 1996, t~~T~~he estimated average annual volume of ~~annual sand and gravel~~sediment delivered to the CCRMP study area is ~~210,000~~690,800 tons per year of which 156,400 tons is estimated to be sand and gravel, and 534,400 is estimated to be fines (see Section 2.1, Introduction, of the CCRMP). ~~Individual years and flood events may vary the supply~~Annual sediment delivery varies substantially from year to year based on hydrologic conditions, and aggregate extraction should follow that variability based on results from the annual monitoring program presented in Chapter 6. Aggregate extraction in local areas may be necessary on a one-time basis as part of priority channel stabilization projects (~~refer to~~see also discussion in Chapter 3). Extraction would be performed in accordance with the target stable channel characteristics listed in Table 1~~9~~ ~~and cross section templates shown in Figures 5 through 8~~.

4~~3~~. ~~In the near term, a~~Allow in-channel reshaping and smoothing at rates at or below~~greater than~~ the average annual deposition since the last prior year that extraction occurred, not to exceed 690,800 annually~~supply in locations identified by the TAC~~, in order to implement the ~~Test 3 Model~~ Channel Form Template.

5. The County shall review and monitor removal of aggregate and/or plant material consistent with the CCRMP and CCIP. The County, at its discretion, may enlist the aid of gravel mining operators, other private property owners, or conduct the maintenance activities using County resources.

6~~4~~. Individual landowners can propose reshaping and smoothing projects to mitigate local channel instabilities. Project designs must comply with the target channel characteristics summarized in Table 1~~Table 9 and Figures 5 through 8~~, and conform to the Channel Form Template. Final designs will comply with local County design criteria and~~,~~ preserve channel stability and existing ~~100 year~~ flood flow capacity without adversely affecting neighboring creek reaches. Final designs must be reviewed by the TAC and Department of Public Works.

7~~5~~. Projects affecting the 100-year floodplain as defined by the National Flood Insurance Program within the CCRMP plan boundary will require review by the TAC,~~Technical Advisory Committee and~~ County approval of a Flood Hazard ~~plain~~ Development Permit (FHDP), and consistency with applicable state and federal permits.

8. The review by the TAC of all FHDP applications for Cache Creek improvement projects within the CCRMP area shall include an evaluation of potential upstream and downstream

effects of the proposed channel modifications. The TAC shall evaluate data on hydraulic conditions presented in the permit application. The TAC shall also examine aerial photographs and perform a reconnaissance investigation of the site and surrounding areas to identify potential upstream and downstream effects.

9~~6~~. ~~Revoke the theoretical thalweg concept and 1979 mining boundary.~~ Use management targets for channel characteristics listed in Table 1~~Table 9~~.

10~~7~~. Manage grading within the channel (for priority projects or annual maintenance) in compliance with the target stable channel template~~s~~ shown in Table 1~~Figures~~6~~ 5 through 8~~.

11~~8~~. Opportunities for groundwater recharge and reestablishment of valuable riparian features should be considered at all project sites. This measure will be implemented in concert with Action 4.4-6 of the CCRMP

12~~9~~. Integrate native riparian vegetation into overall hydraulic and sedimentation design, and management plans.

13~~10~~. Use native riparian vegetation, where appropriate, to provide bank stabilization and to create smoother transitions between reaches with differing hydraulic capacities.

14~~11~~. Avoid channel bed lowering and permanent degradation through maintenance and channel management. Consider the design and installation of grade controls as major channel improvement projects if regular maintenance and channel management are unsuccessful in stopping further bed lowering in critical reaches or in the vicinity of bridges. Use vegetation and biotechnical measures wherever practical.

15~~12~~. ~~Limit changes in channel form and m~~Manage~~manage~~ the channel ~~toward~~ to encourage development of a compound cross sectional shape. Establish native vegetation and maintain at levels that will not result in overtopping of historical channel banks or increase in the 100-year flood elevation. Control weed invasion and adverse flow orientations by improving channel characteristics and performing regular maintenance.

16~~13~~. Manage and maintain in-channel vegetation to ensure it is part of the solution to channel stabilization and not contributing to the problems. Annual maintenance will be guided by the TAC and will include selective clearing and thinning of in-channel vegetation, in a manner sensitive to the surrounding riparian habitat.

17~~14~~. Use managed ~~sand and gravel~~sediment removal (bar skimming) to promote and maintain channel stability and existing flood flow capacity. Use managed clearing and thinning of vegetation to promote and maintain channel stability and existing flood flow capacity. Channel maintenance will be managed by the TAC based on annual monitoring and hydraulic modeling~~numerical analyses~~.

18. Existing flood flow capacity shall not be reduced and existing flood problems downstream shall not be exacerbated by channel reshaping. This shall be ensured through annual monitoring of channel geomorphology, distribution and density of plant material within the channel, and modeling to forecast changes in base flood elevations

19~~15~~. Plan, design, and implement priority projects listed in Chapter 3 to improve channel stability and promote more uniform hydraulic capacity with a stable compound shape.

20~~16~~. Require completion of ~~reconnaissance-level~~site-specific biological inventories before implementation of priority projects~~, especially for special-status species~~.

21~~17~~. ~~Promote the development of off-channel aggregate extraction to replace the present supply from the creek.~~ If no flood protection or erosion control measures are proposed, a setback distance of 700 feet is required~~recommended~~ from the present bank line and the edge of off-channel pits. Where control measures are proposed, or demonstrated not to be needed, consistent with Section 10-4.429 (Setbacks) of the Mining Ordinance, a minimum setback of no less than 200 feet ~~is~~ may be considered~~recommended only~~ if no adverse e~~a~~ffects on~~affects to~~ bank stability and groundwater can be demonstrated, and if the Channel Form Template is implemented along the project creek frontage. Project-induced creek capture associated with remaining in-channel pits is~~are~~ discouraged ~~must not be allowed~~ unless approved by the TAC to improve habitat in reclaimed mine sites or flood flow capacity.

22~~18~~. Implement smooth transitions through the bridges to reduce bed and bank scour and improve the overall hydraulics of the system (refer to Figure~~s~~ 6). Smooth and sculpt the channel to remove or reduce abrupt channel changes.

23~~19~~. Allow for flexible channel management of the creek so changes can be made to components of the CCIP, where and when necessary, based on new information in the future. Continuously collect monitoring data and analyze and document those data yearly. Review and revise the priority project list and maintenance management procedures every five years.

24~~20~~. Some ~~priority~~ projects may require the construction of sections of levees to smooth and resculpt the channel to a more stable configuration. Levee design~~s~~ shall~~ould~~ follow the most current guidelines from~~presented in~~ the U.S. Army Corps of Engineers~~Corps~~, FHWA and Caltrans~~ references listed in Table 11 should be used for design purposes~~. All levee designs will be based on thorough geotechnical engineering analyses based on the local bed and levee materials at the project site. ~~All levees designed to confine and control creek flows will be designed for 100-year flow conditions with no less than 3 feet of freeboard.~~

25~~21~~. All levee projects must be reviewed by the TAC and Yolo County~~the YCCDA and receive~~ pursuant to ~~-~~a FHDP~~Flood Hazardplain Development Permit approval~~. Other State and Federal permits may also be required.

26~~22~~. Bank revetments, spur dikes, groin fields, hard points, toe revetments, bridge transition projects, rock sill, grade controls, biotechnical bank protection projects, and channel shaping (smoothing and widening) must comply with the design guidelines summarized in Table 1~~Table 9 and Figures 5 through 8~~. Final designs must comply with County design criteria, and be reviewed by the TAC~~,~~ and the County Floodplain Administrator if the projects require modification to the 100-year floodplain. A~~n~~ FHDP permit may be required. Other State and Federal permits may also be required.

27. 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.

CHAPTER 6.0 MONITORING PROGRAM

This section describes a proposed monitoring program to collect and analyze data for the purpose of making resource management decisions for the Cache Creek channel on a continuing basis. A monitoring program is described to collect pertinent information regarding water and sediment discharge, changes in channel morphology, and changes in riparian vegetation. The monitoring program described herein is designed to be flexible and practical while assuring that essential data are regularly collected at key locations to support creek resource management decisions. Assuming the data collection program may be funded incrementally, allowing the monitoring program to possibly be expanded over time, the TAC should~~will~~ establish priorities for installation of gages and collection of data. The TAC will describe in their annual reports expected needs and recommended changes in the intensity and location of data collection activities as the channel adjusts over time. Data will be collected and analyzed under direction of the TAC, and integrated in a modern database paired with visual interfaces that facilitate retrieval and exploration of the data. ~~the~~ The~~the~~ TAC will use the monitoring results to make decisions and recommendations for improvement projects, annual maintenance activities, and flood hazard reduction opportunities. In addition, the TAC will periodically review the monitoring program's effectiveness and costs, and suggest~~make~~ revisions as necessary to collect required ~~quality~~ information at minimum cost. The process by which monitoring results will be incorporated into TAC decisions is~~was~~ outlined in Chapter 2.

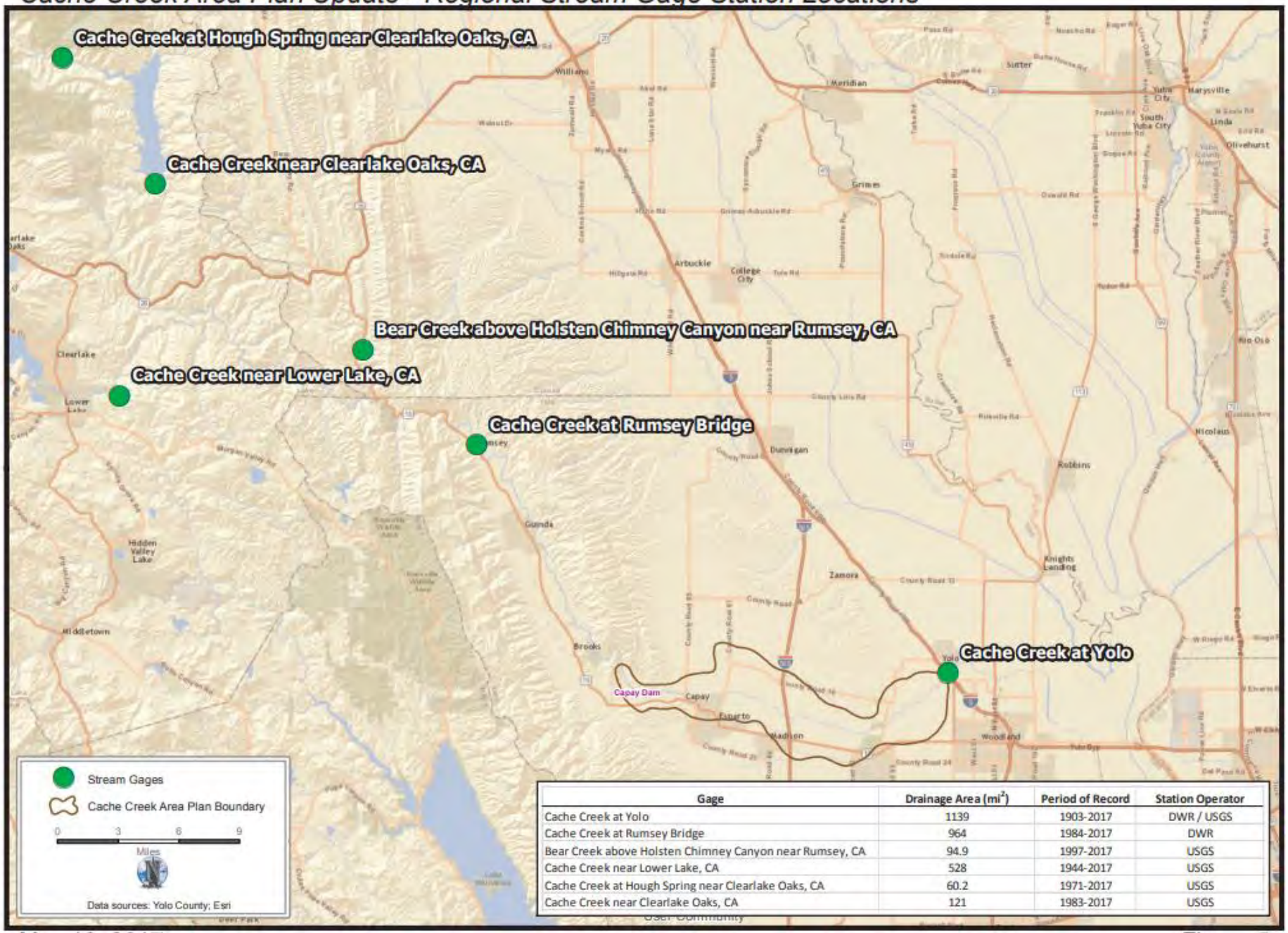
6.1 EXISTING DATA AND INFORMATION

Water and Sediment Discharge Data

The existing streamflow and sediment data available for Cache Creek were summarized originally in the 1995 Technical Studies, and data available since that time are identified and analyzed in the 2017 Technical Studies. Generally, streamflow data has been updated but sediment transport monitoring is not available. ~~in the Cache Creek Streamway Study (NHC, 1995)~~. On an intermittent basis, the United States Geological Survey (USGS) provides suspended sediment discharge monitoring from their gages at Yolo and Rumsey. The TAC has integrated this data into the annual reports, as it has become available. The 2017 Technical Studies applies the regional sediment transport model every year to estimate annual sediment transport throughout the system. While sediment transport monitoring would be helpful, it is both difficult and costly to implement on a system as large and flashy as lower Cache Creek, thus making it infeasible for this program. Prioritization of topographic (LiDAR) surveys after each water year with flows in excess of 20,000 cfs is a more important program task.

Figure 5~~29~~ shows the location of existing stream gages for the portion of the Cache Creek basin upstream of Yolo. ~~Table 12 summarizes existing streamflow data at several gages on lower Cache Creek (downstream of Clear Lake) and on Bear Creek, a major tributary of Cache Creek. Several~~

Cache Creek Area Plan Update - Regional Stream Gage Station Locations



Gage	Drainage Area (mi^2)	Period of Record	Station Operator
Cache Creek at Yolo	1139	1903-2017	DWR / USGS
Cache Creek at Rumsey Bridge	964	1984-2017	DWR
Bear Creek above Holsten Chimney Canyon near Rumsey, CA	94.9	1997-2017	USGS
Cache Creek near Lower Lake, CA	528	1944-2017	USGS
Cache Creek at Hough Spring near Clearlake Oaks, CA	60.2	1971-2017	USGS
Cache Creek near Clearlake Oaks, CA	121	1983-2017	USGS

May 10, 2017

Figure 5

~~gages have discontinuous records or are no longer in service.~~ The gages of particular importance to the CCRMP area are the Rumsey~~, Capay,~~ and Yolo gages. Data availability plays a role in limiting the current understanding of Cache Creek hydrologic and sediment transport processes. ~~In spite of the importance of inflowing sediment loads to aggregate availability in the plan area, sediment discharge data on Cache Creek are extremely limited.. The USGS (USGS, 1989) collected 56 suspended sediment samples at Capay and Brooks, and also collected six bedload samples. Inflowing loads were estimated in the Streamway Study using a water sediment discharge relationship for suspended sediment developed by least squares regression of the USGS data. Due to the scarcity of bedload measurements, inflowing bedload was estimated as a percentage of suspended load according to practices documented by the USGS (1989) and Lustig and Busch (1967).~~

~~Comparison of streamflow data for gages at Rumsey, Capay, and Yolo indicate that the discharge is diminished in downstream progression, although tributary area increases. The explanation for this decrease was beyond the scope of the Streamway Study, but has important consequences for flood control, bank stability, and sediment transport through the plan area.~~The most complete streamflow records available to characterize flows in the study area are from the Rumsey gage (upstream of Capay) and the Yolo gage (immediately downstream of the study area). Historical observations show that under most circumstances, peak discharge at Rumsey for a particular storm event is higher than peak discharge at Yolo. There are several possible explanations for this phenomenon, and it is likely that some combination of all these factors contributes to this behavior:

1. There are no significant tributaries adding to Cache Creek flow between Capay and Yolo. There are minor tributaries that contribute additional flow, but whether these tributaries would increase the peak at Yolo depends greatly on the relative timing of their peaks compared to the peak at Yolo.
2. Absent significant tributary inputs, storm discharge peaks tend to widen and decrease as the flow pulse moves downstream and encounters resistance to flow.
3. The bed of Cache Creek is made up of well-draining sediments and losses to groundwater between Rumsey and Yolo are likely great enough to be observed as a decrease in flow except for when several storm events occur in rapid succession. A series of storms can saturate the channel bed, raise the local groundwater table, and limit or stop losses to groundwater.

~~1.~~4. Inaccuracies in rating curves at both gages can contribute to a margin of error in predicting discharge for a given creek stage at the gage sites.

Topography and Channel Form

Since 1981, Yolo County has completed topographic mapping of Cache Creek between Yolo and Capay during the fall of the year. Mapping for the years 1981 to 1985 is available in hard copy format, and mapping for years 1986 to ~~1995~~ 2011 is available in digital form. Figure 6~~8~~ provides an overview of the format of available aerial data, by year. The 1995 - 2011 data has been incorporated into the County's GIS system, and was used during the 2017 CCAP update to evaluate changes in channel conditions before and after exclusion of mining from the channel in

1996.~~.~~ ~~The Streamway Study used historical maps and aerial photography to characterize changes in channel form from 1937 to the present. The results of these comparisons have been entered into the County's GIS system. The Streamway Study modified stream cross section data from the Westside Tributaries Study (COE, 1994) to generate hydraulic and sediment transport computer models. These cross sections were updated from 1992 data during the Streamway Study, but have not since been updated with information available from the 1995 aerial topography. The Streamway Study also summarized existing channel geomorphic and hydraulic characteristics by reach. Existing channel characteristics were summarized in Chapter 3 (Tables 2 through 8)~~.

Riparian Vegetation ~~and Riparian Habitat~~

Existing riparian habitat in the CCRMP area was ~~first~~ summarized in the 1995 Technical Studies~~Biological Resources Study (EIP, 1995)~~. The current extent and distribution of ~~existing habitat types~~riparian vegetation is ~~shown on Figure 5.4-2 of the Technical Studies for the CCRMP (EIP, 1995).is~~ described in detail in the 2017 Technical Studies (see also Figure 7).~~retrospective analysis of biological resources (Rayburn 2016).).~~ Figure 7~~Table 13~~ summarizes habitat types and acreage within the plan area. These data have been incorporated into the County's GIS system. Information regarding the ~~historical (pre-1995)~~ extent of riparian habitat prior to 1995 is ~~available from aerial photography (back to 1937)~~ summarized in the 1995 Technical Reports. ~~Biological Resources Study (EIP, 1995) but has not been compiled in map form.~~

Bridges and Infrastructure

The 1995 Technical Studies~~Streamway Study~~ summarized the history of bridges within the CCRMP area, and computed potential scour depths at all bridges. The TAC has not updated the calculations of scour depths at the bridges. The 2017 Technical Studies do not show any significant persistent scour at bridge locations. The new 2-D hydraulic model developed during the 2017 technical Studies can evaluate shear stress at any location within the plan area, including at bridge locations and thereby contribute to quantification of potential scour risk at bridges. ~~Plans are available for the present bridges through the Yolo County Public Works Department and Caltrans. Other infrastructure in the CCRMP area includes facilities operated by the Yolo County Flood Control and Water Conservation District (YCFCWCD) and Pacific Gas and Electric (PG&E). Plans are also available for the district facilities, and the district maintains operational records of diversions in various canals.~~

Cache Creek Area Plan Update - Aerial Data Format

	Aerial Photos				Contours/DTM		Volumetric Analysis		LiDAR	
	Comp?	*Format*	*Reso*	*Color*	*Comp?*	*Format*	*Comp?*	*Format*	*Comp?*	*Format*
1997					X	dwg, dxf, dbg				
1998	X[2]	sid			X	dwg, dxf	X	dwg, dxf		
1999	X[3]	tif			X	dxf	X	dxf		
2000	Hard Copy				X	dwg, dxf	X	dwg		
2001	Hard Copy				X	dwg, dxf	X	dwg		
2002	Hard Copy				X	dwg	X	dwg		
2003	Hard Copy				X	dwg	X	dwg		
2004	X	tif	6"	B&W	X	dwg, shp	X	shp		
2005	X[4]	tif	6"	B&W	X	dwg, dng, shp	X	shp		
2006	X	tif	8"	color	X	dxf			X	rrd, tif
2007	X[5]	tif	6"	color	X	dwg, shp, TIN				
2008[1]	X	tif	6"	color					X	ecw
2009	No aerials taken									
2010	X	tif, SID	6"	color	X	dwg, gdb	X	dwg, shp	X	las, tif
2011	X	tif, SID	6"	color	X	dwg, shp	X	GRID, shp, dwg	X	las, tif
2012	No aerials taken[2]									
2013	No aerials taken									
2014	No aerials taken[2]									
2015	X	tif	3-4"	color	X	shp, gdb			X	las simulated LiDAR
2016	No aerials taken[2]									
2017	X	tif, SID	3"	color	X	las[6]			X	las

Notes:
1- Data received from DWR's CVFED project
2- Data from NRCS Data Gateway
3- Only 3 of the 8 photos are georectified
4- Portions of Granite Esparto, Cemex and Syar are cut off
5- Portions of Granite Esparto, Teichert Esparto, Cemex and Syar are cut off
6- LAS Files that can be generated into contours

las - LiDAR
dwg - CADD file
tif - Image file
SID - Aerial image mosaic of multiple images
GRID - Raster terrain model (GIS data)
shp - Esri Shapefile (GIS data)
gdb - Esri Geodatabase (GIS data)

October 8, 2018

Data sources: Yolo County

Figure 6

Cache Creek Area Plan Update - CCAP Vegetation Summary

Reach	Area	Acreage Per Vegetation Class (2015)				
		Riparian Forest	Oak Woodland	Dense Scrub	Scattered Scrub	Herbaceous
Capay Valley[1]	CCRMP	NA	NA	NA	NA	NA
	OCMP	45.34	152.62	46.36	2.25	502.48
	Total	*45.34*	*152.62*	*46.36*	*2.25*	*502.48*
Capay	CCRMP	43.32	0.54	13.18	3.88	96.42
	OCMP	7.08	431.39	1.22	0.00	288.00
	Total	*50.40*	*431.93*	*14.40*	*3.88*	*384.42*
Hungry Hollow	CCRMP	3.73	0	12.92	12.33	68.49
	OCMP	6.57	3.14	12.43	10.42	308.65
	Total	*10.30*	*3.14*	*25.35*	*22.75*	*377.14*
Madison	CCRMP	10.23	0	32.29	14.27	94.38
	OCMP	11.29	1.00	21.93	3.64	91.25
	Total	*21.52*	*1.00*	*54.22*	*17.91*	*185.63*
Guesisosi	CCRMP	28.66	2.35	18.17	5.08	48.17
	OCMP	42.46	0.00	16.75	6.51	124.83
	Total	*71.12*	*2.35*	*34.92*	*11.59*	*173.00*
Dunnigan Hills	CCRMP	121.99	0	48.23	8.25	77.36
	OCMP	159.08	5.78	28.05	12.25	117.90
	Total	*281.07*	*5.78*	*76.28*	*20.50*	*195.26*
Hoppin	CCRMP	37.79	0	34.01	5.15	78.27
	OCMP	90.80	0.00	74.27	17.45	396.82
	Total	*128.59*	*0.00*	*108.28*	*22.60*	*475.09*
Rio Jesus Maria	CCRMP	5.95	0.00	4.95	0.36	11.85
	OCMP	9.92	0.00	6.09	0.00	5.61
	Total	*15.87*	*0.00*	*11.04*	*0.36*	*17.46*
CCRMP Total by Class		**251.67**	**2.89**	**163.75**	**49.32**	**474.94**
OCMP Total by Class		**372.54**	**593.93**	**207.11**	**52.52**	**1835.53**
CCAP Total by Class		**624.21**	**596.82**	**370.86**	**101.84**	**2310.47**

[1]Capay Valley reach is upstream of Capay Dam, outside CCRMP area but within OCMP area

May 10, 2017

Figure 7

Water Quality

Water quality data collected from Cache Creek shall be regularly evaluated by a trained professional to determine whether the use of chemicals in the habitat restoration areas is affecting water quality. If chemicals are used and a correlation between chemical use and the degradation of water quality is established, the use of chemicals in the habitat restoration areas shall be reevaluated.

6.2 MONITORING PROGRAM OVERVIEW

The purpose of the monitoring program is to provide dependable, up-to-date channel condition data ~~on which~~that the TAC can use ~~base~~ to support recommendations for management of the creek. In particular, the results of monitoring will be used to evaluate the need for improvement projects, annual channel maintenance, and hazard response. The data will be used directly in the design of these projects and activities. ~~Due to the relative scarcity of existing data, a~~Analysis of monitoring program data ~~will~~ promotes a better general understanding of Cache Creek processes, and their importance in channel stability. ~~Therefore, c~~Changes in the recommended channel improvement program, and in the monitoring program itself, are expected based on this improved understanding. It is therefore anticipated that the annual monitoring program will be modified and refined over time as the TAC's understanding and management of the creek improves.

The objectives of the proposed monitoring program are to:

1. Improve present estimates of average annual inflowing sediment load;

2. Improve the present understanding of creek hydrology, including flood-frequency, flow-duration, and channel storage/loss relationships;

3. Estimate inflowing sediment load on an annual basis;

4. Monitor changes in channel form and topography, including those directly associated with improvement project and channel maintenance activities;

5. Monitor changes in biological resources annually, with a focus on both native and nonnative riparian vegetation ~~vegetation and riparian habitat annually~~; and

6. Monitor bridges, levees, and other infrastructure to maintain awareness of ~~detect and prevent~~ damage related to creek conditions.

These data will be evaluated annually by the TAC in reviewing~~making~~ designs and making recommendations for channel improvements, channel maintenance and hazard response activities.

6.3 RECOMMENDED MONITORING PROGRAM

Water and Sediment Discharge

The water and sediment discharges of the creek, and their pattern over time, interact with biological and human influences to determine channel morphology. ~~Except for discharge at Yolo, these key factors are presently not measured in the plan area. The locations of proposed monitoring points for normal and flood flow measurements of water and sediment discharge are shown in Figure 30. These measurements will allow development of improved water-sediment discharge relationships, and will assist the TAC in developing a better understanding than presently exists of hydrologic and sediment transport processes. The importance of a long-term monitoring record can not be overemphasized.~~ Due to the high degree of variability in Cache Creek discharge from year to year and through each annual cycle, long-term data records are necessary to ~~determine~~ evaluate statistical relationships and to ~~determine~~ identify trends. ~~The monitoring locations shown in Figure 30 have been selected to take fullest advantage of existing data in developing long term relationships.~~

The monitoring program outlined here is intended to focus on specific needs of the CCRMP. ~~In the long term, Yolo County may wish to implement an automated, "real time" system of precipitation and runoff gage measurement. While the program described here is not a comprehensive automated system, its elements would be compatible with implementation of such a system.~~

The following data will be collected at the proposed monitoring locations:

Water Discharge, Continuous - ~~A c~~Continuous creek stage recording gages are~~is~~ located at the Rumsey B~~b~~ridge and near Yolo. These~~is~~ gages are~~is~~ currently maintained by the USGS ~~Department of Water Resources~~, and their data are available in real-time on the respective website for each gage. A gage at the Capay Dam, including a cableway, should be installed and maintained by the County (or by agreement with another agency) as data from this location would significantly assist in understanding the timing and magnitude of flood flows within the CCRMP area. Data from the Capay and Yolo gage sites would provide information at both inflow and outflow boundaries to the study reach only. ~~has telemetry capabilities. As part of the CCIP, the TAC would arrange to obtain real-time data telemetered to Yolo County from the Rumsey gage.~~

~~**Water Discharge, Continuous and**~ **Sediment Discharge, Sampling Program** - In addition to continuous water discharge monitoring, periodic sampling of suspended and bedload sediments, ~~bed material, and bed load~~ over a range of flow conditions would improve the available ~~are required to develop a~~ sediment discharge rating curve~~.~~ and should be collected when the TAC has identified a need for additional data in the previous year annual report. Real time discharge data for lower Cache Creek is available on the internet. ~~would be telemetered to Yolo County.~~ Sediment transport measurements should be made to develop sediment transport rating curves. Sediment transport measurements (suspended and bedload) should be conducted at the same

gage locations as continuous streamflow monitoring (or the closest feasible location) using appropriate techniques following the guidance of the USGS. The TAC should use these measurements to develop sediment transport (bedload and suspended load) rating curves for several locations in the program area at flows determined by the TAC in the prior year annual report. ~~Approximately five measurements per year are anticipated to be performed by field crews. Two gaging stations would be used to characterize inflow (Capay) and outflow (Yolo) from the CCRMP area.~~

~~In the future, a possible third station located at Madison to define changes in discharge and sediment transport through the CCRMP area would be installed. Flow and sediment load data at Madison are important because there are presently no data available to indicate channel hydraulics and sediment transport conditions in the main CCRMP study reach. Data from the Capay and Yolo gage sites will provide information at both inflow and outflow boundaries to the study reach only.~~

~~The gage at Yolo is currently maintained by the USGS, but does not have telemetry capability. The new gage at Capay, including a cableway, would be installed and maintained by the County (or by agreement with another agency).~~

Longitudinal Water Surface Elevation Profile Survey – When a flow at or exceeding 10,000 cfs is predicted at the Yolo stream gage, a field crew should be mobilized to survey a water surface elevation profile at no less than eight locations between Capay Dam and Yolo. This survey should be used to calibrate the program hydraulic model. The TAC undertook this in the winter of 2015/16 and 2016/17.

High Flow Water and Sediment Discharge - When funding is available and the TAC has identified a need for data, additional sediment transport measurements should be completed. Monitoring of water and sediment discharge during high flow events requires mobilization of field crews during winter runoff events to measure discharge, suspended sediment and bed load. ~~A staff gage and peak recording gages would be installed at each monitoring location. Comparison of high flow discharge and sediment measurements to continuous gaging location results would yield information regarding the relative timing and magnitude of peak flows at various points, transport of sediments through the Cache Creek system, and general channel sediment storage/losses. In addition to two stations on Cache Creek, one future station is proposed on Goodnow Slough to characterize inflows from this source. An average of approximately five measurements per high flow year at each site are anticipated.~~

Bed Material Sampling - After flow events greater than or equal to 20,000 cfs the TAC shall complete coarse level channel bed surface pebble counts at approximately one to three locations per reach, to determine grain size distribution. If possible, these pebble counts should be completed during the annual creek walk.

Sediment transport measurements (suspended and bedload) should be conducted at the same gage locations as continuous streamflow monitoring (or the closest feasible location) using best

available technology according to guidance provided by the USGS (see the following website as an example: https://water.usgs.gov/osw/techniques/Diplas_Kuhnle_others.pdf).

Sediment transport measurements should be conducted to develop sediment transport rating curves for the program that improve with time following guidance on the flow levels for sampling provided by the TAC in the previous years' annual report.

~~In addition to the samples collected during discharge and high flow measurements, bed material grab samples will be collected annually in each of the seven reaches identified in the Streamway Study within the CCRMP area. Two samples per reach will be collected. These samples will be collected at the time of the TAC's annual inspection (see below). Samples will be taken from exposed bar areas that are representative of the material being transported along the stream's bed during higher flows. Grain size distribution curves will be prepared for all samples annually.~~

Topography and Channel Form

Aerial surveying of the creek will be conducted every five years or after a major creek event defined as 20,000 cfs or greater at the Yolo gage. Changes in channel form will be monitored by comparison of ~~annual~~ aerial topography ~~and cross section~~ surveys to prior years. ~~A set of cross sections will be generated by aerial methods each year at fixed locations, selected by the TAC.~~ Aerial topography survey data (e.g., LiDAR) may be supplemented with additional field or aerially surveyed cross-sections in areas where increased accuracy is determined to be necessary by the TAC. Aerial survey data will be compiled in Digital Terrain Model (DTM) format (or files compatible with terrain model generation in the County's GIS system) to facilitate ~~cross-section generation for use in~~ updated hydraulic and sediment transport modeling, for use in volumetric comparisons, and for use in design of improvement projects and maintenance activities. ~~Aerial surveys will have a contour interval of 2 feet, and be prepared in hard copy format at a scale of 1 inch = 200 feet.~~ Horizontal coordinates will be based on the California Coordinate System, Zone 2. Existing survey control points will be used in ~~performance of~~ the aerial surveys, with annual checks to repaint and reset, where necessary, disturbed control points. Every five years the control net will be checked (resurveyed by the County surveyors or survey contractor) for vertical accuracy to detect variations due to land subsidence.

~~Aerial photography and compilation of the DTM will be performed once a year in the late spring (exact timing will depend on flow conditions). The TAC will specify locations for additional cross sections, if any, based on annual inspections (see below). In addition to the spring surveys, portions of the channel affected during the summer season by significant channel improvement or maintenance activities will be surveyed by the people performing the improvements or maintenance upon completion of those activities.~~

~~The aerial photography used for topographic mapping will be used to generate halftone mylar photo enlargements of the Cache Creek channel at a scale of 1 inch = 200 feet. These~~

~~enlargements will be used by the TAC in annual inspections and for the purpose of monitoring changes in vegetation and riparian habitat.~~

~~*Vegetation and*~~ *Riparian* ~~*Habitat*~~*Vegetation*

Every five years, ~~the TAC will prepare a riparian habitat survey and map for incorporation into the County's GIS system. The riparian habitat survey will present measurements or estimates by subreach or subarea of the following:~~ the TAC riparian biologist shall conduct reconnaissance-level biological survey of lower Cache Creek annually at an appropriate time of the year to convey the maximum amount of useful biological data. In addition, the TAC Biologist will conduct a comprehensive riparian habitat survey at least every five years at the scale of the entire CCRMP area (and potentially at the scale of the broader CCAP area is deemed appropriate by the County and the TAC). Such a survey was last performed in 2016, and standardized survey and analysis methodologies are detailed in the 2017 Technical Studies. The survey should include classification of vegetation using consistent class descriptions) by reach from recent high-resolution aerial photography, preferably from within one year. Vegetation classifications should be verified through ground-truthing and corrected accordingly. Changes in native and nonnative vegetative characteristics from previous evaluations, including a discussion of implications for other biological resource elements (wildlife, invertebrates, and fish), should be presented by reach and for the CCRMP area overall, including detailed maps and databases of spatial data collected and analyzed during the survey. The riparian habitat survey may also include additional data, including but not limited to:

1. Percent cover of native or nonnative species (may be obtained from permanent monitoring plots if established);

2. Crown height of trees (by age or size class);

3. Vigor (e.g., die-back);~~;~~

4. Changes in the extent and/or distribution of priority invasive species~~Invasion by exotic species~~ (or particular ~~problem~~ species of concern);

5. List of special~~-~~-status species (plant, animal, invertebrate, or fish) present;

6. ~~Natural~~ Native species recruitment/regeneration; and

7. Instances of significant disturbance (e.g., fire, flooding, drought, OHV use) and impacts on biological resources

8. Status of previous revegetation or restoration projects, in addition to priority sites for future revegetation or restoration projects.

~~7. Changes in vegetative and habitat characteristics from previous evaluation.~~

These measurements will be recorded on maps in a format suitable for incorporation into the County's GIS system. Maps will be produced through a combination of field inspection and use of aerial survey information~~photo enlargements~~.

~~As part of the vegetation monitoring program, the TAC will install a series of piezometers in the creek channel to measure groundwater levels. At least one piezometer per stream reach is recommended, with locations to be determined by the TAC. Piezometers will be monitored twice each dry season (June through October).~~

Annual Inspections

At the end of each runoff season (ideally April or May if conditions allow), the TAC will make an annual inspection of the creek (referred to as the "creek walk") to document channel conditions. Conditions that will be noted include:

1. Evidence of changes in channel dimensions or bank erosion;

2. Evidence of bed degradation or aggradation;

3. Significant changes in the locations or sizes of bars and other channel features;

4. Degree of channel armoring and bed material imbrication;

5. Vegetation located within the center portion of the channel (within 100 feet of the low flow channel), including type, density, and size;

6. Conditions at bridges along levees and other major infrastructure;

7. Potentially hazardous conditions involving public safety or property damage;

8. General hydraulic condition of the channel based on qualitative comparison with previous years (e.g., restrictions due to vegetative growth, changes in bed form, etc);

9. General evaluation of channel and bank stability on a reach-by-reach basis;

10. Identification of areas where vegetation may be getting so thick as to adversely alter flow direction or reduce channel capacity; and

~~11. Areas where the existing capacity of the channel can no longer contain a 100-year flood event, or is nearing the loss of such capacity.~~

~~Notes from the annual inspection will be prepared on the photo base.~~

Flood Monitoring

Significant channel changes have historically occurred on Cache Creek during major floods. During periods of major floods in which the discharge at Rumsey exceeds 20,000 cfs, more intensive data collection is warranted to collect important ~~water and sediment discharge~~ data. The YCFCWCD monitors gages during high water events. ~~Although an average of five high flow monitoring measurements at each site is anticipated, adequate monitoring of a single flood might require more than this number of measurements. If possible, water and sediment discharge measurements should be made at all stations at least once a day for each day that the flow exceeds 20,000 cfs.~~ Depending on access and safety, additional efforts should be considered~~made~~ to conduct monitoring measurements during rising flow periods, ~~limits,~~ peak flows, and recession flow periods.

The Cache Creek channel has historically responded to major floods by ~~making major lateral and vertical adjustments~~adjusting ~~in~~ channel form both vertically and laterally. Bank migration, loss of riparian vegetation, damage to bridges and other infrastructures, overbank flooding, and channel incision are problems that occur during large floods. ~~At the present time, there are no procedures in place for monitoring and responding to flood events on Cache Creek. Both Yolo County and the Yolo County Flood Control and Water Conservation District are typically involved in monitoring flood situations that could threaten infrastructure or private property, but a coordinated proactive program for response to floods is lacking.~~

This section does not prescribe a comprehensive flood management plan, but outlines the participation of the TAC in flood watch activities and a high flow monitoring program. Such a program can become an integral component of a more comprehensive, County-wide flood management plan. The TAC does ~~will~~ not have responsibility or authority for flood hazard response, but is~~will be~~ available to participate, on behalf of the County, to monitor and analyze~~respond to~~ Cache Creek floods. Several elements of the monitoring program described will assist the County in monitoring flow conditions on a real time basis, and preparing for potential flood conditions.

Observation and measurement of how Cache Creek responds to high flow events is critical to the CCIP. Understanding how the creek responds during high flows is important for proper creek resource management and maintenance activities. Flood watch activities include monitoring creek flows, precipitation, and watershed conditions to determine when flood flows are likely to occur in the CCRMP area, mobilizing personnel and equipment to monitor conditions in the area, and coordinating the activities of these personnel.

The County Office of Emergency Services (OES) has designated the position of TAC Flood Coordinator as a Technical Specialist to the County OA EOC during periods of activation. On an ongoing basis, the TAC identifies a primary and alternate Flood Coordinator.

~~The TAC will develop a plan to accomplish these objectives, including the following basic elements:~~

~~1. Procedures for monitoring discharge at the Rumsey gage and precipitation in the upper watershed to determine when flood flows are likely. For the purposes of this program, a discharge greater than 20525,000 cfs is considered a flood flow. This discharge has about a 20 percent chance of occurring in any year (5 year flood). Procedures must include assignment of staff for 24 hour availability, and establishment of contact procedures with the National Weather Service for flood watch and flood forecast information.~~

~~2. Procedures for TAC contact with the Yolo County Public Works Department and YCFCWCD on a 24 hour basis to mobilize personnel and equipment necessary for monitoring purposes.~~

~~3. Selection of a TAC flood watch coordinator and an alternate to manage observations and monitoring of high flows .~~

~~4. Procedures for notification of other agencies (e.g., City of Woodland, Caltrans, DWR, USGS, etc.) of identified hydraulic problems or hazards, and advance notification of these agencies of flood watch and contact procedures. Although the CCIP has no authority or responsibility for flood hazard warning, the intent is that monitoring personnel will cooperate with other County emergency groups and notify them if problems are observed.~~

~~5. Establishment of flood flow monitoring and record keeping procedures for flood watch activities.~~

Data Analysis

Data compilation and analysis will be under the direction of the TAC. Data will be stored in a database integrated ~~into~~ with the County's GIS system, and such storage, data formatting, and quality control should be coordinated with the relevant TAC member to the extent possible. Retrieval of data for use by the private sector will be billed at standard rates or by hourly charge for the time spent by County employees. Collection of the data is the first step in assembling the database. However, data checking, compilation, and analysis must also be performed on an ongoing basis to result in useful long term data. This section describes the procedures for compiling the data into a database system and making preliminary analyses for use by the TAC.

Water and Sediment Discharge - Water discharge at continuous gages is computed by means of a stage-discharge rating curve. This curve relates stage in the stream (water surface elevation) to discharge. Changes in the channel at or in the vicinity of the gage will result in changes in the rating curve. Streams that are in the process of ~~incising~~ adjusting to changes in sediment supply and transport rates (like Cache Creek) may require annual adjustments in the rating curve. The rating curve is established and maintained with actual discharge measurements, usually involving measurement of velocity and flow area in segments of the creek's~~stream's~~ cross-section. To develop a rating curve, multiple measurements are required over a range of discharges. Therefore, initial installation of a continuous gage requires many measurements in the first few years to establish a reliable rating curve, and measurement of high flows continues to be important to the accuracy of the rating curve throughout the gage's service life. Data collected

by continuous recorders or via telemetry must be checked to eliminate errors. In addition, the gage equipment itself must be periodically checked and maintained to ensure proper operation and to collect recorded data.

Sediment data collection requires field sampling and laboratory analysis. The field sampling work involves collection of suspended and bed sediment samples, organizing and labeling the samples, and transporting samples to a laboratory for analysis. Suspended sediment samples are analyzed for total weight of sediment per unit weight or volume of water, and for gradation of the sediment by size. Bed load samples may be analyzed for weight collected per unit time and for gradation. Laboratory analysis may be performed, as needed, to yield gradation of the collected samples. Bed load transport supplies aggregate to the CCRMP area in the sizes that were historically commercially mined, through 1996~~have been commercially mined~~. Bed load samples are useful in confirming the ratio of bed load to suspended load transport at various discharges (necessary to compute total load), and to confirm the accuracy of transport functions used in sediment transport modeling. However, at very high flows, bed load sampling may not be practical due to limitations in field equipment and methods. When possible as a component of the TAC monitoring of Cache Creek, ~~In addition to~~ bed load samples should be taken from the flowing creek~~stream~~, and dry bed material samples should be collected in each reach at the time of the annual inspection, for ~~will be~~ laboratory analysis~~zed in the laboratory for~~ of gradation. Bed load transport can be calculated from stream properties and bed material size. ~~Table 14 lists the type of compilation, analysis, and data storage required for each measurement type.~~

Topography and Channel Form - Changes in channel topography and form will be determined primarily from ~~annual~~ Digital Terrain Models (DTM) produced ~~annually by~~using LiDAR or aerial photogrammetry after peak flows greater than 20,000 cfs, or every five years, whichever occurs first. The ~~completed terrain~~DTM modeling will be used to ~~record~~ quantify key channel characteristics for comparisons~~comparison to~~ with previous years. In addition, a longitudinal profile of the stream within the entire CCRMP area will be ~~made~~ developed from this data and compared to previous years.

The DTM will be used to locate areas of aggradation and degradation in the ~~stream~~ creek by comparing DTM surface elevations for the current year with that of the previous year. A grid plot of elevation differences will be produced for areas within the channel. Where significant elevation differences (e.g., greater than two feet over areas exceeding one acre) are identified or suspected, the two surfaces will be compared digitally and a ~~–~~volumetric estimate of aggradation or degradation made. ~~This type of volumetric comparison is not required or recommended over the entire stream surface. In addition to comparison of terrain model surfaces, the TAC will establish cross-section locations for annual comparisons. Data for these cross-sections will be generated primarily from aerial photogrammetry, but a portion of the data may need to be produced by field survey in areas of vegetative cover or below the water surface. In addition to regularly measured cross-sections, the TAC may request additional cross-sections in areas of interest for channel improvement projects or problem areas.~~ The DTMs will also be used to update the hydraulic model and evaluate hydraulics to identify new areas of concern.

~~**Vegetation and**~~ **Riparian** ~~**Habitat**~~ **Vegetation**- Data generated during~~in~~ riparian ~~in~~ vegetation ~~and riparian habitat~~ monitoring will be compiled and stored in the County's GIS system. The TAC Biologist will review monitoring data to determine trends by subreach. Data will be compiled and plotted to illustrate changes in acreage by habitat type over the entire CCRMP area, and changes in specific characteristics by ~~sub~~reach. Data comparisons to be tabulated or plotted shall include but not be limited to area, percent cover, crown height of trees, number of species present, and level of invasion by ~~exotic~~non-native species. ~~Piezometer data will be recorded in the County's database.~~

Annual Inspection - Maps and notes from annual inspections will be stored in an appropriate ~~hard copy~~ format. Additional analysis of annual inspection results is not required. The observations of the annual inspections will be supplemented by analysis of digital terrain model data for the purpose of identifying and quantifying changes in the channel.

Flood Monitoring - Data from flood monitoring ~~will not normally require analysis, unless requested by the TAC. Discharge measurements~~should be reported in each year's annual report and ~~will~~ be compiled, stored, and analyzed as described for other water and sediment discharge measurements.

6.4 HYDRAULIC AND SEDIMENT TRANSPORT MODELING

The 1995 Technical Studies relied on ~~Streamway Study used~~ hydraulic (HEC-2) and sediment transport (HEC-6) model~~s~~ to evaluate ~~current~~ hydraulic and sediment transport conditions throughout lower~~in the~~ Cache Creek channel. In 2001/02 and again in 2006 HEC-2 modeling was conducted on a portion of the lower creek, from CR 94B to the I-5 bridge. The 2017 Technical Studies contain new HEC-RAS 2-D modeling to evaluate current hydraulic and sediment transport conditions throughout lower Cache Creek based on data collected since 1996. As changes occur in the creek~~'s channel~~, additional modeling will be required to maintain sufficiently accurate quantitative tools for making management decisions on the creek. Modeling is necessary both to support long-term management decisions and for use in the design of specific improvement projects or maintenance activities. Topics which can be addressed using hydraulic~~numerical~~ modeling include flood ~~carrying~~ flow capacity, bridge scour potential, channel stability, sediment transport characteristics, channel hydraulic characteristics (e.g., width, average velocity, and depth at two year flow frequency), and location of hydraulic constrictions or controls. As monitoring data are collected, the ability of hydraulic~~numerical~~ models to duplicate and predict observed conditions will improve.

The TAC shall regularly update the program hydraulic model and identify locations where the 100-year flood flow is no longer contained in the channel or has otherwise changed significantly. The TAC shall coordinate with interested parties to promote awareness of changes in flood flow capacity in Cache Creek over time. Flood flow capacity associated with Cache Creek near the city of Woodland shall not be exacerbated by in-channel activities conducted under either the CCRMP or the CCIP.

The use of ~~numerical~~ hydraulic modeling in the future will be at the discretion of the TAC, as necessary to evaluate significant changes in the creek's morphology (including changes in channel roughness due to vegetation and bar and terrace formation) or evaluate specific projects. The TAC will be responsible for maintaining a current versions of ~~both hydraulic and sediment transport models~~the hydraulic model for the entire CCRMP area. ~~The public will have access to these models (at a nominal cost to cover record keeping and reproduction) for use in evaluating specific channel improvement projects.~~The hydraulic model will be made available for landowners and/or their consulting engineers for use in the design of channel improvement projects.

6.5 PROJECT PERFORMANCE EVALUATION

The TAC will be responsible for evaluating and commenting on the performance of proposed improvement projects in the creek. Projects may be evaluated using normal annual monitoring data, or additional data may be collected for evaluation of specific projects. The TAC will include the costs for any applicable~~special~~ monitoring requirements in the estimated budget~~s~~ for review of proposed improvement projects. These costs shall be borne by each individual project applicant unless the County determines the TAC's review will result in program-wide value.

6.6 ANNUAL MONITORING REPORT

The TAC will produce an annual report in January of each year for the Board of Supervisors that describes the data collected and analysis conducted as part of the monitoring program. In 2013, the annual reporting period was changed from the calendar year (January 1 through December 31) to the water year (October 1 through September 30). This change was made to allow the TAC adequate time to respond to and analyze water events that may occur towards the end of the calendar year without delaying the publication of the annual report.

The annual report serves as a regular opportunity for the TAC to step back and take a larger perspective in looking at both the creek and at the CCRMP with a critical eye for improvement. Although this is a complex and ambitious project, it is designed to be adaptive, so that monitoring requirements and management techniques can appropriately address the ever-changing ~~riparian~~ creek system environment. In order to be effective, the annual report should not be seen as a chronicle of recent success or a lackluster recitation of dry data, but must reflect thoughtful self-evaluation. Is information being used? Are other forms of monitoring needed? Is there unnecessary or less-than-useful monitoring that can be eliminated or consolidated? Given the limited budget of the CCIP, are activities being carried out in a cost-effective manner and are the most important priorities being emphasized? Are objectives being met? Are the policy and technical assumptions still valid? Fundamental questions such as these should underlie the annual report, so that recommendations made by the TAC take into account the long-term benefit of both the creek and the community. Review of the report by the Board of Supervisors will provide the necessary policy direction, as well as provide an ongoing public forum for

~~focussing~~focusing the County's attention on the unique issues that concern Cache Creek. The format of the report will be as follows:

1. Brief description of annual monitoring activities, changes from previous years, and costs. Summary of significant findings, problems, and needs for upcoming year;

2. Summary of annual water and sediment discharge data and notable variations from previous years or period of record;

3. Summary of changes in channel topography and form, including identification of problem areas and summary of desirable and undesirable trends, including any areas where existing flood flow~~channel~~ capacity has been significantly reduced~~can no longer contain a 100-year flood event~~;

4. Estimate of location and volume of annual sediment replenishment;

5. Summary of changes in biological resources, with a focus on both native and nonnative vegetation~~ and riparian habita~~t;

6. Summary of flood monitoring results, if applicable;

7. Evaluation of bed and bank stability in the CCRMP area, considering data summarized above. A description of the relationship of problem areas to recommended improvement projects and maintenance activities (see Chapter 2);

8. Recommendations for changes in prioritization of channel improvement projects; and

9. Recommendations for changes in monitoring program in coming year.

~~Figure 31 schematically shows the annual schedule for the monitoring program~~

REFERENCES

1. ~~EIP, 1995, Biological Resources Study,~~ *Technical Studies and Recommendations for the Lower Cache Creek Resource Management Plan*, prepared for the Yolo County Community Development Agency, October 1995.

2. *2017 Technical Studies and 20-Year Retrospective for the Cache Creek Area Plan*,bpreapred for the Yolo County Administrator's Office, March 17, 2017.

3. Cache Creek Annual Status Reports (1998, 1999, 2006, 2010 through 2016)

4. *2006 Cache Creek Status Report and Trend Analysis, 1996-2006*, prepared for Yolo County Planning, Resources, and Public Works Department, July 25, 2006.

5. *Cache Creek Area Plan Program Audit and Management Tools*, September 22, 2011.

~~2. Lustig, Lawrence K., and Busch, Robert D., 1967, *Sediment Transport in Cache Creek Drainage Basin in the Coast Ranges West of Sacramento, California*, Geological Survey Professional Paper 562-A.~~

~~3. Harmon, Jerry G., 1989, *Streamflow, Sediment Discharge, and Streambank Erosion in Cache Creek, Yolo County, California, 1953-86*, U.S. Geological Survey Water Resources Investigations Report 88-4188.~~

~~4. NHC, 1995, Cache Creek Streamway Study, *Technical Studies and Recommendations for the Lower Cache Creek Resource Management Plan*, prepared for the Yolo County Community Development Agency, October.~~

~~5. U.S. Army Corps of Engineers, 1994, Reconnaissance Report, Westside Tributaries to Yolo Bypass, California, June.~~

ACKNOWLEDGEMENTS

2019 Update

Updated acknowledgement will be inserted here

1996 CCIP

Cache Creek has historically been a dynamic system, influenced by high flood flows, large sediment supplies, and steep slopes in the upper watershed. These dynamics have been exaggerated by the multiple demands placed upon the creek in the past few decades, as mining, agriculture, and infrastructure have intruded into the floodplain. As a result, the creek has become increasingly degraded and imbalanced. Left on its own, the creek will eventually heal itself and adjust to the artificial constraints placed upon it, but the healing would take decades and may threaten property and lives in the process. Instead, the CCIP provides a program for managing riparian resources in a responsible and sensitive manner, that allows the creek to establish a new, more natural equilibrium. As the process of reshaping the channel and restoring in-stream habitat progresses, the creek will respond to these changes, requiring adjustments in the CCIP to account for these changes. This process will be guided by professional judgement, science, and an extensive monitoring program to keep abreast of Cache Creek as it evolves. The elimination of commercial in-stream mining is an important first step in solving the serious concerns currently associated with the creek, but other problems will continue. In order to properly manage riparian resources, the County must take a larger perspective and look at all of the components of the creek as an integrated system. The CCIP is a broad-based and flexible program, that provides the County with such a perspective, and the means, for enhancing the precious natural resources of Cache Creek.

1996 Yolo County Board of Supervisors

Mike McGowan	District 1
Helen Thomson	District 2
Tom Stallard, Chair	District 3
Betsy Marchand	District 4
Frank Sieferman	District 5

1996 Yolo County Planning Commission

Bob Heringer	District 1
Barbara Webster	District 2
Harry Walker	District 3
Jim Gray, Chair	District 4
Henry Rodegerts	District 5
Nancy Lea	At Large
Kent Lang	At Large

1996 Key Members of Staff

Roy Pederson	County Administrative Officer
David Morrison	Resource Management Coordinator

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 Plan was provided by the *Technical Studies and Recommendations for the Lower Cache Creek Resource Management Plan* (October, 1995). Kevin O'Dea of Baseline Environmental Consulting was the primary author of this report, with assistance from Bob MacArthur of Northwest Hydraulic Consultants, Inc. The County is grateful for their involvement in this process.

Funding for this project was provided by R.C. Collet, Solano Concrete Company, Syar Industries, and Teichert Aggregates.

♦ ♦ ♦

To find out more about this Program, or the process through which it was developed and updated, please contact:

Elisa Sabatini, Manager of Natural Resources
~~David Morrison, Resource Management Coordinator~~
Yolo County Administrator's Office~~YOLO COUNTY COMMUNITY DEVELOPMENT AGENCY~~
625 Court~~292 West Beamer~~ Street, Room 202
Woodland, CA 95695
(530) 406-5773~~(916) 666-8041~~

-or-

Heidi Tschudin, Principal
TSCHUDIN CONSULTING GROUP
710 21st Street
Sacramento, CA 9581~~1~~4
(916) 447-1809

EXHIBIT 5 TO ATTACHMENT B

MITIGATION MONITORING AND REPORTING PROGRAM

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CEQA MITIGATION MONITORING AND REPORTING PROGRAM

The California Environmental Quality Act requires public agencies to report on and monitor measures adopted as part of the environmental review process (PRC Section 21081.6 and CEQA Guidelines Sections 15091.d and 15097). This Mitigation Monitoring and Reporting Program (MMRP) is designed to fulfill that requirement for the Cache Creek Area Plan (CCAP) Update.

The CCAP Update Final EIR identifies all relevant, feasible mitigation measures necessary and available to mitigate significant impacts to acceptable levels. The Board of Supervisors has substantially incorporated each of these measures into the CCAP making the plan "self-mitigating" in that respect. The measures therefore will be implemented and enforced through the application of the CCAP to individual mining and reclamation projects.

PRC Section 21081.6(b) and CEQA Guidelines Section 15097(b) confirm that the required monitoring plan may consist of mitigation measures incorporated into a plan, which is the approach that has been taken by the Board of Supervisors. Given this format, the Board of Supervisors has determined that no additional information or documentation is necessary or required in this MMRP.

Pursuant to Section 15097(b) of the CEQA Guidelines the County's annual report to the Board on the CCAP can fulfill the requirement for a reporting component to an MMRP. The monitoring and implementation policies included in the General Plan and the Cache Creek Annual Status Report are hereby found by the Board of Supervisors to fulfill this component of the mitigation monitoring program requirement.

As required by Section 21081.6 of the Public Resources Code, the Yolo County Natural Resources Division is the "custodian of documents and other material" which constitute the "record of proceedings" upon which the decision to adopt the CCAP Update was based. Inquiries should be directed to:

Casey Liebler, Natural Resources Program Coordinator
Yolo County Natural Resources Division
(530) 666-8236
NaturalResources@yolocounty.org

The location of this information is:
Yolo County Administrator's Office
625 Court Street, Suite 202
Woodland, CA 95695

To assist with implementation of the mitigation measures, the MMRP includes the following information:

Mitigation Measure: The mitigation measures are taken verbatim from the EIR.

Timing/Milestone: This section specifies the point by which the measure must be completed.

Responsibility for Oversight: The County has responsibility for implementation of most mitigation measures. This section indicates which entity will oversee implementation of the measure, conduct the actual monitoring and reporting, and take corrective actions when a measure has not been properly implemented.

Implementation of Mitigation Measure: This section identifies how actions will be implemented and verified.

Responsibility for Implementation: This section identifies the entity that will undertake the required action.

Checkoff/Date/Initials/Notes: This section verifies that each mitigation measure has been implemented.

Table B: Mitigation Monitoring and Reporting Program

Mitigation Measures	Timing/Milestone	Responsibility for Oversight	Implementation Responsibility/Details	Checkoff Date/Staff Name/Notes
Air Quality				
AIR-2: The following regulation shall be added as Sect. 10-4.414.1 to the Mining Ordinance: Wherever practical and feasible, aggregate facilities shall use clean electric energy from the grid or install alternative on-site electricity generation systems to replace diesel equipment and reduce criteria pollutant emissions.	Incorporate new Section 10-4.414.1 of the Mining Ordinance at the time of adoption of the CCAP Update	Yolo County	This requirement will be applied to applications for mining and/or reclamation as a condition of approval.	
Biological Resources				
BIO-1a: Proposed changes to Action 4.4-14 in the CCRMP and Section 10-3.501(d) of the In-Channel Ordinance shall be further modified as follows: 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 covered activities and covered species.	Incorporate into Section 10-3.501(d) of the In-Channel Ordinance and Action 4.4-14 of the CCRMP at the time of adoption of the CCAP Update	Yolo County	This requirement will be applied to applications for mining and/or reclamation as a condition of approval.	
Action 4.4-16 in the CCRMP and Section 10-3.505(c) and (d) of the In-Channel Ordinance shall be modified to include the following text: 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	Incorporate into Section 10-3.501(c) of the In-Channel Ordinance and Action 4.4-16 of the CCRMP at the time of adoption of the CCAP Update			

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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.)				
The In-Channel Ordinance shall be revised to include a new section as follows: Section 10-3.406.1. Habitat conservation plan compliance. All in-channel activities performed under the CCRMP and CCIP shall be consistent with applicable components of the Yolo County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP).	Incorporate as new Section 10-3.406.1 of the In-Channel Ordinance at the time of adoption of the CCAP Update			
BIO-1b: Action 6.4-3 in the OCMP shall be revised as follows: Mitigate for short-term and long-term loss of agricultural land and habitat pursuant to applicable County requirements and CEQA. ~~in effect at the time~~ Comply with the Yolo HCP/NCCP for covered species. For non-covered species for which impacts may occur, ensure compliance with appropriate measures in site-specific biological assessments required under the OCMP and CCRMP, in compliance with the State Fish and Game Code, Migratory Bird Treaty Act, and other applicable regulations, plans and programs, as appropriate.	Incorporate into Action 6.4-3 of the OCMP at the time of adoption of the CCAP Update	Yolo County	This requirement will be applied to applications for mining and/or reclamation as a condition of approval.	
The title of Section 10-5.514 of the Reclamation Ordinance shall be changed as follows: Section 10-5.514. Habitat management conservation plan compliance.	Incorporate into Section 10-5.514 of the Reclamation Ordinance at the time of adoption of the CCAP Update			
Section 10-4.440 in the Mining Ordinance shall be revised as follows: Avoid disturbance to important wildlife habitat features such as bird nesting trees, colonial breeding locations, elderberry host plants for Valley Elderberry Longhorn Beetle, and mature	Incorporate into Section 10-4.440 of the Mining Ordinance at the time of adoption of the CCAP Update			

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riparian forest and oak woodland habitat. This shall include sensitive siting of haul roads, trails, and recreational facilities away from these features. Suitable habitat for special-status species shall be protected and enhanced, or replaced as a part of mitigation plans prepared by a qualified biologist, where necessary, and through compliance with the Yolo HCP/NCCP for covered special-status species. Mining and reclamation activities shall be performed in accordance with the State Fish and Game Code, Migratory Bird Treaty Act, and other applicable regulations to protect bird nests when in active use. …				
Section 10-4.502(b)(1) in the Mining Ordinance shall be revised as follows: A biological inventory and analysis to evaluate the on-site habitat value of the proposed mined area, as well as the potential impacts to special-status species and sensitive natural communities, both on-site and within the immediate area. The analysis shall propose appropriate measures to reduce any potential adverse impacts to special-status species or associated significant suitable habitat, and shall ensure compliance with the Yolo HCP/NCCP, California Fish and Game Code, Migratory Bird Treaty Act, and other applicable regulations, plans and programs. The analysis shall also include a wetland delineation study for any potential on-site wetlands, and shall provide adequate mitigation and appropriate authorizations from regulatory agencies, where required. If landscaping is proposed to screen the surface mining operations from adjoining public rights-of-way or public and private lands, the biological analysis shall include an evaluation of the feasibility of the species, weed control, and irrigation methods to be used;	Incorporate into Section 10-4.502(b)(1) of the Mining Ordinance at the time of adoption of the CCAP Update			
BIO-2: Revegetation guidelines in Section 10-3.415(A) of the In-Channel Ordinance shall be revised as follows: 12) The following guidelines shall be followed when developing wetland habitat areas, with refinements and adjustments made based on current professional practice where recommended by	Incorporate into Section 10-3.415(A) of the In-Channel Ordinance at the time of adoption of the CCAP Update	Yolo County	This requirement will be applied to applications for mining and/or reclamation as a condition of approval.	

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a qualified biologist, subject to review by the TAC: 13) The following guidelines shall be followed when developing riparian woodland habitat areas, with refinements and adjustments made based on current professional practice where recommended by a qualified biologist, subject to review by the TAC: 14) The following guidelines shall be followed when developing oak woodland habitat areas, with refinements and adjustments made based on current professional practice where recommended by a qualified biologist, subject to review by the TAC: 15) The following guidelines shall be followed when creating habitat areas within previously mined areas outside of the active channel, with refinements and adjustments made based on current professional practice where recommended by a qualified biologist, subject to review by the TAC:				
Revegetation provisions in Section 10-3.415(A)7 of the In-Channel Ordinance shall be revised as follows: 7) Plant materials shall preferably be collected in the vicinity of the project site in order to control the origin of the genetic stock and provide the most site-adapted ecotypes. If seeding of native herbaceous species is proposed, seeds shall be collected, cleaned, tested for viability, and stored appropriately by a qualified native seed supplier. Cottonwood cuttings shall be collected and contract-grown at a nursery with staff experienced in the propagation of native plants. Alternatively, cottonwood cuttings can be collected from vegetation in the project vicinity and stockpiled for planting within twenty-four (24) hours of collection. Willow cuttings can be collected from vegetation in the project vicinity and stockpiled for planting within 24 hours of collection. Other woody riparian species shall be collected and contract-grown from local seed by a qualified native plant nursery. Where revegetation involves such a relatively small area that the requirements for locally-collected and grown	Incorporate into Section 10-3.415(A) of the In-Channel Ordinance at the time of adoption of the CCAP Update			

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material would be infeasible, the seed and plant material to be used in revegetation efforts may be obtained commercially as long as it is of local origin from within Yolo County.				
BIO-3: Implement Mitigation Measure BIO-1b.	See above	See above	See above	
BIO-5a: Implement Mitigation Measures BIO-1a, Bio-1b, and BIO-2.	See above	See above	See above	
BIO-5b: Implement Mitigation Measure BIO-1a and BIO-1b.	See above	See above	See above	
Cultural and Tribal Cultural Resources				
CUL-1: The following revision shall be made to the CCAP Update In-Channel Ordinance Section 10-3.501. to ensure that an analysis of the potential for cultural resources is undertaken as part of the application process. In-Channel Ordinance Section 10-3.501. Applications: Contents. Except as provided for in Section 10-3.502 of this article, all project application documentation shall be submitted to the Director at one time. Three (3) complete copies of the application shall be provided to the County. Applications for proposed in-channel activities shall include, but shall not be limited to, the following: (e) A cultural resources survey of the proposed mining area, in order to evaluate the potential for historic and/or prehistoric artifacts. A survey may not be required if a preliminary investigation from the Northwest Information Center indicates that the likelihood of archaeological resources is low for the proposed site.	Incorporate into Section 10-3.501 of the In-Channel Ordinance at the time of adoption of the CCAP Update	Yolo County	This requirement will be applied to applications for mining and/or reclamation as a condition of approval.	
Geology, Soils, Mineral, and Paleontological Resources				
GEO-3: Implementation of mitigation measures GEO-3a and GEO-3b would ensure that this impact is mitigated to a less-	See below	See below	See below	

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than-significant level.				
GEO-3a: The text of In-Channel Ordinance Section 10-3.404 shall be replaced with the following: Section10-3.404. Cultural Resources. (a) All resource records shall be checked for the presence of and the potential for prehistoric and historic sites, paleontological resources, and unique geologic features. Damaging effects to cultural resources shall be avoided whenever possible. If avoidance is not feasible, the importance of the site shall be evaluated by a qualified professional (e.g. archeologist, paleontologist, or geologist, depending on the resource type) prior to the commencement of operations. If a cultural or unique geological resource is determined not to be important, both the resource and the effect on it shall be reported to the County, and the resource need not be considered further. If avoidance of an important cultural resource is not feasible, a mitigation plan shall be prepared and implemented. The mitigation plan shall explain the importance of the resource, describe the proposed approach to mitigate destruction or damage to the site, and demonstrate how the proposed mitigation would serve the public interest. (b) If human skeletal remains are encountered during material removal, all work within seventy-five (75) feet shall immediately stop, and the County Coroner shall be notified within twenty-four (24) hours. If the remains are of Native American origin, the appropriate Native American community identified by the Native American Heritage Commission shall be contacted, and an agreement for treating or disposing, with appropriate dignity, of the remains and associated grave goods shall be developed. If any cultural resources, such as chipped or ground stone, historic debris, building foundations, or paleontological materials are encountered during material removal, then all work within seventy-five feet shall immediately stop and the Director	Incorporate into Section 10-3.404 of the In-Channel Ordinance at the time of adoption of the CCAP Update	Yolo County	This requirement will be applied to applications for mining and/or reclamation as a condition of approval.	

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shall be notified at once. Any cultural or paleontological resources found on the site shall be recorded by a~~A~~ qualified archaeologist or paleontologist using relevant professional protocols ~~shall then examine any cultural resources found on the site and the information~~ and a report fully recording the find shall be submitted to the County. This report shall include recommendations for appropriate treatment of the resource/artifact. The County encourages the donation of resources, other than tribal cultural resources, to the County for public display at the Cache Creek Nature Preserve or other appropriate venue. ~~Damaging effects to cultural resources shall be avoided whenever possible. If avoidance is not feasible, the importance of the site shall be evaluated by a qualified archeologist prior to the commencement of operations. If a cultural resource is determined not to be important, both the resource and the effect on it shall be reported to the County, and the resource need not be considered further. If avoidance of an important cultural resource is not feasible, a mitigation plan shall be prepared and implemented. The mitigation plan shall explain the importance of the resource, describe the proposed approach to mitigate destruction or damage to the site, and demonstrate how the proposed mitigation would serve the public interest.~~				
GEO-3b: The text of Off-Channel Ordinance Section 10-4.410 shall be modified as follows: Section 10-4.410. Cultural resources. (a) All resource records shall be checked for the presence of and the potential for prehistoric and historic sites, paleontological resources, and unique geologic features. Damaging effects on cultural, paleontological, and unique geologic resources shall be avoided whenever possible. If avoidance is not feasible, the importance of the site shall be evaluated by a qualified professional (either an archaeologist of geologist, depending on the resource type) prior to the commencement of mining operations. If a cultural resource or unique geologic resource is determined not to be important, both	Incorporate into Section 10-3.404 of the In-Channel Ordinance at the time of adoption of the CCAP Update	Yolo County	This requirement will be applied to applications for mining and/or reclamation as a condition of approval.	

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the resource and the effect on it shall be reported to the County~~Agency~~, and the resource need not be considered further. If avoidance of an important cultural, paleontological, or unique geologic resource is not feasible, a mitigation plan shall be prepared and implemented. The mitigation plan shall explain the importance of the resource, describe the proposed approach to mitigate destruction or damage to the site, and demonstrate how the proposed mitigation would serve the public interest. (b) If human skeletal remains are encountered during excavation, all work within seventy-five (75) feet shall immediately stop, and the County Coroner shall be notified within twenty-four (24) hours. If the remains are of Native American origin, the appropriate Native American community identified by the Native American Heritage Commission shall be contacted, and an agreement for treating or disposing of, with appropriate dignity, the remains and associated grave goods shall be developed. If any cultural resources, such as chipped or ground stone, historic debris, building foundations, or paleontological materials are encountered during excavation, then all work within seventy-five (75) feet shall immediately stop and the Director shall be notified at once. ~~Any cultural resources found on the site shall be recorded by a qualified archaeologist and the information shall be submitted to the Agency.~~ The find must be recorded by a qualified archaeologist or paleontologist using relevant professional protocols and a report fully recording the find submitted to the County. This report shall include recommendations for appropriate removal and preservation of the artifact. The County encourages the donation of the find to the County for public display at the Cache Creek Nature Preserve or other appropriate venue.				
Hydrology and Water Quality				
HYD-1: The text of Sections 10.5.517 and 10-5.532 of the Reclamation Ordinance shall be replaced in their entirety by the following:	Incorporate into Section 10-5.517 of the Reclamation Ordinance	Yolo County	This requirement will be applied to applications for mining and/or	

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Section 10-5.517. Mercury bioaccumulation in fish. As part of each approved long-term mining plan involving wet pit mining to be reclaimed to a permanent pond, lake, or water feature, the operator shall maintain, monitor, and report to the Director according to the standards given in this section. Requirements and restrictions are distinguished by phase of operation as described below. (a) Mercury Protocols. The Director shall issue and update as needed "Lower Cache Creek Off-Channel Pits Mercury Monitoring Protocols" (Protocols), which shall provide detailed requirements for mercury monitoring activities. The Protocols shall include procedures for monitoring conditions in each pit lake, and for monitoring ambient mercury level in the lower Cache Creek channel within the CCAP planning area, as described below. The Protocols shall be developed and implemented by a qualified aquatic scientist or equivalent professional acceptable to the Director. The Protocols shall identify minimum laboratory analytical reporting limits, which may not exceed the applicable response threshold identified in subsection (e) below. Data produced from implementing the Protocols shall meet or exceed applicable standards in the industry. (b) Ambient Mercury Level. The determination of the ambient or "baseline" fish mercury level shall be undertaken by the County every ten years in years ending in 0. This analysis shall be undertaken by the County for use as a baseline of comparison for fish mercury testing conducted in individual wet mining pits. The work to establish this baseline every ten years shall be conducted by a qualified aquatic systems scientist acceptable to the Director and provided in the form of a report to the Director. It shall be paid for by the mining permit operators on a fair-share basis. The results of monitoring and evaluation of available data shall be provided in the report to substantiate the conclusions regarding ambient concentrations of mercury in fish within the lower Cache Creek channel within the CCAP planning area.	at the time of adoption of the CCAP Update		reclamation as a condition of approval.	

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(c) Pit Monitoring. (1) Mining Phase (including during idle periods as defined in SMARA). The operator shall monitor fish and water column profiles in each pit lake once every year during the period generally between September and November for the first five years after a pit lake is created. Fish monitoring should include sport fish where possible, together with other representative species that have comparison samples from the creek and/or other monitored ponds. Sport fish are defined as predatory, trophic level four fish such as bass, which are likely to be primary angling targets and have the highest relative mercury levels. The requirements of this subsection apply to any pit lake that is permanently wet and navigable by a monitoring vessel. If, in the initial five years after the pit lake is created, the applicable response threshold identified in subsection (e) is exceeded in any three of five monitoring years, the operator shall, solely at their own expense, undertake expanded analysis pursuant to subsection (f) and preparation of a lake management plan pursuant to subsection (g). (2) Reclamation Phase. No monitoring is required after mining has concluded, during the period that an approved reclamation plan is being implemented, provided reclamation is completed within the time specified by SMARA or the project approval, whichever is sooner. (3) Post-Reclamation Phase. After reclamation is completed, the operator shall monitor fish and water column profiles in each pit lake at least once every two years during the period of September-November for ten years following reclamation. Monitoring shall commence in the first calendar year following completion of reclamation activities. If fish monitoring results from the post-reclamation period exceed the applicable response threshold described in subsection (e) or, for ponds that have implemented mitigation management, results do not exhibit a general decline in mercury levels, the operator shall, solely at their own expense, undertake expanded analysis pursuant to				

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subsection (f) and preparation of a lake management plan pursuant to subsection (g). (4) Other Monitoring Obligation**.** If monitoring conducted during both the mining and post-reclamation phase did not identify any exceedances of the ambient mercury level for a particular pit lake, and at the sole discretion of the Director no other relevant factors substantially support that continued monitoring is merited, the operator shall have no further obligations. (d) Reporting. (1) Pit Monitoring Results. Reporting and evaluating of subsection (c) pit monitoring results shall be conducted by a qualified aquatic scientist or equivalent professional acceptable to the Director. Monitoring activities and results shall be summarized in a single report (addressing all wet pit lakes) and submitted to the Director within six months following each annual monitoring event. The report shall include, at a minimum: (1) results from subsection (b) (pit monitoring), in relation to subsection (a) (ambient mercury levels). (2) Expanded Analysis Results. Reporting and evaluation of subsection (f) expanded analysis shall be conducted by a qualified aquatic scientist or equivalent professional acceptable to the Director. Results shall be summarized in a single report (addressing all affected wet pit lakes) and submitted to the Director within six months following each annual monitoring event. The report shall include, at a minimum, the results of the expanded analysis undertaken pursuant subsection (f). (3) Data Sharing. For pit lakes open to the public, the Director may submit the data on mercury concentrations in pit lake fish to the state Office of Environmental Health Hazard Assessment (or its successor) for developing site-specific fish consumption advisories. (e) Response Thresholds. (1) Fish Consumption Advisory. If at any time during any phase of monitoring the pit lake's average sport fish tissue mercury				

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concentration exceeds the Sport Fish Water Quality Objective, as it may be modified by the state over time (as of 2019, the level was 0.2 mg/kg), the operator shall post fish consumption advisory signs at access points around the lake and around the lake perimeter. Catch-and-release fishing may still be allowed. Unless site-specific guidance has been developed by the state's Office of Health Hazard Assessment or the County, statewide fish consumption guidance shall be provided. (2) Mining Phase Results. If, during the mining phase of monitoring, the pit lake's average fish tissue mercury concentration exceeds the ambient mercury level for any three of five monitoring years, annual monitoring shall continue for an additional five years, and the operator shall undertake expanded analysis pursuant to subsection (f) and preparation of a lake management plan pursuant to subsection (g). (3) Post-Reclamation Phase Results. If during the first ten years of the post-reclamation phase of monitoring, the pit lake's average fish tissue mercury concentration exceeds the ambient mercury level for any three of five monitoring years, biennial monitoring shall continue for an additional ten years, and the operator shall undertake expanded analysis pursuant to subsection (f) and preparation of a lake management plan pursuant to subsection (g). (f) Expanded Analysis. (1) General. If during the mining or post-reclamation phase, any pit lake's average fish tissue mercury concentration exceeds the ambient mercury level for any three years, the operator shall undertake expanded analyses. The analysis shall include expanded lake water column profiling (a minimum of five profiles per affected wet pit lake plus one or more non-affected lakes for control purposes) conducted during the warm season (generally May through October) in an appropriate deep profiling location for each pit lake. The following water quality parameters shall be collected at regular depth intervals, from surface to bottom of each lake, following protocols identified in subsection (a): temperature, dissolved oxygen, conductivity, pH and oxidation-				

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reduction potential (ORP), turbidity or total suspended solids, dissolved organic matter, and algal density by Chlorophyll or Phycocyanin. The initial analysis shall also include one-time collections of fine grained (clay/silt) bottom sediments from a minimum of six well distributed locations for each affected lake, and from one or more non-affected lakes for control purposes, to be analyzed for mercury and organic content. (2) Scope of Analysis. The purpose of the expanded analyses is to identify and assess potential factors linked to elevated methylmercury production and/or bioaccumulation in each pit lake. The scope of the expanded analyses shall include monitoring and analysis appropriate to fulfill this purpose, invoking best practices in the industry. In addition to the analyses described in subsection (f)(1) above, the analysis should also consider such factors as: electrical conductivity, bathymetry (maximum and average depths, depth-to-surface area ratios, etc.), and trophic status indicators (concentrations, Secchi depth, chlorophyll a, fish assemblages, etc.). Additional types of testing may be indicated and appropriate if initial results are inconclusive. (3) Use of Results. The results of the expanded analyses undertaken pursuant to this subsection shall be used to inform the preparation of a lake management plan described below under subsection (g). (g) Lake Management Activities (1) General. If monitoring conducted during the mining or post-reclamation phases triggers the requirement to undertake expanded analysis and prepare and implement a lake management plan, the operator shall implement lake management activities designed by a qualified aquatic scientist or equivalent professional acceptable to the Director, informed by the results of subsection (f). Options for addressing elevated mercury levels may include (A) and/or (B) below at the Director's sole discretion and at the operator's sole expense. (A) Lake Management Plan. Prepare a lake				

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management plan that provides a feasible, adaptive management approach to reducing fish tissue mercury concentrations to at or below the ambient mercury level. Potential mercury control methods could include, for example: addition of oxygen to or physical mixing of anoxic bottom waters; alteration of water chemistry (modify pH or organic carbon concentration); and/or removal or replacement of affected fish populations. The lake management plan may be subject to external peer review at the discretion of the Director. Lake management activities shall be appropriate to the phase of the operation (e.g., during mining or post-reclamation). The Lake Management Plan shall include a recommendation for continued monitoring and reporting. All costs associated with preparation and implementation of the lake management plan shall be solely those of the operator. Upon acceptance by the Director, the operator shall immediately implement the plan. The lake management plan shall generally be implemented within three years of reported results from the expanded analyses resulting from subsection (f). If lake management does not achieve acceptable results and/or demonstrate declining mercury levels after a maximum of three years of implementation, at the sole discretion of the Director, the operator may prepare an alternate management plan with reasonable likelihood of mitigating the conditions. (B) Revised Reclamation Plan. As an alternative to (A), or if (A) does not achieve acceptable results and/or demonstrate declining mercury levels after a maximum of three years of implementation, at the sole discretion of the Director, the operator shall prepare and submit revisions to the reclamation plan (including appropriate applications and information for permit amendment) to fill the pit lake with suitable fill material to a level no less than five (5) feet above the average seasonal high groundwater level, and modify the end use to agriculture, habitat, or open space at the discretion of the Director, subject to Article 6 of the Mining Ordinance and/or Article 8 of the Reclamation Ordinance as may be applicable.				

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(2) Implementation Obligations. (A) If a lake management plan is triggered during the mining or post-reclamation phase and the subsequent lake management activities do not achieve acceptable results and/or demonstrate declining mercury levels, the operator may propose different or additional measures for consideration by the Director and implementation by the operator, or the Director may direct the operator to proceed to modify the reclamation plan as described in subsection (g)(1)(B). (B) Notwithstanding the results of monitoring and/or lake management activities during the mining phase, the operator shall, during the post-reclamation phase, conduct the required ten years of biennial monitoring. (C) If monitoring conducted during the post-reclamation phase identifies three monitoring years of mercury concentrations exceeding the ambient mercury level, the operator shall implement expanded analyses as in subsection (f), to help prepare and implement a lake management plan and associated monitoring. (D) If subsequent monitoring after implementation of lake management activities, during the post-reclamation phase, demonstrates levels of fish tissue mercury at or below the ambient mercury level for any three monitoring years (i.e., the management plan is effective), the operator shall be obligated to continue implementation of the plan and continue monitoring, or provide adequate funding for the County to do both, in perpetuity. 846 (as updated). Topsoil that contains pesticides or herbicides above the Maximum Contaminant Levels for primary drinking water (California Code of Regulations), or that contains fine-grained soils exceeding on average 0.4 mg/kg total mercury shall not be placed in areas that drain to the pit lakes. Land reclaimed to a subsequent use that includes planting of vegetation (e.g., agriculture, habitat) shall be provided an adequate soil profile (i.e., depth and texture of soil) to ensure				

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successful reclamation. At the discretion of the Director and at the operator's sole expense, the proposed reclamation plan for the project may be peer reviewed by an appropriate expert/professional, and recommendations, if any, shall be incorporated into the project as conditions of approval.				
Section 10-5.532. Use of overburden and fine sediments in reclamation. Sediment fines associated with processed in-channel aggregate deposits (excavated as a result of maintenance activities performed in compliance with the CCIP) may be used for other purposes such as in the backfill or reclamation of off-channel pit lakes, for in-channel reshaping or habitat restoration, and/or as a soil amendment in agricultural fields provided the operator can demonstrate that no detrimental sediment toxicity exists (consistent with the state's Stream Pollution Trends Monitoring Program protocols) and fine-grained soil (<63 micron) do not exceed 0.4 mg/kg total mercury. The operator shall use overburden and processing fines whenever possible to support reclamation activities for pit lakes. If topsoil (A-horizon soil), formerly in agricultural production, is proposed for use within a pit lake or its drainage area, the operator must sample the soils prior to placement and analyze them for pesticides and herbicides (EPA Methods 8141B and 8151A, or equivalent) as well as for total mercury (EPA Method 7471B, or equivalent). The operator shall collect and analyze samples in accordance with EPA Test Methods for Evaluating Solid Waste Physical/Chemical Methods, SW-	Incorporate into Section 10-5.532 of the Reclamation Ordinance at the time of adoption of the CCAP Update			
Transportation				
TR-2: Modify Section 10-4.502(b)(4) of the Mining Ordinance as follows: (4) A transportation impact ~~traffic~~ analysis to evaluate the impacts of the proposed operation on haul routes and other impacted county roads (if any) pursuant to Secs. 10-4.408 and 10-4.409 of the Mining Ordinance, and the County General Plan.	Incorporate into Section 10-4.502(b)(4) of the Reclamation Ordinance at the time of adoption of the CCAP Update	Yolo County	This requirement will be applied to applications for mining and/or reclamation as a condition of approval.	

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~~on the Levels of Service for County roads and State highways.~~ The analysis shall evaluate operations, safety, and truck and vehicle VMT (as required to ensure compliance with the CCAP and County General Plan). ~~specific designated truck routes and~~ The analysis shall satisfy the requirements of the County's Transportation Impact Study Guidelines and shall include an evaluation of existing road conditions for those routes to be used, as well as any other information necessary to demonstrate compliance with applicable county and State standards. The analysis shall also specify the projected number of average truck trips per year, average truck trips per day, estimated maximum truck trips on peak days, estimated number of peak days per year, and estimated months in which peak days will occur. The analysis shall identify mitigation measures such as capital improvements and maintenance to be undertaken by the applicant~~ include appropriate measures~~ to reduce direct and indirect~~ any~~ significant adverse impacts to traffic flow and/or safety to acceptable levels consistent with applicable LOS, VMT, pavement condition, and other thresholds in the Yolo County General Plan and County Transportation Impact Study Guidelines;				
TR-3a: The text of Section 10-3.409 of the In-Channel Ordinance shall be amended to include the following: (f) Unless a subsequent environmental impact assessment is completed or a determination is made that a subsequent environmental impact assessment is not necessary, the combined volume of aggregate material removed from in-channel and off-channel sources that is transported on the County roadway network in any given year shall not exceed the annual allocation assigned to the applicable off-channel operator (as specified in their approved mining permit).	Incorporate into Section 10-3.409 of the Reclamation Ordinance at the time of adoption of the CCAP Update	Yolo County	This requirement will be applied to applications for mining and/or reclamation as a condition of approval.	

Table B: Mitigation Monitoring and Reporting Program

Mitigation Measures	Timing/Milestone	Responsibility for Oversight	Implementation Responsibility/Details	Checkoff Date/Staff Name/Notes
TR-3b: Make the following modifications to identified sections of the County Mining and Reclamation Ordinances: Section 10-4.212/10-5.212. Haul road. "Haul road" or "route" shall mean: 1) a road along which material is transported from the area of excavation to the processing plant or stock pile area of the surface mining operation; and/or 2) the designated route aggregate trucks are authorized to take pursuant to Section 10-4.419.	Incorporate into Section 10-4.212 of the Mining Ordinance and 10-5.212 of the Reclamation Ordinance at the time of adoption of the CCAP Update	Yolo County	This requirement will be applied to applications for mining and/or reclamation as a condition of approval.	
Section 10-4.419. Haul route roads. ~~An operator may only haul on~~Trucks accessing a mining site to pick up a load, or leaving a mining site to deliver a load, are restricted to the approved/designated haul routes identified in the operator's permit which applies to the route taken from the mining site access/driveway to a state /federal highway. If a truck subsequently exists the state/federal highway while within Yolo County, this too may only occur on an approved/designate haul route. This applies to all truck trips serving the mining site, unless making a local delivery. Those portions of designated truck haul routes that include County-maintained roads shall be posted as such, in accordance with the Public Works Department, to facilitate law enforcement and public safety. Private truck haul routes or conveyors shall be used to transport material within the mining site, in order to reduce impacts to public roads.	Incorporate into Section 10-4.212 of the Mining Ordinance at the time of adoption of the CCAP Update			