

ATTACHMENT A

2024 CACHE CREEK ANNUAL STATUS REPORT
(BOARD OF SUPERVISORS DRAFT)



An Ash-throated Flycatcher (*Myiarchus cinerascens*) photographed by Dr. Andrew P. Rayburn on the 2024 Creek Walk.

2024 Cache Creek Annual Status Report

Prepared by the Cache Creek Technical Advisory Committee

**THIS REPORT HAS YET TO BE ACCEPTED BY THE YOLO COUNTY
BOARD OF SUPERVISORS.**

**THIS REPORT SHALL BE CONSIDERED A DRAFT UNTIL
ACCEPTED BY THE BOARD.**

Cache Creek Annual Status Report

for the 2024 Water Year
(October 1, 2023 – September 30, 2024)

Cache Creek Technical Advisory Committee



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Table of Contents

List of Tables.....	iii
List of Figures	iii
List of Appendices.....	vii
Acronyms and Terms	vii
1. Introduction & Overview	1
1.1 Cache Creek Area Plan History	1
1.2 Purpose of the Annual Report	3
1.3 Purpose of Annual Monitoring Program.....	3
1.4 Cache Creek Technical Advisory Committee	5
TAC Riparian Biologist: Andrew P. Rayburn, Ph.D., ESA, SER	5
TAC Fluvial Geomorphologist: Mark Tompkins, Ph.D., P.E.....	5
TAC Hydraulic Engineer: Paul Frank, P.E., CED.....	6
1.5 Summary of Significant Findings.....	6
1.5.1 Hydrologic and Water Quality Findings	7
1.5.2 Geomorphology Findings	7
1.5.3 Biological Resources Findings.....	8
1.6 Summary of 2024 Recommendations	9
1.6.1 Hydrologic and Water Quality Recommendations	9
1.6.2 Geomorphology Recommendations.....	10
1.6.3 Biological Resources Recommendations	11
2. Hydrology & Water Quality.....	13
2.1 Water Quality	13
2.1.1 Water Year 2024 Sampling Event	14
2.1.2 Water Quality Review.....	14
2.1.3 Water Quality Summary for Key Contaminants.....	14
2.2 Summary of Annual Water Discharge Data	24
2.3 Bridge Crossing and Other Infrastructure Observations.....	24
2.4 Recommendations	36
3. Geomorphology	39
3.1 Summary of Annual Sediment Discharge Data	39
3.2 Evidence of Changes in Channel Dimensions or Bank Erosion (Bank Retreat)	41

3.3	Evidence of Bed Degradation or Aggradation and Significant Changes in the Locations or Sizes of Bars and Other Channel Features	44
3.4	Bridge Conditions	45
3.5	Summary of Changes in Channel Topography and Form.....	47
3.6	Location and Volume of Annual Sediment Replenishment	47
3.6.1	Volumetric Change Analysis	47
3.7	Channel Maintenance Activities	47
4.	Biological Resources	50
4.1	Native Vegetation.....	50
4.1.1	Current Condition of Native Vegetation	51
4.1.2	Changes in Native Vegetation	52
4.1.3	Notable Remnant Native Species	58
4.1.4	Vegetation Monitoring	58
4.1.5	Recommendations Regarding Native Vegetation.....	59
4.2	Restoration Opportunities and Observations on Current and Past Projects	60
4.2.1	Potential Habitat Enhancement and Restoration Sites	60
4.2.2	Status of Past and Current Habitat Enhancement and Restoration Projects.....	63
4.2.3	Recommendations Regarding Habitat Restoration	65
4.3	Invasive Plant Species Monitoring and Management.....	67
4.3.1	Distribution and Extent of Non-Native and Invasive Plant Species.....	67
4.3.2	Recommendations for Invasive Plant Species Management	74
4.4	Special-Status Species	75
4.4.1	Observations of Special-Status Species and Additional Data.....	75
4.4.2	Recommendations Regarding Special-Status Species	80
4.5	Additional Biological Resource Observations	81
4.6	References.....	85
5.	Status of Prior Recommendations.....	87
5.1	High Priority Recommendations.....	87
5.2	Medium Priority Recommendations	89
5.3	Low Priority Recommendations	92

List of Tables

Table 2-1. CCRMP water quality sampling locations and site codes.....	14
Table 3-1. Calculated suspended and bedload sediment transport totals. (2005-2024).....	40
Table 3-2. Summary of channel change tracking. (2021-2024).....	43
Table 3-3. Summary of observations of bridge conditions. (2021-2024).....	46
Table 3-4. Summary of recommended channel maintenance activities. (2021-2024).....	49
Table 4-1. Current (2024) table of priority non-native and invasive species within the CCRMP area.	70
Table 4-2. Master list of special-status species observed within the CCRMP area.....	76
Table 4-3. The 55 unique bird species observed during the 2024 Creek Walk.....	82

List of Figures

Figure 1-1. Programmatic boundaries of the Cache Creek Area Plan.....	2
Figure 1-2. Lower Cache Creek's river miles and reaches.....	6
Figure 2-1. Lower Cache Creek Boron measurements.	18
Figure 2-2. Lower Cache Creek Dissolved Oxygen measurements.	18
Figure 2-3. Lower Cache Creek Nitrate measurements.....	19
Figure 2-4. Lower Cache Creek Orthophosphate measurements.....	19
Figure 2-5. Lower Cache Creek Total Mercury measurements.	20
Figure 2-6. Lower Cache Creek Dissolved Mercury measurements.	20
Figure 2-7. Lower Cache Creek Total Coliform measurements.	21
Figure 2-8. Lower Cache Creek Fecal Coliform measurements.	21
Figure 2-9. Lower Cache Creek Total Kjeldahl Nitrogen measurements.	22
Figure 2-10. Lower Cache Creek Total Suspended Solids measurements.	22
Figure 2-11. Abandoned vehicles near RM 25.4.....	23

Figure 2-12. Instantaneous flows in Water Year 2023 at Rumsey and Yolo flow gages.	24
Figure 2-13. Capay Dam and apron. (2024).....	25
Figure 2-14 View of soil erosion behind Bank Repair Wall at Capay Dam. (2024).....	26
Figure 2-15. Photo showing current state of erosion control blanket at PG&E Palisades site including substantial riparian vegetation growth (2024 Creek Walk).	27
Figure 2-16. Photo showing Capay Bridge and increase vegetation growth after the 2024 winter flows (2024 Creek Walk).	28
Figure 2-17. Photo showing the streambank at River Mile 25.9 where a car has been previously observed in the bank. (2024)	29
Figure 2-18. South (right) bank at River Mile 25.4 showing installation of concrete rubble in 2021, addition of new soil fill in 2023, and addition of new rubble in 2024.	30
Figure 2-19. Photo from 2024 Creek Walk showing Esparto Bridge piers with no significant change from last year.	31
Figure 2-20. Teichert gravel pile on the north (left) bank. (2024)	32
Figure 2-21. Exposed pipe in south (right) bank at River Mile 22.5.	33
Figure 2-22. Newly eroded bank and exposed pipe at I-505 Bridge.....	34
Figure 2-23. Looking upstream at I-505 Bridge. (2024).....	35
Figure 2-24. Looking upstream at the Stephen’s Bridge (County Road 94B). (2024)	36
Figure 3-1. Suspended load (Q_s) and bedload (Q_b) in Cache Creek from Water Year 2005 through 2024. .	39
Figure 3-2. Looking upstream of CR 94B in Water Year 2023 (left) and 2024 (right) showing typical changes in geomorphic conditions and riparian vegetation adjacent to and in the active channel.....	40
Figure 3-3. Looking upstream of CR-85 in Water Year 2023 (left) and 2024 (right) showing loss of vegetation, sediment deposition, and minor erosion, scour, and channel migration in Water Year 2023.	41
Figure 3-4. Locations of CCTAC Geomorphologist recommendations for Water Year 2024.	42
Figure 3-5. Locations of CCTAC Geomorphologist bridge inspections for Water Year 2024.	46
Figure 3-6. CCTAC Geomorphologist channel maintenance locations for Water Year 2024.....	48
Figure 4-1. Representative Photograph of Lower Cache Creek Channel showing a typical mix of vegetation. (2020) (1) mature riparian forest; (2) developing riparian forest; (3) dense shrub scrub; (4) establishing woody and herbaceous vegetation; (5) invasive tamarisk; (6) invasive arundo; (7) herbaceous annual vegetation above and below the slope; and (8) bare ground.....	51

Figure 4-2. In-channel vegetation upstream of County Road 85 bridge at RM 26.3 in the Hungry Hollow Reach in 2022 (left), 2023 (center), and 2024 (left). Note significantly reduced vegetation in 2023 due to relatively high winter 2022-2023 flows, with some recovery in 2024. 53

Figure 4-3. Native woody vegetation was observed in 2024 to be recovering from drought stress observed in 2023 in many locations. Photos from RM 16.5 in the Dunnigan Hills Reach (left), and RM 20.5 in the Guesisosi Reach (right). 54

Figure 4-4. Examples of native woody vegetation displaced from banks into the main stream channel by bank erosion resulting from winter 2023-2024 flows in the Hoppin Reach at RM 15.7 (left) and RM 15.0 (right). 54

Figure 4-5. OHV tracks, soil disturbance, and vegetation impacts observed during the 2024 Creek Walk. Photos from RM 21.4 in the Madison Reach (upper left), RM 15.3 in the Hoppin Reach (upper right), RM 14.9 in the Hoppin Reach (lower left), and RM 12.4 in the Rio Jesus Maria Reach (lower right). 56

Figure 4-6. Representative photographs of two locations at which establishment and persistence of native vegetation is severely constrained by site conditions (left: downstream of County Road 87 bridge in the Hungry Hollow reach; right: Madison Reach). Photos from 2020; sites were in a similar condition in 2021, 2022, and 2023. 57

Figure 4-7. Healthy, stable mature riparian forest on the north bank at RM 17.2 in the Dunnigan Hills Reach (right), and drought-stressed mature riparian forest on the south bank at RM 21.1 in the Guesisosi Reach (right). Some drought recovery was observed at RM 21.1 in 2024 (photo not shown). 58

Figure 4-8. Potential restoration sites at off-channel mining pits on the north bank from RM 15.0–15.4 in the Hoppin Reach. Photos are from 2022 and show view upstream (left) and downstream (right). Conditions were essentially unchanged in 2024. 61

Figure 4-9. Potential restoration sites on upland portions of the north bank at RM 27.5 (left) and RM 27.8 (right) in the Capay Reach. Photos are from 2022, and conditions were essentially unchanged in 2024. . 62

Figure 4-10. Potential restoration site at the Correll-Rodgers pit on the south bank at RM 13.9 in the Hoppin Reach. Photo is from 2022, and conditions were essentially unchanged in 2024 with exception of increased soil moisture and more robust understory vegetation. 62

Figure 4-11. The results of a prescribed burn of wetlands at the Cache Creek Nature Preserve at RM 16.5 in the Dunnigan Hills Reach in 2022 (left) and two years later in 2024 (right). 64

Figure 4-12. Teichert-led restoration projects in the Hoppin Reach: the five-year old Haller/Muller Habitat Enhancement Project at RM 15.1 (2023 photo; left), and the Teichert “Muller 90” site just to the northwest (photo from 2022; right). Planted native vegetation on both project sites is persisting through sustained drought conditions. 64

Figure 4-13. Elderberry mitigation sites at RM 14.5 (left; planted in 2020 and photo from 2022), RM 13.7 (center), and RM 13.8 (right). 65

Figure 4-14. Treated stands of invasive arundo at RM 28.0 in the Capay Reach (left) and RM 19.3 in the Guesisosi Reach (right). 72

Figure 4-15. Stands of invasive arundo and tamarisk at RM 26.8 in the Capay Reach (top), Ravenna grass at RM 17.2 in the Dunnigan Hills Reach (bottom left), and purple loosestrife at RM 26.1 in the Hungry Hollow Reach (bottom right). 73

Figure 4-16. Special-status species observed during the 2023 Creek Walk included bald eagles (*Haliaeetus leucocephalus*; left) and Swainson’s hawks (*Buteo swainsoni*; right). 77

Figure 4-17. A flock of American white pelicans (*Pelecanus erythrorhynchos*) was observed during the 2024 Creek Walk flying overhead in the Hoppin Reach. 78

Figure 4-18. A large, active bank swallow (*Riparia riparia*) colony on the south bank at RM 15.4 in the Hoppin Reach observed during the 2024 Creek Walk. 79

Figure 4-19. Various native bird species observed during the 2024 Creek Walk. Left column, top to bottom: ash-throated flycatcher (*Myiarchus cinerascens*), California scrub jay (*Aphelocoma californica*), and great blue heron (*Ardea herodias*). Center column, top to bottom: black-crowned night heron (*Nycticorax nycticorax*), black phoebe (*Sayornis nigricans*), and great horned owl (*Bubo virginianus*). Right column, top to bottom: lesser nighthawk (*Chordeiles acutipennis*), great egret (*Ardea alba*), and northern flicker (*Colaptes auratus*) feeding young. 83

Figure 4-20. Beaver dams and resulting pools observed during the 2024 Creek Walk at RM 17.3 (left) and, RM 17.9 (right) in the Dunnigan Hills Reach. 85

List of Appendices

Appendix A	2024 Natural Resources Division Update
Appendix B	2024 Creek Walk Observations

Acronyms and Terms

CCAP	Cache Creek Area Plan
CCIP	Cache Creek Improvement Program
CCRMP	Cache Creek Resources Management Plan
CCTAC	Cache Creek Technical Advisory Committee
cfs	cubic feet per second
CFT	Channel Form Template
DO	dissolved oxygen
IWC	invasive weed control
OCMP	Off-Channel Mining Plan
OHV	off-highway vehicle
RM	river mile
TKN	Total Kjeldahl Nitrogen
TSS	total suspended solids
VELB	Valley Elderberry Longhorn Beetle

1. Introduction & Overview

1.1 Cache Creek Area Plan History

Mining has occurred within the Cache Creek channel since before the beginning of the 20th century. Mining operations increased dramatically following World War II. Between the booming post-war economy and the construction of the national highway system, the demand for high-quality aggregate material, like the material naturally found in Cache Creek, increased exponentially. In the mid-1970s, in response to increased public interest in the environmental ramifications of in-channel mining, as well as the general degradation of the riparian environment along Cache Creek, Yolo County turned its attention towards the development of a comprehensive resource management plan for Lower Cache Creek.

For over 20 years, and with the input of numerous stakeholder groups, advisory committees, and public participation, the County toiled to identify an appropriate balance between the mining of aggregate resources, encouragement and preservation of agricultural productivity, protection of water resources, and the enhancement and protection of the riparian environment. The result of this effort is the Cache Creek Area Plan (“CCAP”); a scientifically based management solution that balances a diverse range of concerns with the overriding vision of enhancing the variety of resource needs for the region. The CCAP was formally adopted by the Yolo County Board of Supervisors in 1996.

The CCAP program is administered by the Natural Resources Division of the Yolo County Department of Community Services. The program is funded by fees paid by participating mining operators for each ton of aggregate sold. More information regarding the Gravel Mining Fee Ordinance can be found in Title 8, Chapter 11 of the Yolo County Code.

The CCAP is comprised of two separate, though complementary, plans: the Off-Channel Mining Plan (“OCMP”) and the Cache Creek Resources Management Plan (“CCRMP”). The plan area is approximately 14.5 miles along both banks of Lower Cache Creek, spanning from the Capay Dam to the town of Yolo, near Interstate 5 (Figure 1-1).

The OCMP is a mining plan that restricts the location and extent of off-channel mining in Yolo County to approximately 2,123 acres through 2068. The OCMP governs the mining of aggregate resources (e.g., sand and gravel) outside of the channel banks of Cache Creek and the 100-year floodplain and provides for a minimum 200-foot riparian corridor. The OCMP provides a policy framework and regulations to ensure balanced management of the off-channel corridor of Lower Cache Creek. The regulations that accompany this plan generate the resources (including land dedications, funding, and adaptive management) necessary to implement the plan’s vision.

The Cache Creek Resources Management Plan, adopted August 20, 1996, and amended August 15, 2002, and December 17, 2019, eliminated in-channel commercial mining (i.e., mining inside of the boundaries of the CCRMP in-channel area, generally comprised of the active channel and banks) and established the Cache Creek Improvement Program (“CCIP”) to implement on-the-ground projects to improve and/or maintain channel stability and restore riparian habitat. The CCRMP provides a policy and regulatory framework for restoration of 14.5 miles of Lower Cache Creek and includes specific implementation standards. The CCIP is the implementation plan for the CCRMP and identifies categories of projects (i.e., bank stabilization, channel maintenance, revegetation, and habitat restoration) and general templates and standards for construction.

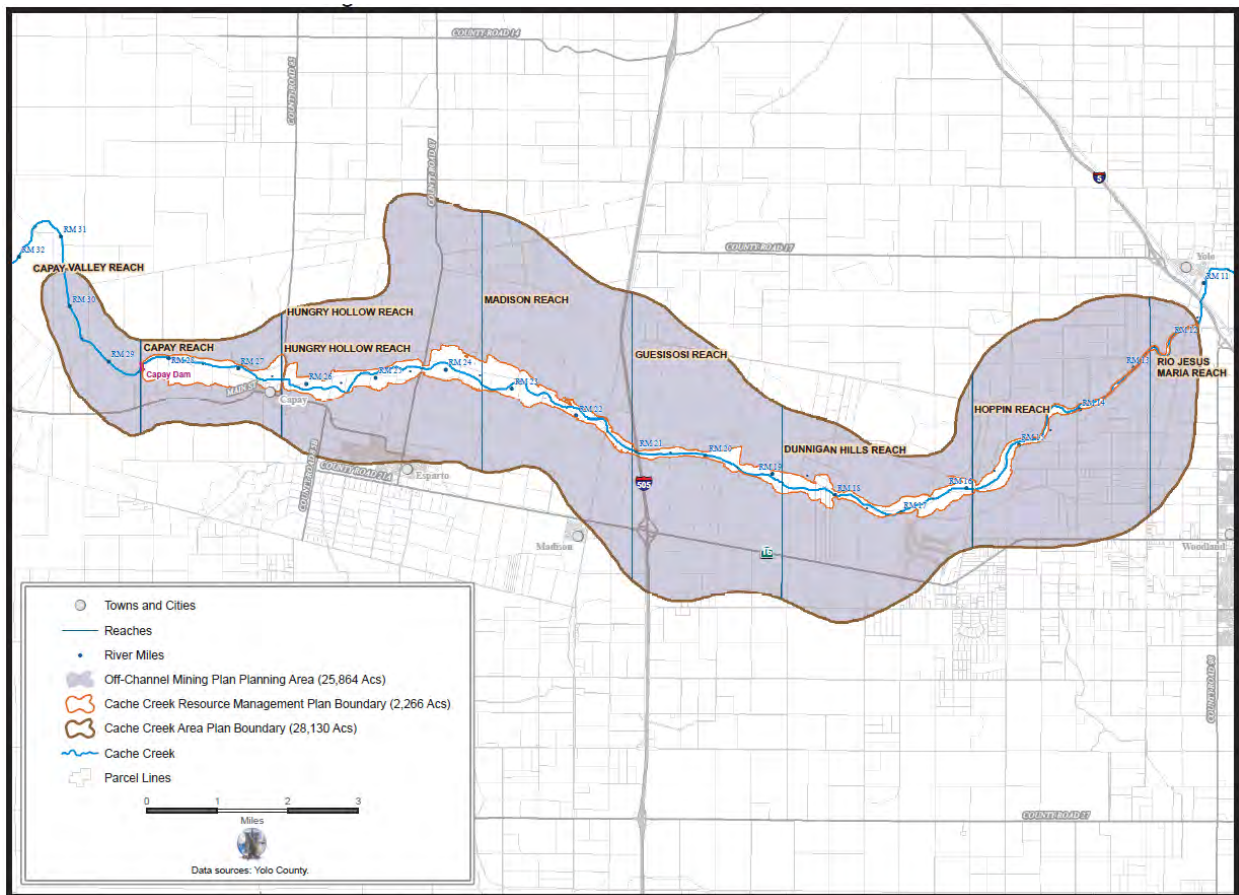


Figure 1-1. Programmatic boundaries of the Cache Creek Area Plan.

For additional information on CCAP implementation activities that occurred in 2024, please refer to Appendix A – the 2024 Natural Resources Division Update.

As a management plan that recognizes Cache Creek and its resources as a dynamic system, the CCRMP is not a static vision of management of the creek. The program is designed to evolve and adapt in response to new creek conditions and improved understanding of creek processes.

1.2 Purpose of the Annual Report

Section 6.6 of the CCIP requires that the Cache Creek Technical Advisory Committee (“CCTAC” or “Cache Creek TAC”) produce an annual report in January of each year for the Board of Supervisors that describes the data collected and analysis conducted as a part of the program’s annual monitoring program (more on the monitoring program can be found in Section 1.3). The annual report serves as a regular opportunity for the Cache Creek TAC to step back and take a larger perspective in looking at 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 environment.

To be effective, the annual report should not be seen as a chronicle of success or a lackluster recitation of dry data; it 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 CCTAC take into account the long-term benefit of 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 focusing the County’s attention on the unique issues that concern Cache Creek.

1.3 Purpose of Annual Monitoring Program

The purpose of the CCIP monitoring program is to provide dependable, up-to-date channel condition data that the CCTAC can use 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 obtained during the monitoring program will be used directly in the design of these projects and activities. The objectives of the CCIP monitoring program are to:

- Improve present estimates of average annual inflowing sediment load.
- Improve the present understanding of creek hydrology, including flood-frequency, flow-duration, and channel storage/loss relationships.
- Estimate inflowing sediment load on an annual basis.

- Monitoring changes in channel form and topography, including those directly associated with improvement project and channel maintenance activities.
- Monitor changes in vegetation and riparian habitat annually.
- Monitor bridge, levees, and other infrastructure to detect and prevent damage.
- At the end of each runoff season, the Cache Creek TAC is required to make an annual inspection of the creek to document channel conditions. This event is commonly referred to as the “Creek Walk.” The Cache Creek TAC traverses the length of the creek over a three-day period and notes specific conditions of the creek including:
 - Evidence of changes in channel dimensions or bank erosion.
 - Evidence of bed degradation or aggradation.
 - Significant changes in the location or sizes of bars and other channel features.
 - Degree of channel armoring and bed material imbrication.
 - Vegetation located within the center portion of the channel (within 100 feet of the low flow channel), including type, density, and size.
 - Conditions at bridges along levees and other major infrastructure.
 - Potentially hazardous conditions involving public safety or property damage.
 - General hydraulic condition of the channel base on qualitative comparison with previous years (e.g., restrictions due to vegetative growth, changes in bed form, etc.).
 - General evaluation of channel and bank stability on a reach-by-reach basis.
 - Identification of areas where vegetation may be getting so thick as to adversely alter flow direction or reduce channel capacity.

The CCTAC held the annual Creek Walk from June 12-14, 2024. The Creek Walk was attended by County staff, representatives from the mining producers and partner agencies, as well as members of the public. A detailed list of the observations made by the Cache Creek TAC during the 2024 Creek Walk can be found attached as Appendix B.

Information gathering and landowner participation are critical components in the implementation of the CCRMP and CCIP. The monitoring mandated by the program provides data on stream flow, water quality, erosion, and vegetation that guides creek management recommendations made by the three-member Technical Advisory Committee. The CCTAC provides recommendations based on data, trend analysis, and field observations.

The CCRMP and CCIP recommendations are designed to be adaptive, so that monitoring requirements and management techniques can appropriately address the ever-changing channel and riparian environment of Cache Creek.

1.4 Cache Creek Technical Advisory Committee

The Cache Creek Technical Advisory Committee was established to: (1) provide scientific and technical review and oversight for all projects conducted under the CCIP, and (2) collect and evaluate scientific data on hydrologic, hydraulic, sediment transport, and biological conditions within the CCRMP area. The CCTAC is a three-person interdisciplinary group comprised of a hydraulic engineer, a fluvial geomorphologist and riparian biologist. The additional responsibilities of the TAC are outlined on pages 5 through 7 of the CCIP.

The Cache Creek TAC was staffed during the 2024 Water Year by the following subject matter experts through contracts with the County:

TAC Riparian Biologist: Andrew P. Rayburn, Ph.D., ESA, SER

Dr. Rayburn obtained a B.A. in Biology from Austin College, a M.S. in Ecology and Evolutionary Biology from Iowa State University, and a Ph.D. in Ecology from Utah State University. He is a Certified Senior Ecologist (Ecological Society of America) and a Certified Ecological Restoration Practitioner (Society for Ecological Restoration) with 20+ years of experience in applied ecology with a focus on ecological restoration, invasive species control, landscape assessment, geospatial analysis, and both riparian and upland ecosystems.

TAC Fluvial Geomorphologist: Mark Tompkins, Ph.D., P.E.

Dr. Tompkins completed his undergraduate and Master's degrees from the University of Illinois and earned his Ph.D. in Environmental Planning from University of California, Berkeley. He is a registered Civil Engineer and has over 20 years of consulting experience in fluvial geomorphology, river restoration, flood management, hydrology, hydraulics, sediment transport, fisheries biology, environmental planning, and water resources engineering. Dr. Tompkins also serves as the CCTAC Chair.

TAC Hydraulic Engineer: Paul Frank, P.E., CED

Mr. Frank is an ecological engineer experienced in river corridor, wetland, and watershed management planning, analysis, and implementation. He has 20+ years of engineering consulting experience practicing hydraulic, hydrologic, and flood analysis and modeling; fish passage design; sediment transport and fluvial geomorphology; and ecosystem conservation, restoration, and assessment planning. Mr. Frank has experience with designing and constructing multi-objective river and wetland design projects in North America, Europe, Asia, and the Middle East. He is a state-wide recognized expert in hydraulic and sediment transport analysis and modeling, having developed models for hundreds of miles of river systems throughout California.

1.5 Summary of Significant Findings

Based on monitoring, analysis, regulatory requirements, and professional experience, the CCTAC have made the following findings. This document refers to reaches and river miles (“RM”) to describe the physical location of observations and recommendations. A map of Cache Creek showing river mile markers is provided as Figure 1-2.

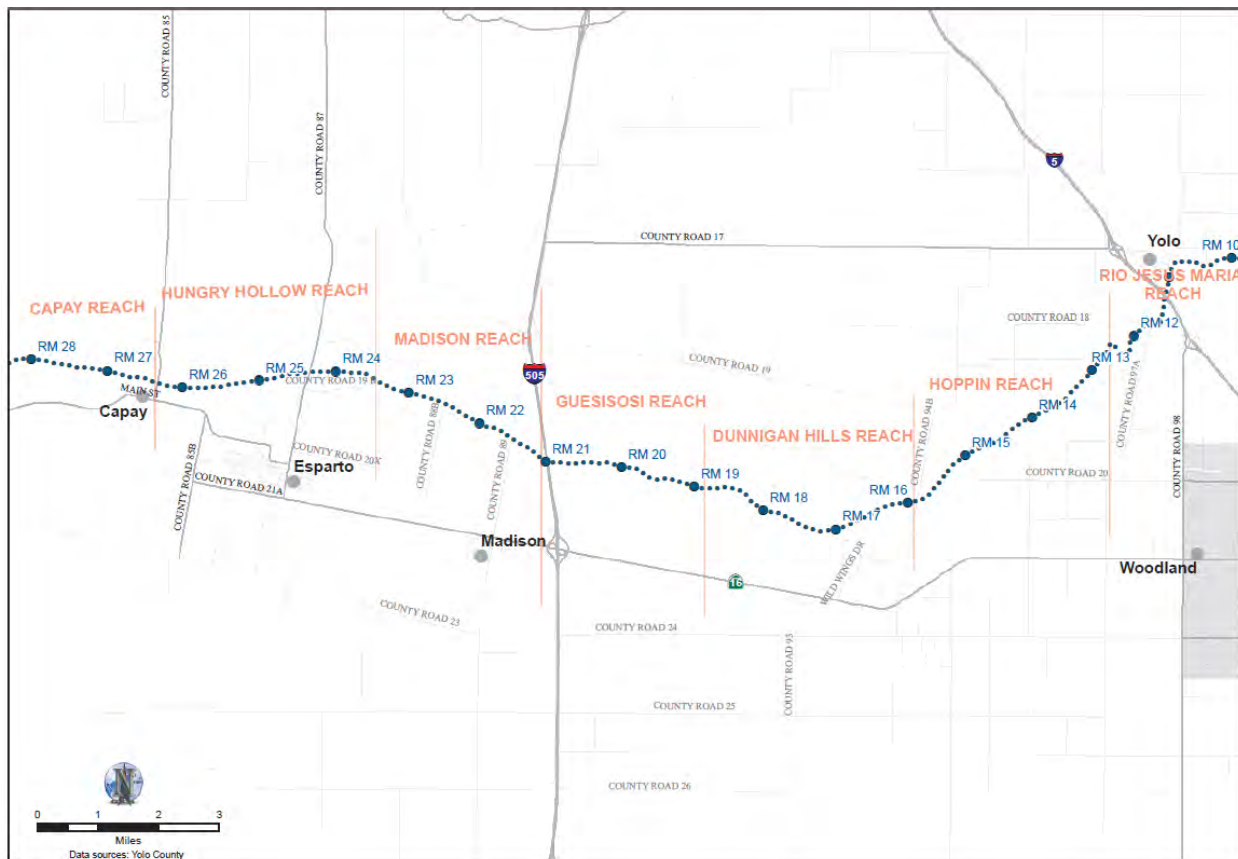


Figure 1-2. Lower Cache Creek's river miles and reaches.

1.5.1 Hydrologic and Water Quality Findings

The 2024 Water Year was average for the State of California and Sacramento Valley. For Cache Creek, which is not affected by snow as is the greater Sacramento Valley, the water year was almost identical to 2023, which was considered “above normal” to “wet.” Similar patterns of storm flows in January through April occurred, and almost identical summer irrigation releases down the creek occurred. The largest flow event of the water year occurred February 4-5, 2024, when flows of approximately 14,500 cubic feet per second (“cfs”) at Rumsey and 13,800 cfs at Yolo were observed. These flows represented approximately a 2-year return interval peak. Two additional events in late January and late February occurred which represented approximately average annual peak flow events (6,000 – 9,000 cfs). Much like occurred in 2023, 2024 was characterized by a series of moderate and ecologically beneficial flows that did not produce significant damaging erosion.

1.5.2 Geomorphology Findings

As mentioned previously, Water Year 2024 was very similar to Water Year 2023 in the Cache Creek basin. There were slightly higher peak flow magnitudes in Water Year 2024, but the channel response was nearly identical to Water Year 2023. The peak flow at the Yolo USGS streamflow gage reached 13,798 cfs in February 2024, well below the threshold of 20,000 cfs required for significant sediment transport and channel change in Cache Creek. Therefore, while delivery and transport of sediment to, and through, the CCRMP area in Water Year 2024 was the fifth highest over the last 20 years, channel change due to erosion, scour, and deposition was localized and mostly relatively minor. The geomorphic conditions changed a bit more than in Water Year 2023, likely because 2023 peak flows loosened sediments and removed vegetation, and because the peak flow magnitude was slightly higher in 2024.

Because of the relatively moderate channel change in Water Year 2024, the recommendations developed by the Cache Creek TAC did not change substantially from recommendations made since 2023. Similar to 2023, the recommendation to monitor conditions at Huff’s Corner at the downstream end of the CCRMP area should be updated to assess conditions addressed by the repair work completed at that site. Channel conditions are expected to change at newly constructed sites in response to the magnitude of high flows observed in 2023 and 2024, so Huff’s Corner should be closely monitored in Water Year 2025, especially if wet conditions continue. In addition, because Water Year 2024 did result in significant sediment transport, the CCTAC Fluvial Geomorphologist recommends another comprehensive review of current recommendations be completed in Water Year 2025 after the high flow season and before the 2025 Creek Walk. The purpose of this review is to focus Creek Walk observations on expected areas of significant change and needs for revised recommendations.

1.5.3 Biological Resources Findings

The distribution, extent, and condition of native vegetation along Lower Cache Creek in 2024 was generally similar to conditions observed in 2023, with four notable exceptions: (1) increases in in-channel vegetation in areas where vegetation was observed to have been reduced in 2023 due to scour from 2022–2023 winter flows; (2) no significant new observations of drought-stressed native woody vegetation, as well as some recovery in areas observed in 2023 to have been significantly impacted by drought; (3) some minor loss of mature native woody vegetation due to scour and bank erosion resulting from winter 2023–2024 flows, and (4) increased impacts to native vegetation resulting from increased OHV activity. In general, significantly more OHV activity was observed during the 2024 Creek Walk compared to 2022 and 2023, especially in the Hoppin Reach.

Non-native and invasive plant species remain widespread along Lower Cache Creek, and continue to be one of greatest constraints to further recovery of native habitat. As in recent years, arundo, tamarisk, Ravenna grass, and other non-native species were frequently observed, and tamarisk especially appears to be spreading in some locations. As in 2022 and 2023, evidence of continued treatment of arundo and tamarisk was observed, which is a positive development. Many additional non-native and invasive species (e.g., Himalayan blackberry, perennial pepperweed, and tree tobacco) remain common along Lower Cache Creek and should be prioritized for treatment and monitoring when and where feasible. After treatment of non-native and invasive species, native woody and herbaceous species should be planted whenever possible to enhance habitat and reduce the potential for re-invasion.

Many common and special-status species of wildlife, invertebrates, and fish were again observed by the Cache Creek TAC, Cache Creek Conservancy staff, and other Creek Walk participants during the 2024 Creek Walk. Swainson’s hawks (State threatened) were observed in six of the seven reaches, and as in 2022 and 2023 an occupied nest was observed in the Dunnigan Hills Reach. Bald eagles (State fully protected) were observed at the Capay Dam and in and Hungry Hollow Reach, and a flock of American white pelicans (State species of special concern) was observed in the Hoppin Reach. At least five active colonies of bank swallows (State threatened) were observed in the Hoppin Reach, which represented the greatest number of colonies and holes observed on Lower Cache Creek for at least the last 10 years. Numerous other potential bank swallow colony sites were also evaluated starting in the Hungry Hollow Reach and downstream to the Hoppin Reach. A total of 55 unique bird species were observed in 2024 including acorn woodpecker, Anna’s hummingbird, ash-throated flycatcher, blue grosbeak, Bullock’s oriole, cliff swallows, great horned owl, green heron, lesser nighthawk, marsh wren, red-tailed hawk, song sparrow, and wood duck. Western pond turtles (State species of special concern) were observed in deeper pool in the Capay and Guesisosi reaches. Beaver dams were frequently observed during the 2024 Creek Walk, including a large beaver dam complex in the Dunnigan Hills Reach. Other wildlife species observed included, black-tailed jackrabbit, California ground squirrel,

Columbian black-tailed deer, coyote, desert cottontail, garter snake, river otter, wild pig and fishes including bluegill, common carp, green sunfish, and largemouth bass.

Priority opportunities for active habitat enhancement and restoration along Lower Cache Creek are essentially unchanged since 2019, with the focus on areas where enhancement and/or restoration are realistically feasible, where plantings will be at lower risk of impacts from high flows, and where native vegetation can be sustained with limited management through reliance on natural river processes. Such areas include including flat upland areas on the north bank from RM 26.8–27.8, the PG&E “Palisades” site (RM 26.8), Capay Open Space Park (RM 26.3), the Hayes “Bow-Tie” property (RM 20.0), the Millsap property (RM 18.5), Wild Wings Open Space Park (RM 17.0), the Correll and Rodgers properties (RM 13.7), the Capay Organic creek frontage (RM 27.9) identified in 2019, and former mining pits in the Dunnigan and Hoppin reaches (e.g., on the north bank from RM 15.0–15.4). On lower banks and within the main stream channel, where high flows can potentially scour and remove planted native vegetation, passive restoration of native woody vegetation through invasive species removal, streamflow enhancement, and strategic channel maintenance projects is likely the most efficient and effective means of accelerating native vegetation recovery.

1.6 Summary of 2024 Recommendations

The key recommendations made by the Cache Creek TAC in this report are summarized below. Recommendations from the previous Annual Status Reports that remain applicable are listed in Chapter 5. If accepted by the Yolo County Board of Supervisors, the 2024 recommendations will be merged with the previous year’s recommendations and the CCTAC will be tasked with prioritizing all the recommendations for review and/or implementation going forward. Natural Resources Division staff will coordinate with the CCTAC and relevant stakeholders to ensure the recommendations are implemented.

1.6.1 Hydrologic and Water Quality Recommendations

The CCTAC Hydraulic Engineer recommends the following:

- Capay Dam – Remedies to prevent future damage of the dam and movement of the dam’s concrete pads into the channel should be undertaken – a long-term CCTAC recommendation.
- Retaining Wall Downstream of Capay Dam – Erosion behind the recent emergency bank stabilization wall appears to be continuing to occur and should be investigated and addressed.

- PG&E Palisades – The erosion control blanket and all associated infrastructure should be removed. As of 2023, PG&E is working on implementing the removal, but progress appears stalled.
- Erosion sites identified should continue to be monitored in the future for any new erosion.
- Consideration should be given to removal of bank protection weirs particularly downstream of the Esparto Bridge. These weirs are eroding, are used by illicit off-highway vehicle use, and could be replaced by more modern approaches to bank stabilization.
- A large pile of gravel is perched above the creek bank at the Teichert Esparto site near River Mile 22.9. The stability of the pile and failed bank stabilization measures (i.e., K-rail, etc.) should be evaluated for risk of slumping of gravels into the creek.

1.6.2 Geomorphology Recommendations

As in previous years, geomorphology recommendations for Water Year 2024 are in three general categories: monitoring, evaluation, and implementation. Monitoring is recommended at multiple sites including RM 28.3 (near Capay Dam), RM 26.7, RM 20.8 (near CEMEX), RM 18.8, RM 18.2 (near Moore’s Siphon), RM 17.8, RM 15.4 (near Teichert Woodland), and RM 12. Monitoring at these locations should focus on lateral channel migration, sediment deposition, and erosion. The CCTAC Geomorphologist updated the recommendation for Huff’s Corner monitoring and continues to recommend previous evaluation and implementation actions as described below:

- Accelerate voluntary implementation of previously recommended bar skimming projects at RM 24.6 – 25 and RM 20.1 – 20.5.
- Reinitiate voluntary bar skimming project evaluation at RM 21.6.
- Evaluate the potential for additional bar skimming at RM 21 and RM 22.
- Complete removal of the PG&E Palisades infrastructure (RM 26.9) from Cache Creek.
- Notify bridge owners of scour and deposition at bridge piers and abutments, and continued succession of riparian vegetation upstream and downstream of bridges.
- Continue detailed monitoring and assessment of channel treatments at locations of 2017

channel migration and erosion (RMs 26, 25.5, 23.5, 22, 21.5, and 18).

- Conduct additional, more detailed monitoring of erosion, scour, deposition, and related channel change during and after high flows at Huff's Corner (RM 11.6 and determine the need to implement channel maintenance measures to prevent excessive channel change.
- Following the 2019 approval of the CCAP Update, assess the Channel Form Template (CFT) with respect to 2019 topographic conditions at RM 26.0, RM 25.5, RM 23.5, RM 22, RM 21.8, RM 21.4, RM 18.2, and anywhere else the active channel has migrated near or beyond the CFT. Also, complete administrative and/or technical changes to the CFT based on the results of this assessment.
- Yolo County, Cache Creek TAC, Cache Creek Conservancy, Yolo County Resources Conservation District, and Yolo County Flood Control and Water Conservation District should work together to develop a comprehensive invasive species removal, ecosystem restoration, flood management and water supply bundle of projects based on prior Cache Creek TAC recommendations and submit additional Proposition 1 (and other) grant proposals to fund such projects in Water Year 2025.

1.6.3 Biological Resources Recommendations

Recommendations regarding biological resources from the CCTAC Riparian Biologist are grouped into four general categories: native vegetation monitoring and management (Section 4.1.5), habitat restoration (Section 4.2.3), invasive species monitoring and management (Section 4.3.2), and special-status species (Section 4.4.2).

- Recommendations regarding **native vegetation** focus on monitoring approaches intended to understand changes in native vegetation, as well as management actions required (if any) to maintain desirable flow conditions.
- Recommendations regarding **habitat restoration** highlight high-priority potential projects, the importance of including native understory species, the need for post-implementation monitoring, the importance of planting native species on invasive species treatment sites, the potential for increased surface flows and strategic channel maintenance projects to accelerate native habitat recovery, and the opportunity to incorporate native plant species of cultural importance to the Yocha Dehe Wintun Nation into revegetation and restoration projects.

- Recommendations regarding **invasive species monitoring and management** include expanding the list of priority species and the areas in which treatments are implemented, the importance of a formal monitoring program to track invasive species, the need to remove treated biomass from the CCRMP area if feasible, the importance of planting native species on invasive species treatment sites, and the ongoing need to leverage invasive species treatment within the CCRMP area to support additional mapping and treatment upstream of Capay Dam.
- Recommendations regarding **special-status species** focus on the need for additional monitoring and documentation of both rare and common species, documentation of observations, and the potential for increased surface flows to benefit Western pond turtles and other native plant and wildlife species.

2. Hydrology & Water Quality

This chapter describes the water quality, watershed hydrology, and flood monitoring prescribed by the Cache Creek Resources Management Plan and the Cache Creek Improvement Plan.

The 2024 water year was average for the State of California and Sacramento Valley, after the wet 2023 water year that generally recovered reservoir levels and aquifers after drought years. For Cache Creek, which is not affected by snow as is the greater Sacramento Valley, the water year was almost identical to 2023, which was considered “above normal” to “wet.” Similar patterns of storm flows in January through April occurred, and almost identical summer irrigation releases down the creek occurred. The largest flow event of the water year occurred February 4-5, 2024, when flows of approximately 14,500 cubic feet per second (“cfs”) at Rumsey and 13,800 cfs at Yolo were observed. These flows represented approximately a 2-year return interval peak. Two additional events in late January and late February occurred which represented approximately average annual peak flow events (6,000 – 9,000 cfs). Much like occurred in 2023, 2024 was characterized by a series of moderate and ecologically beneficial flows that did not produce significant damaging erosion.

2.1 Water Quality

Section 3.4-3 of the CCRMP requires water quality sampling at least once per year at the upstream and downstream ends of the CCRMP area during the “first flush” flow event. The CCRMP water quality monitoring program continues to use the services of the Yolo County Flood Control and Water Conservation District, under the supervision of the TAC Hydraulic Engineer and County Natural Resources Division staff, to conduct the surface water quality monitoring. The program’s water quality monitoring results are included in the Water Resources Information Database (WRID), a shared resource that is managed by the Yolo County Flood Control and Water Conservation District and available for public review by contacting the District.

The program’s water quality monitoring is performed to characterize trends in water quality over time and capture potential effects of gravel mining and other adjacent landowner activities on the health of the creek. The monitoring is not part of any regulatory program, and no regulatory actions are taken as a result of sampling analyses. However, each year’s samples are compared against applicable regulatory limits to provide context for the levels observed and identify which constituents are present at elevated levels. The most applicable suite of limits is found in *The Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region* (otherwise known as the “Basin Plan”). The Basin Plan outlines water quality standards intended to protect beneficial uses of surface waters to comply with the California Water Code.

2.1.1 Water Year 2024 Sampling Event

The first flows of the water year at Yolo (the point at which full flows through the CCAP area is established) occurred on December 20, 2023, but rapidly dried out. Another flow event occurred at Yolo on December 31, 2023, that established the winter base flow but due to this day being a Sunday and the New Year’s holiday following, sampling was not performed. Flow at Yolo decreased to under 20 cfs after this event. The first event that established and maintained significant (100 cfs) baseflow for the winter occurred on January 15, 2024, and the water quality sampling event for water year 2024 was conducted during this event on January 18, 2024. Samples were collected after the peak flow (379 cfs) reached Yolo when flow at that gage was approximately 160 cfs. Surface water data is coded and categorized in the WRID as shown in Table 2-1.

Table 2-1. CCRMP water quality sampling locations and site codes.

Site Name	Site Code
Cache Creek at Capay Bridge	CC10
Cache Creek Upstream of Gordon Slough	CC11
Gordon Slough near Cache Creek	CC12
Cache Creek at Stephen’s Bridge	CC13
Cache Creek at I-5 Bridge	CC14

*samples collected and analyzed in all years

‡ samples and analysis reduced in 2016 and eliminated in 2019

2.1.2 Water Quality Review

This report describes trends and significant changes in water quality observed in the water year 2024 water quality monitoring data.

2.1.3 Water Quality Summary for Key Contaminants

Boron

Boron is a naturally occurring contaminant in the Cache Creek watershed, and Yolo County is one of the counties in California with the highest levels of boron in groundwater wells. While boron is not a regulated contaminant, many agricultural crops are sensitive to boron concentrations and boron can cause toxicity in drinking water. California’s drinking water standard for boron is 1,000 µg/l, while the winter limit in the Basin Plan is 2.6 mg/l.

Borax, a compound of boron that is commercially mined, was historically mined near Clear Lake in the Cache Creek watershed; therefore, elevated levels of boron in Cache Creek are not unexpected. However, during the 2024 water year sampling event, boron concentrations were at the low end of historical trends and all sample values were below the Basin Plan maximum. Notably, all three

sites reported a 2.0 mg/L concentration which is suspicious because identical concentrations at three disparate sites have never happened previously. It is not clear whether this was by coincidence or laboratory error. Figure 2-1 displays historical boron measurements along with this year's values.

Dissolved Oxygen

Oxygen is required by invertebrates, fish, and many other kinds of wildlife found in Cache Creek. Oxygen dissolves in water from the atmosphere and from photosynthesis of algae and plants growing in the water. It is used up by respiring animals and microorganisms decomposing organic matter. Therefore, dissolved oxygen ("DO") can fluctuate in Cache Creek based on many factors including sunlight (which increases photosynthesis and oxygen production), turbidity in the water (which shades the water, reducing light penetration and photosynthesis), and amount of organic material (which increases microbial activity and depletes oxygen). Figure 2-2 illustrates historical Dissolved Oxygen measurements in Lower Cache Creek along with this year's values.

In the 2024 Water Year, DO concentrations were at the high end of historical ranges, and followed the typical trend of the lowest value observed in Gordon Slough. However, all samples were well above the Basin Plan minimum for warm water fish and spawning.

Nitrate

Nitrate is common form of nitrogen found in surface waters where there is the presence of oxygen. It is a nutrient that can cause algae blooms at high concentrations. Nitrate levels were lower than previous years with all samples below 1 mg/L. The Gordon Slough sample was significantly lower than many recent years which is a positive outcome. Figure 2-3 displays historical concentrations of nitrate along with this year's values.

Orthophosphate

Orthophosphate is a common form of phosphorus in surface waters. Like nitrate, it is a nutrient that can encourage algae blooms at high concentrations. Orthophosphate was not detected in any samples in 2024, which is a notable result that has not occurred in recent years. Figure 2-4 displays historical concentrations of orthophosphate along with this year's values.

Total and Dissolved Mercury

Mercury concentrations – both total and dissolved – in the creek waters were sampled again in 2024 (as they were in 2023) after the sampling was inadvertently dropped from the suite of analyses between 2019-2022. It is important to note that the in-channel water quality sampling of

mercury is a completely separate and different sampling program than the County's off-channel wet pit fish mercury sampling program prescribed by Section 10-5.517 of the County's Mining Reclamation Ordinance.

The results from this year's sampling were lower than historic averages at all sites. For total mercury, there was a noticeable drop from the level observed in 2023. This may be related to the very low TSS levels this year (total mercury represents both dissolved and particulate-attached mercury). All mercury samples were below California Toxics Rule thresholds (Figs. 2-5 and 2-6).

Because mercury data were not collected between 2019 and 2022, recent trends cannot be identified but it is a positive result that mercury levels were so low in 2024 after an elevated result at I-5 Bridge in 2023.

Total and Fecal Coliforms

Coliforms are bacteria present in surface water that has contacted soil. Fecal coliforms are specific to the gut and feces of warm-blooded animals. Therefore, measurements of total and fecal coliform indicate the degree to which water has been impacted by human or livestock waste.

Total coliform counts in 2023 were within ranges seen in years since 2018 when limitations of laboratory maximum reporting values were addressed (making data from 2000-2017 not representative). Values for Gordon Slough and I-5 decreased from 2022, while the concentration at Capay Bridge went up slightly. Overall, total coliform level seen between 2018-2023 are higher than those seen between 2006 - 2010. Figure 2-7 displays historical measurements of total coliforms along with this year's values.

Fecal coliforms were lower than we observed in 2022 which had been a notable year for elevated levels. The most likely source of total and fecal coliform bacteria in Cache Creek is fecal material from the intestinal tracts of wildlife, livestock, pets, or humans in the watershed. Fecal coliform bacteria multiply rapidly after introduction, especially during warm, low flow summer conditions. The Capay Bridge site had the highest levels, mirroring total coliform counts. Also, similar to total coliforms, fecal coliforms have been seen at higher levels during 2018-2023 than observed in 2006-2010. Figure 2-8 displays historical measurements of fecal coliforms along with this year's values.

Total Kjeldahl Nitrogen

Total Kjeldahl Nitrogen ("TKN") is a nitrogen species that combines ammonia plus organic nitrogen. In surface waters it generally represents all nitrogen other than nitrate/nitrite. TKN

concentrations were generally typical of previous years although the concentration detected at Capay Bridge was among the highest seen by the program. This isolated, elevated sample does not warrant specific concern at this time. Because ammonia continues to be either not detected (such as the I-5 sampling location) or detected at very low concentrations (such as at the other sampling sites), elevated organic nitrogen at Capay Bridge sampling site was likely the cause of the high TKN concentration. Organic nitrogen in environmental waters is often derived from algae or animal waste. Figure 2-9 displays historical TKN measurements along with this year's values.

Total Suspended Solids

Total Suspended Solids ("TSS") is a measure of particles in water that includes both organic (e.g., algae) and inorganic (e.g., sediment) matter. In a flowing stream such as Cache Creek, that does not typically accumulate floating algae growth, it helps indicate the presence of eroded fine sediments that are carried by the flow. This year, TSS levels were high relative to historical averages at Capay Bridge while other sites exhibited concentrations in line with historical averages. As with last year's sample, because sampling occurred during the rising limb of the flow event near the peak, elevated TSS at Capay may reflect the presence of eroded sediments. However, concentrations downstream were low to average at I-5, casting doubt on this conclusion. Since this year's data do not reflect any historical trends there is no concern about these data. Figure 2-10 displays historical TSS measurements along with this year's values.

[The following 5 pages contain Figures 2-1 through 2-10]

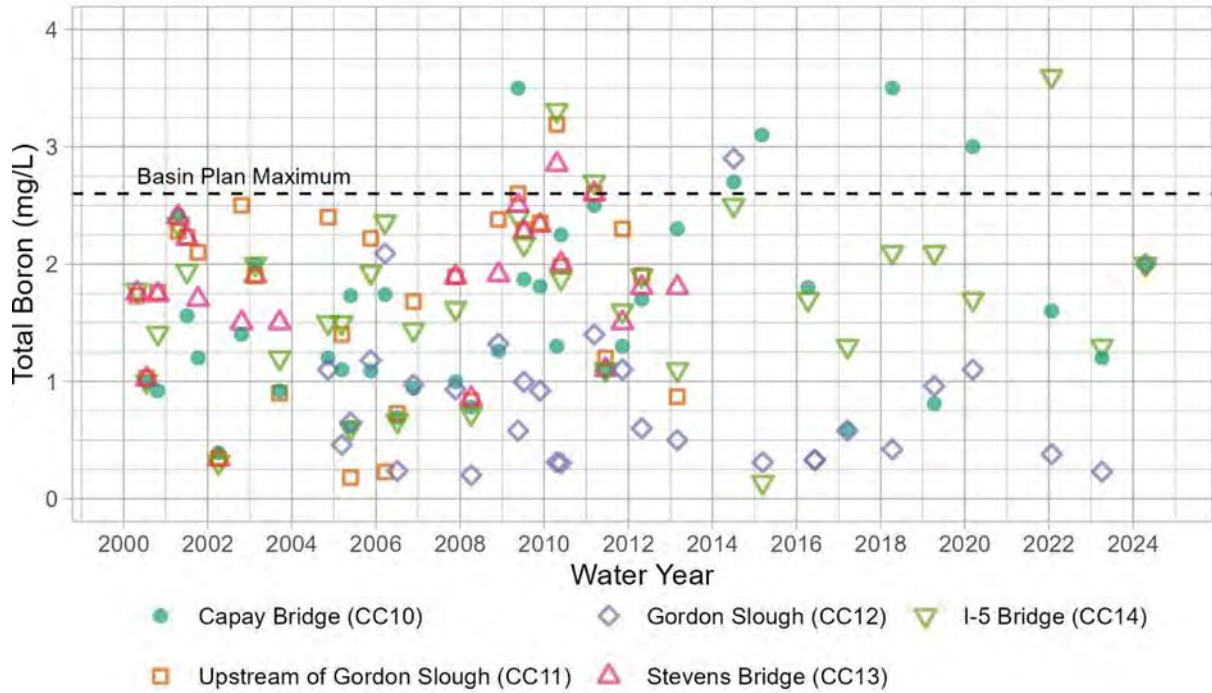


Figure 2-1. Lower Cache Creek Boron measurements.

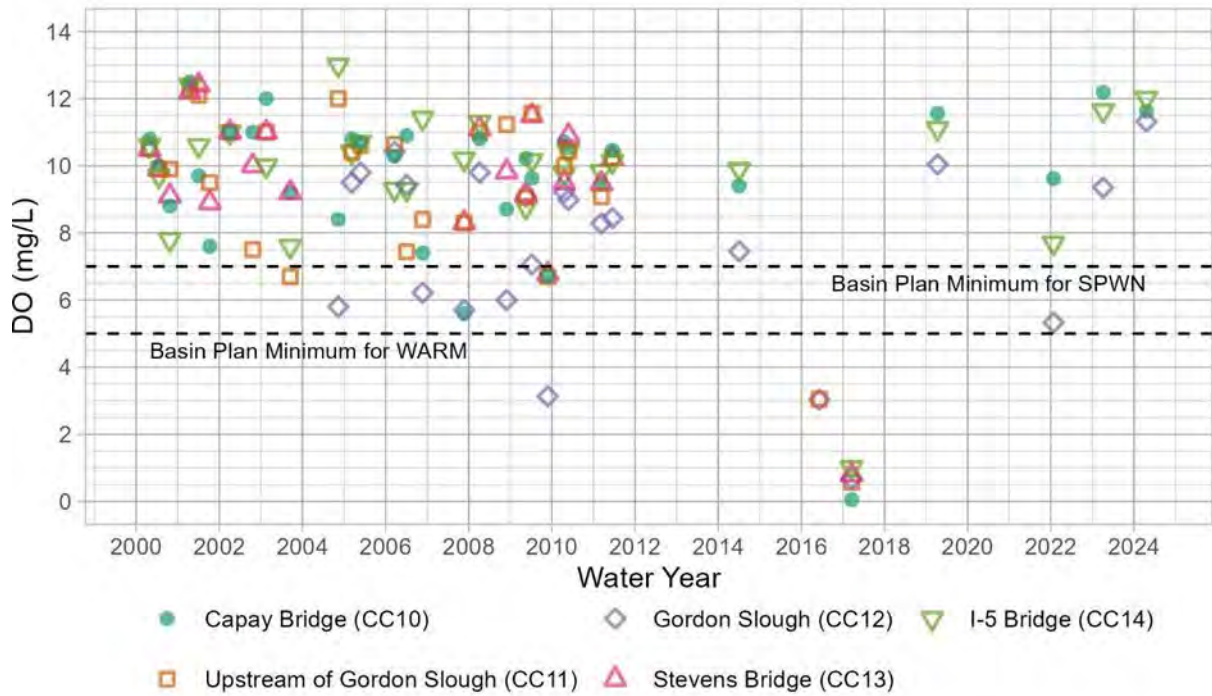


Figure 2-2. Lower Cache Creek Dissolved Oxygen measurements.

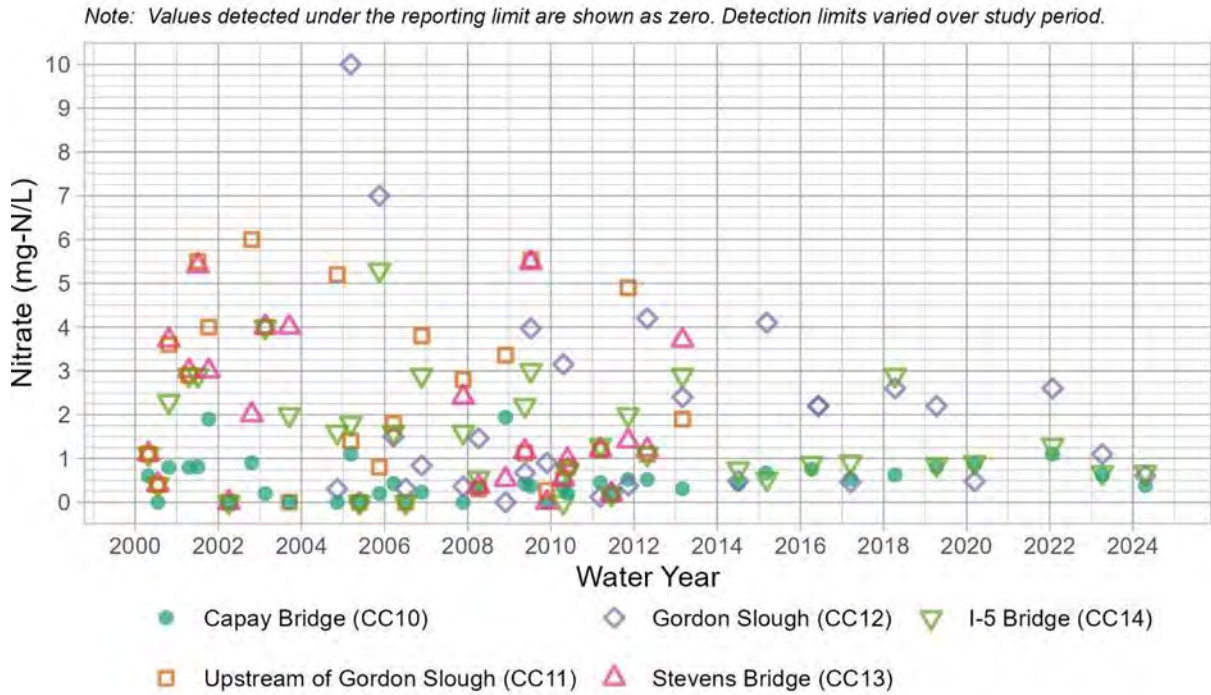


Figure 2-3. Lower Cache Creek Nitrate measurements.

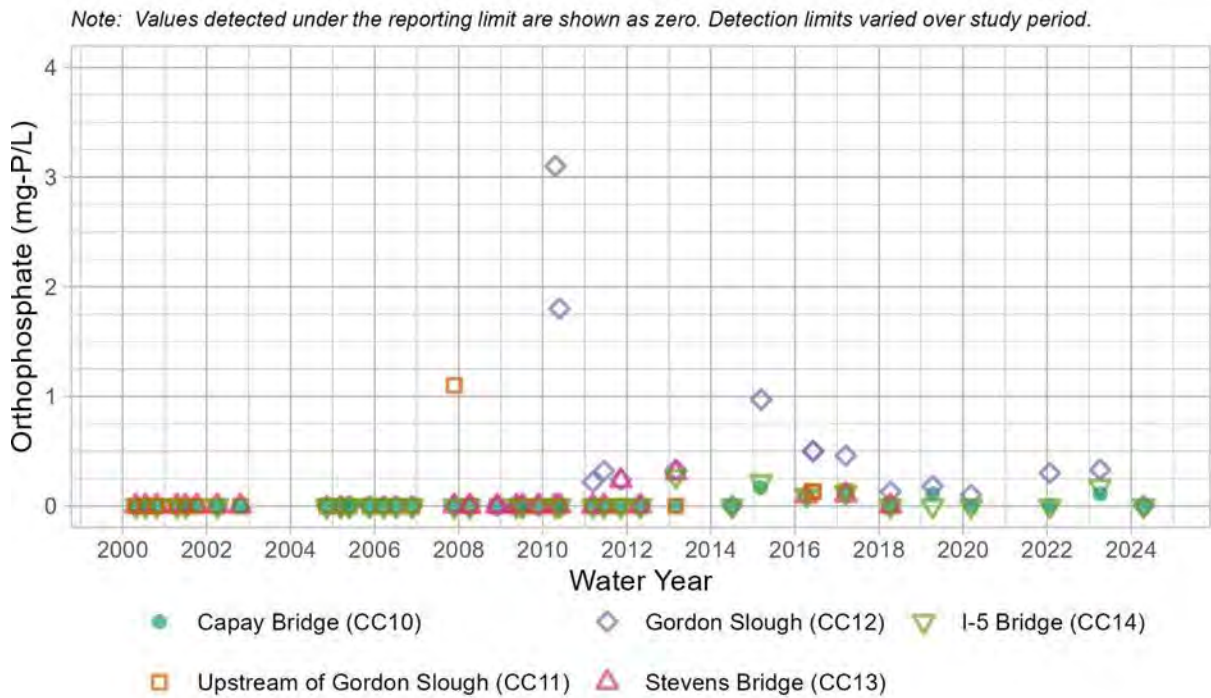


Figure 2-4. Lower Cache Creek Orthophosphate measurements.

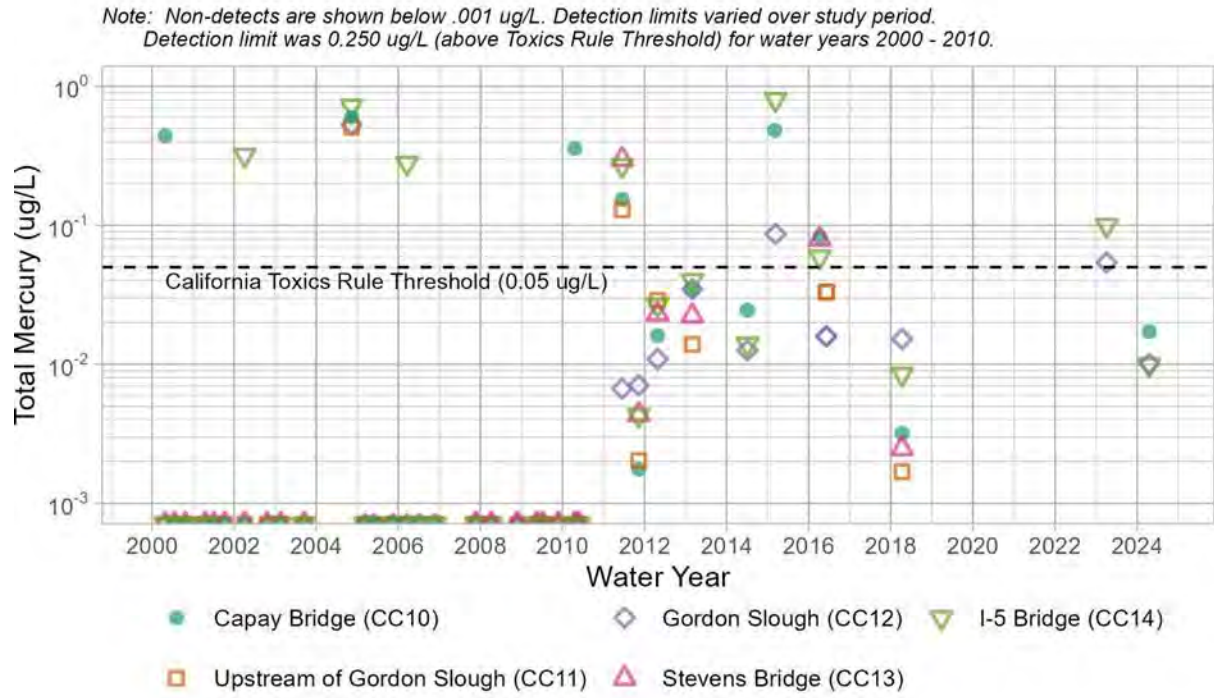


Figure 2-5. Lower Cache Creek Total Mercury measurements.

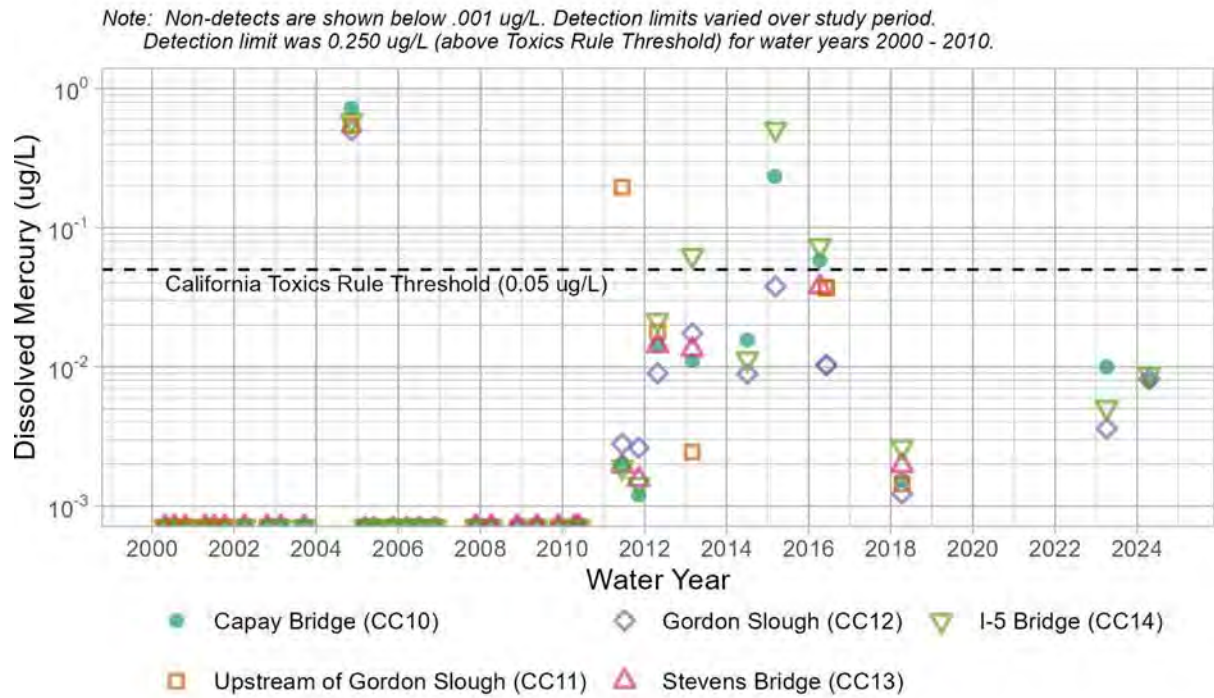


Figure 2-6. Lower Cache Creek Dissolved Mercury measurements.

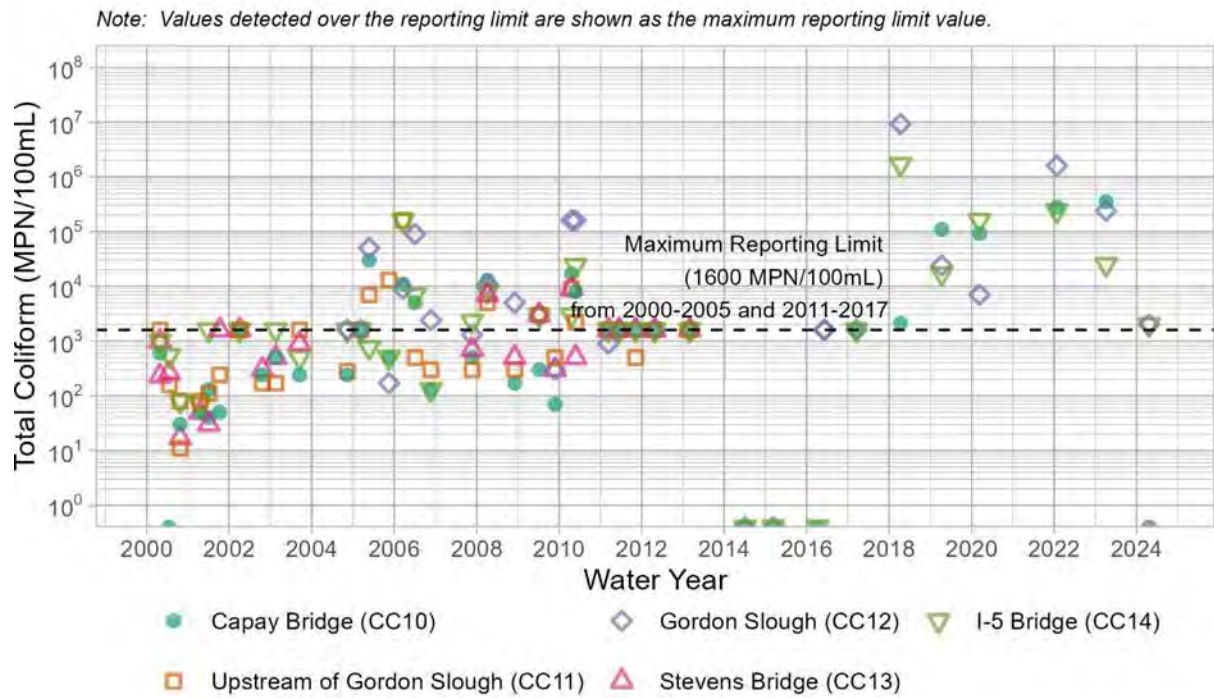


Figure 2-7. Lower Cache Creek Total Coliform measurements.

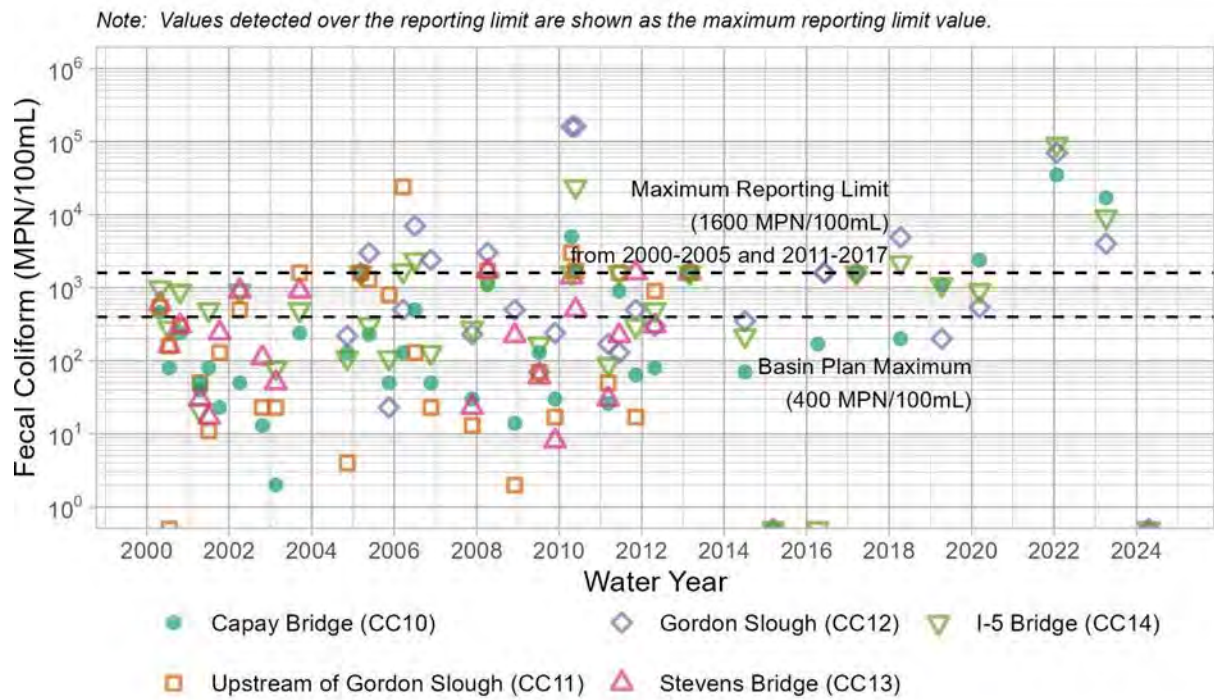


Figure 2-8. Lower Cache Creek Fecal Coliform measurements.

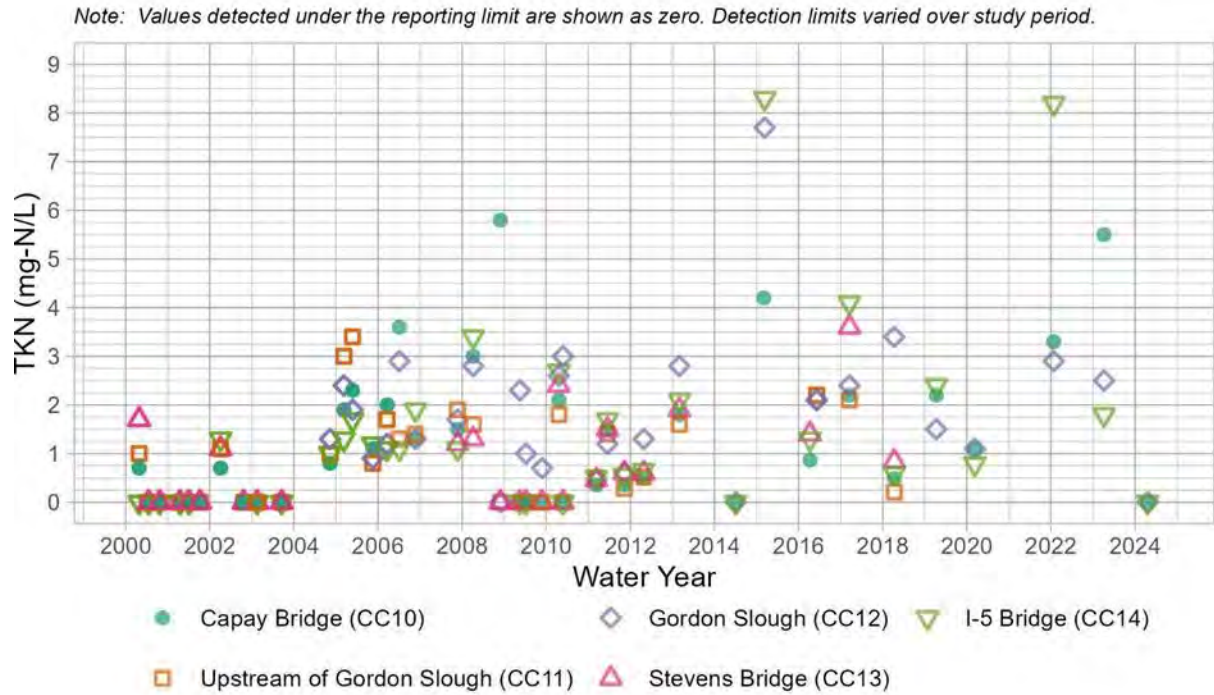


Figure 2-9. Lower Cache Creek Total Kjeldahl Nitrogen measurements.

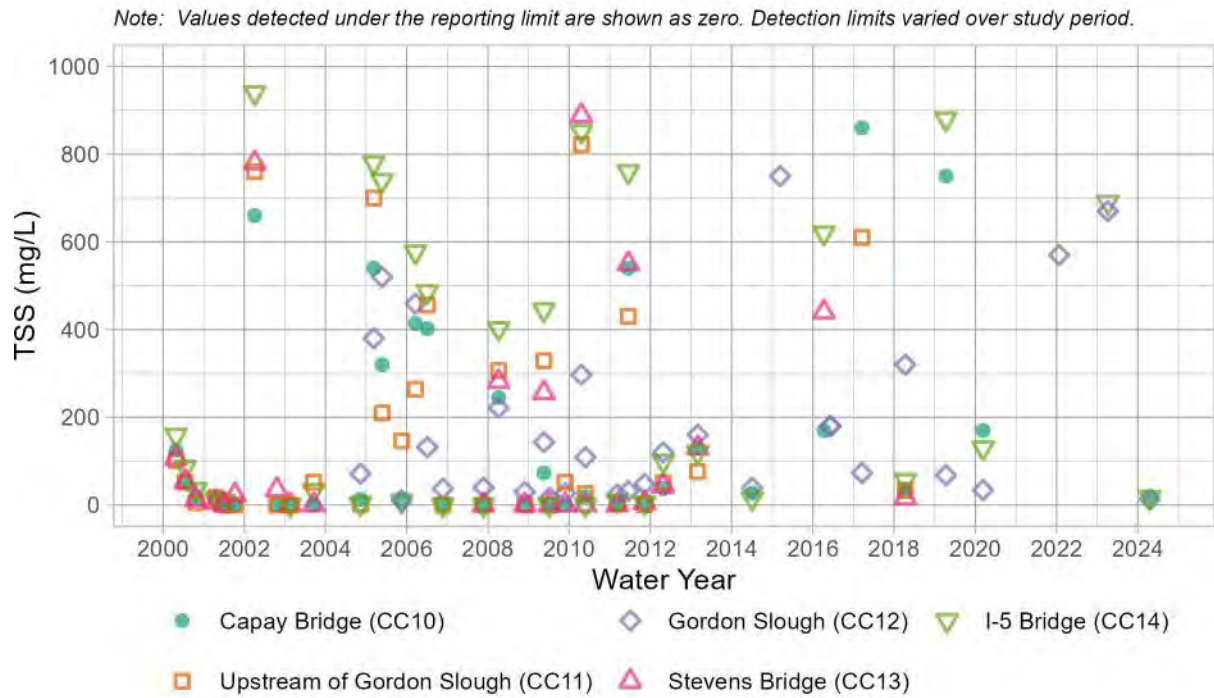


Figure 2-10. Lower Cache Creek Total Suspended Solids measurements.

Vehicle Boneyard / Abandoned Vehicles Water Quality Risk

The County has been engaged in code enforcement activities for many years at a private property on the south bank of Cache Creek approximately 1,500 feet upstream of the Capay Bridge (County Road 85). The property is referred to as the “Vehicle Boneyard” because of the number of non-operative vehicles and vehicle parts located in the floodplain.

In previous years, the Cache Creek TAC determined that between 2002 and 2005, bank erosion adjacent to the Vehicle Boneyard had substantially reduced the distance between the channel and the junkyard. During the 2024 Creek Walk, the TAC Hydraulic Engineer did not notice substantive new erosion at the site but continues to recommend continued monitoring of the distance between the creek and the boneyard, especially after high peak flows, until the subject vehicles have been removed.

In 2024, the abandoned/disabled vehicles, construction materials and debris, and other deleterious waste were again observed on the creek overbank near river mile 25.4 as in recent years (Fig. 2-11). These abandoned vehicles and waste materials present a similar hazard to the “Boneyard” site, but they are closer to the creek itself. The CCTAC Hydraulic Engineer recommends the County consider available enforcement actions against this property owner.



Figure 2-11. Abandoned vehicles near RM 25.4.

2.2 Summary of Annual Water Discharge Data

Peak flows in Cache Creek are an important driver of sediment transport processes, as well as water quality conditions in the CCRMP area. The CCIP requires that the TAC monitor hydrology at the upstream and downstream ends of the CCRMP area. This annual report summarizes this monitoring, with a focus on observations and conditions not already documented in previous annual reports.

The 2024 water year had three events that produced peak flows in the annual to 2-year return interval range. The largest storm produced peak flows of 14,500 cfs at Rumsey and 13,800 cfs at Yolo on February 4 and 5, 2024, respectively. Three other events occurred in January through April that exceeded 4,000 cfs at each gage, while flows generally remained at or above 500 cfs from February into April. Figure 2-12 compares instantaneous flows at Rumsey (upstream) and Yolo (downstream) gages during the 2024 water year.

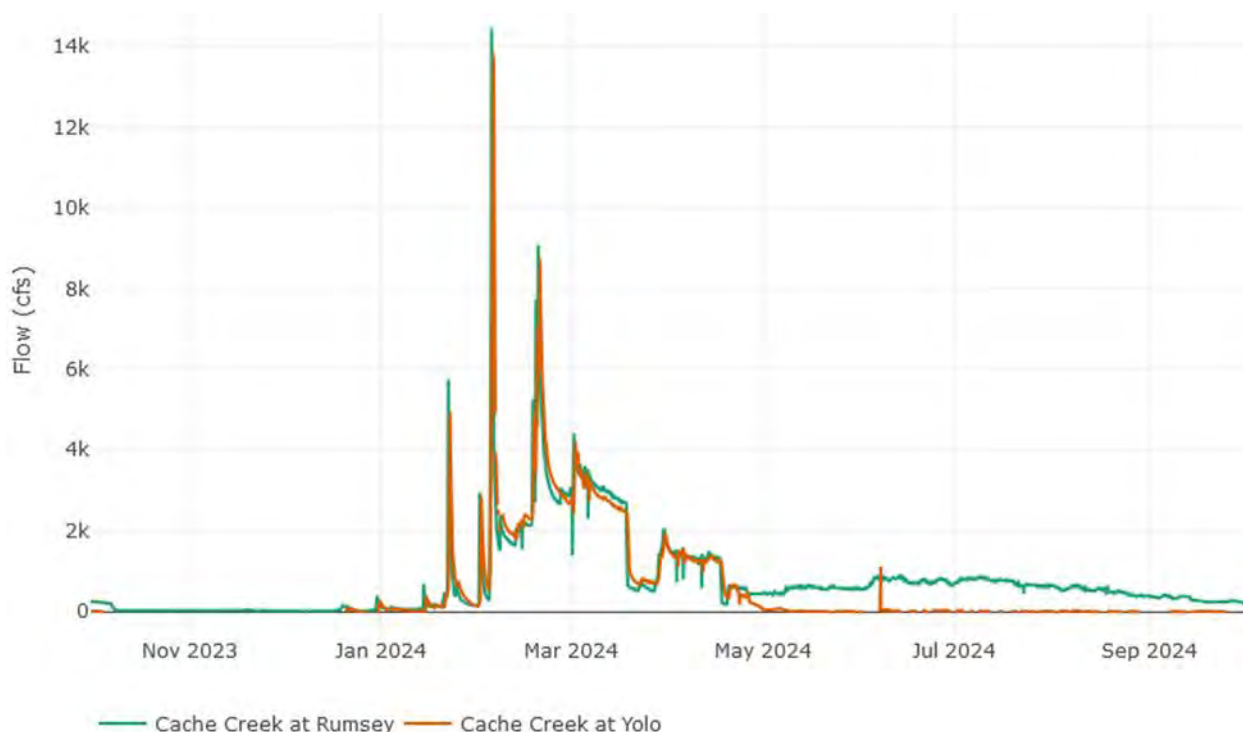


Figure 2-12. Instantaneous flows in Water Year 2023 at Rumsey and Yolo flow gages.

2.3 Bridge Crossing and Other Infrastructure Observations

This section describes observations regarding bridge crossings and other infrastructure made during the 2024 Creek Walk.

Capay Dam

For years the TAC has recommended removal of the failed energy dissipation blocks at the Capay Dam apron and noted the presence of surficial cracks in the apron throughout. No significant new damage was noted this year, but the concrete blocks continue to affect the creek and should be removed from its bed (Fig. 2-13).



Figure 2-13. Capay Dam and apron. (2024)

Capay Dam Site Emergency Bank Repair Retaining Wall

The emergency retaining wall structure built in 2017 immediately downstream of the Capay Dam continues to exhibit signs that water is running off behind the wall and compromising its integrity, and in 2024, new evidence of additional erosion was clear compared to 2023. “Scalloping” or deep holes forming alternately behind each concrete panel was observed and continue to increase in size due to overland flow of stormwater off the adjacent access road and down behind the wall (Fig. 2-14). This erosion will eventually compromise the access road adjacent to the irrigation canal if not addressed. As has been the recommendation for several years, this appears to be an issue needing action from the Yolo County Flood Control and Water Conservation District.



Figure 2-14 View of soil erosion behind Bank Repair Wall at Capay Dam. (2024)

PG&E Palisades

No new signs of damage or erosion were observed at the PG&E palisades and erosion control blanket were observed in 2024 (Fig. 2-15). The increasing trend in vegetation growth observed in the last few years continued again. The long-planned removal project has still not occurred, and the TAC continues to recommend that this removal occur as soon as possible. As vegetation continues to establish on and around the concrete blanket (including willows, cottonwoods, and wetland plants) the impacts of removal will only increase.



Figure 2-15. Photo showing current state of erosion control blanket at PG&E Palisades site including substantial riparian vegetation growth (2024 Creek Walk).

Capay Bridge (County Road 85)

The Capay Bridge did not exhibit any signs of erosion or scour in 2024 but rather showed increased vegetation growth from observations in 2023 (Fig. 2-16). Curiously, 2023 and 2024 were remarkably similar water years in terms of durations and magnitudes of flow events and while scouring of vegetation was evident in the aftermath of 2023 storms, it was not this year. However, there are currently no concerns about the Capay Bridge which seems to be exhibiting variable patterns of vegetation growth and scour without deleterious erosion that would compromise the structure.



Figure 2-16. Photo showing Capay Bridge and increase vegetation growth after the 2024 winter flows (2024 Creek Walk).

Car in Bank at River Mile 25.9

This car, first observed in 2021, was not observed in 2024. The photo in Figure 2-17 shows the location where the car was observed in 2023. It appears to have been removed by an unknown party.



Figure 2-17. Photo showing the streambank at River Mile 25.9 where a car has been previously observed in the bank. (2024)

Erosion, Waste Disposal, and Soil Fill at River Mile 25.4

The reach of Cache Creek near River Mile 25.4 has been identified for years as a site of active channel change where deposition in central gravel bars occurs and the active channel alternates between the north and south banks. During migration of the active channel between the banks, erosion of those banks is common. On the south (right) bank, a deep bend is present from years of this process. The Cache Creek TAC have observed various attempts at bank stabilization or rebuilding in recent years and these are documented below.

In 2021, new rubble (waste concrete and similar materials) armoring was observed at the bend along the right (south) bank of the creek near River Mile 25.4. In 2023, new soil fill at this location was observed, and in 2024 it appeared that additional concrete rubble was installed. Figure 2-18 shows conditions at this site in 2021, 2023, and 2024. The soil fill has not been stabilized with vegetation and is likely to erode, adding fine sediment to the creek while the concrete rubble prevents riparian vegetation from establishing.



Figure 2-18. South (right) bank at River Mile 25.4 showing installation of concrete rubble in 2021, addition of new soil fill in 2023, and addition of new rubble in 2024.

Esparto Bridge (County Road 87)

In some previous years after high flows, the Esparto Bridge has shown evidence of significant scour, including exposure of steel piles below the concrete piers. No significant changes or deleterious scour change was observed in 2024. A view of the bridge looking upstream is provided in Figure 2 19.



Figure 2-19. Photo from 2024 Creek Walk showing Esparto Bridge piers with no significant change from last year.

Teichert Gravel Pile at River Mile 22.9

Bank erosion over several years has occurred near River Mile 22.9 at the Teichert Esparto plant. As the bank has retreated northwards, it has resulted in a large pile of gravel being perched immediately above the creek with potential for it to slump into the creek. Furthermore, K-rails have been placed at the toe of the slope to protect the bank (Fig. 2-20). These K-rails have shifted and are not performing any stabilization function. In 2023 and 2024, it appeared as though some sloughing of gravel material into the creek is occurring. This pile should be regraded to prevent discharge of gravel material into the creek.



Figure 2-20. Teichert gravel pile on the north (left) bank. (2024)

Retreating Bank at River Mile 22.5

In 2024 a newly exposed pipe was observed protruding from the south creek bank at River Mile 22.5 (Fig. 2-21). While this pipe had not be observed in any prior year, the bank retreat occurred in either 2023, 2024, or somewhat in both years. This bank should continue to be monitored for additional erosion that exposes more pipe or other infrastructure.



Figure 2-21. Exposed pipe in south (right) bank at River Mile 22.5.

Interstate 505 Bridge

In 2024 a new area of bank erosion and exposed pipe was observed immediately upstream of the I-505 Bridge on the north bank (Fig. 2-22). While this erosion does not threaten the bridge or its abutment at this time, it should be monitored each year for additional change that could be more problematic.



Figure 2-22. Newly eroded bank and exposed pipe at I-505 Bridge.

In 2024, little change was observed at the I-505 Bridge itself – the winter of 2023-2024 had scoured the bed of the channel clean of vegetation but no deleterious scour was noted (Fig. 2-23).



Figure 2-23. Looking upstream at I-505 Bridge. (2024)

Stephen's Bridge (County Road 94B)

Similar to other bridges, no significant changes occurred at Stephen's Bridge in 2024. The fairly heavy flows of 2024 scoured vegetation clean, but no deleterious scour was observed (Fig. 2-24).



Figure 2-24. Looking upstream at the Stephen's Bridge (County Road 94B). (2024)

2.4 Recommendations

1. Capay Dam Concrete Energy Dissipation Structures and Apron Cracking

This is a repeat recommendation from prior years. Large concrete slab pads were included in the construction of the Capay Dam apron expansion project. Unfortunately, these pads were not secured to the dam apron. Additional movement of concrete pads off the apron was observed this year, as well as surficial cracking and sloughing. The TAC Hydraulic Engineer recommends that remedies to prevent future damage and movement of these concrete pads into the channel be undertaken, and inspection of the sloughing concrete by a qualified professional for recommendations on the long-term effects of this process.

2. Emergency Bank Stabilization Retaining Wall at Capay Dam

Repeated from previous years, we observed erosion of fill from behind the emergency bank stabilization project built in 2017 near the Capay Dam to repair a failure that threatened the adjacent access road and irrigation canal. The erosion appears to originate from local runoff

behind the wall rather than flows in Cache Creek itself and in 2024 is continuing to advance. The TAC Hydraulic Engineer recommends that the Yolo County Flood Control and Water Conservation District evaluate the erosion and implement remedies.

3. PG&E Palisades and Erosion Control Blanket

The erosion control blanket and steel piles at the PG&E Palisades site continue to represent a barrier to natural function of Cache Creek. PG&E is currently working to remove the blanket and piles. Until this project is implemented, it remains the Cache Creek TAC's recommendation that the erosion control blanket and all associated infrastructure be removed and the palisades either be removed entirely or cut at, or below, ground level and revegetation/natural stabilization project be implemented. As time goes on, more riparian vegetation is establishing in the blanket, making potential project permitting more challenging which makes time of the essence.

4. Creek Monitoring of Erosion and Other Issues

As described above, the flows of water year 2024 were relatively high although significant damage was not noted. Listed below are notable sites that have suffered damage in past years with recommendations for ongoing monitoring or actions.

- **Jensen Bend (River Mile 25.4)**: The apex of the southward meander bend at the Jensen property has had significant debris dumped into the creek and abandoned vehicles have been placed within 100 feet of the top of bank. This waste disposal is deleterious to the creek ecosystem and presents a water quality hazard when fluid leaks from the vehicles. The TAC Hydraulic Engineer recommends the County take any available enforcement action against the property owner to effect removal of the waste to outside of the creek and its overbank. In recent years, soil fill has been placed into the creek bank along with new concrete rubble. This fill placement was potentially done without the required permits from regulatory agencies such as USACE, California Department of Fish and Wildlife, and Regional Water Quality Control Board and without approvals through the County. The County should determine what if any enforcement actions are appropriate.
- **Granite Esparto (River Miles 24.8 – 24.4)**: The north bank of the channel immediately upstream of the Esparto Bridge was recently stabilized by Granite Construction and there was no evidence of recent erosion this year. It should be continually monitored.
- **Retreating Bank at River Mile 22.5**: The exposed pipe at this location is new and should be routinely monitored.

- **I-505 Bridge:** Immediately upstream of the I-505 Bridge a new erosion site with an exposed pipe was observed. It should be routinely monitored.
 - **Huff's Corner (River Mile 11.6):** The Huff's Corner project was constructed in 2022 and removed a significant quantity of accumulated sediment that had formed an island in the middle of the channel. The combination of late construction completion in November 2022 and early elevated flows in December 2022 led to some erosion of the terrace, leaving some unanchored erosion control matting. Remedial actions were constructed in 2024 and should be monitored in subsequent years.
- 5. Consider removal of some bank stabilization weirs and replacement with more modern approaches to bank stabilization.**

The bank stabilization weirs downstream of the Esparto Bridge between River Miles 24.10 and 23.90 had become a significant OHV use area during 2020-2021. The banning and enforcement of ATV activity appeared to have reduced this issue during 2023. The TAC Hydraulic Engineer continues to recommend evaluating this site as a pilot project to remove the weirs and replace them with a different bank protection scheme, such as a vegetated terrace to bolster the bank toe, that could provide habitat value and remove the attraction for OHV enthusiasts.

- 6. Address the failed bank stabilization measures and perched gravel pile at the Teichert Esparto Plant near River Mile 22.9.**

The TAC Hydraulic Engineer recommends that the stability of the bank at this location be evaluated, especially considering the presence of the large pile of gravel above the bank at the Teichert plant. This pile could already be contributing gravel to the creek and any further retreat of the bank could create conditions that deposit a significant quantity of gravel into the creek bed in an uncontrolled fashion. The K-rails that have been installed (c. 2019) at the toe are not currently providing any benefit and are a detriment to habitat conditions.

The bank retreated here in winter of 2016-2017 and while it has not significantly retreated since, it has likely slowly continued to erode and could erode further when a significant flow event (e.g., 10-year return interval or higher) occurs. The bank appears to have retreated past the Channel Form Template line. Some remedial action is required to remove the risk of gravel discharge, to remove the K-rails, and determine if any further bank protection action is required to ensure compliance with mining permits and the Channel Form Template.

3. Geomorphology

3.1 Summary of Annual Sediment Discharge Data

Sediment transport in creeks is correlated with flow. As flow increases, sediment transport increases. Sediment transport calculations for Water Year 2024 in the CCRMP area use sediment transport rating curves developed from pre-1996 measured suspended sediment data in Cache Creek. In general, the sediment component of most interest to the Cache Creek TAC is the material deposited in the channel (CCIP, p. 34). This is typically comprised of the sand and gravel component of the total sediment load, also called the bedload. However, it is very important to note that excavation from prior in-channel mining (before 1996) created physical conditions in some reaches of Cache Creek conducive to deposition of fine sediments in addition to bedload.

Figure 3-1 shows the bedload (Q_b) and suspended load (Q_s) volumes calculated for Water Years 2005 through 2023. The Q_b and Q_s values were calculated using both approved and provisional USGS flow data. USGS suspended sediment transport data were only available for water years 2013 through 2019.

The critically dry drought conditions in Water Years 2021 and 2022 were followed by two relatively wet Water Years 2023 and 2024. Water Year 2024 was designated as “normal,” and flows in Cache Creek were similar to flows in Water Year 2023, with moderately high flow for long periods as opposed to the shorter, more extreme flows in the previous wet Water Years 2017 and 2019. This resulted in total sediment transport of 544,218 tons in 2024.

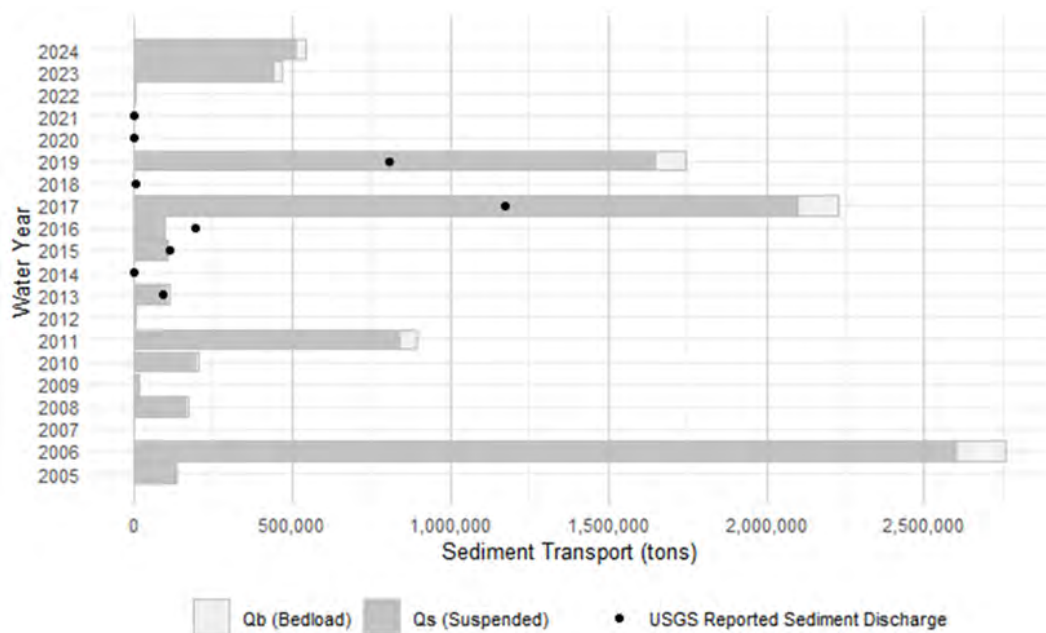


Figure 3-1. Suspended load (Q_s) and bedload (Q_b) in Cache Creek from Water Year 2005 through 2024.

Figure 3-2 shows a typical reach of Cache Creek in 2022 and 2023 with significant changes in sediment patterns and geomorphic features typical throughout Cache Creek after Water Year 2023 winter flows. Changes included removal of in-channel vegetation, migration of the active channel, erosion of channel banks, and deposition of gravel bars.



Figure 3-2. Looking upstream of CR 94B in Water Year 2023 (left) and 2024 (right) showing typical changes in geomorphic conditions and riparian vegetation adjacent to and in the active channel.

Table 3-1 displays a ranked summary of suspended load (Q_s), bedload (Q_b), and total sediment transported to and through the CCRMP reach over the last 20 water years. Total sediment transport in Water Year 2024 increased slightly to 544,218 tons (similar to 2023, and much higher than zero in 2021 and 2022), and significantly increased the total sediment load over the past 20 years. Just six Water Years (2006, 2017, 2019, 2011, 2024, and 2023) have transported more than 91% of all the sediment over the past two decades. Water Year 2024 was the fifth highest annual sediment transport over the last 20 years. The total sediment transported between 2005 and 2024 is approximately 9,489,327 tons.

Table 3-1. Calculated suspended and bedload sediment transport totals. (2005-2024)

Water Year	Q_s (tons/year)	Q_b (tons/year)	Total Transport	Percent of Total	USGS Reported Sediment Discharge (tons/year)
2006	2,600,959	156,058	2,757,017	29.1	N/A
2017	2,099,524	125,971	2,225,496	23.5	1,173,399
2019	1,646,773	98,806	1,745,579	18.4	808,853
2011	841,136	50,468	891,604	9.4	N/A
2024	513,414	30,805	544,218	5.7	N/A
2023	440,105	26,406	466,511	4.9	N/A
2010	192,179	11,531	203,710	2.1	N/A
2008	161,006	9,660	170,666	1.8	N/A
2005	128,903	7,734	136,637	1.4	N/A
2013	103,913	6,235	110,148	1.2	90,637
2015	101,509	6,091	107,600	1.1	112,721

2016	93,179	5,591	98,770	1.0	192,944
2009	16,968	1,018	17,986	0.2	N/A
2022	5,323	319	5,643	0.1	N/A
2012	3,934	236	4,171	0.0	N/A
2007	1,999	120	2,119	0.0	N/A
2018	1,010	61	1,070	0.0	3,106
2020	274	16	291	0.0	N/A
2014	86	5	92	0.0	711
2021	0	0	0	0.0	N/A

Q_b estimated as six percent of the suspended sediment load.

USGS Reported Sediment Discharge includes provisional data.

3.2 Evidence of Changes in Channel Dimensions or Bank Erosion (Bank Retreat)

The channel changes observed in Water Year 2023 were generally perpetuated or repeated in Water Year 2024. The peak flow in Water Year 2024 of approximately 14,455 cfs at Rumsey and 13,798 cfs at Yolo on February 4 and 5, 2024, respectively, again combined with periods of sustained flows above 2,000 cfs in February and March 2024 resulted in significant mobilization and redistribution of sediment within the Cache Creek channel. The persistent periods of moderately high flow in Water Year 2024 caused relatively minor erosion, scour, and channel migration throughout Cache Creek, very similar to 2023. However, because the peak flows were relatively small (just over a two-year recurrence interval), erosion, scour, and channel migration were less extensive than in previous wet water years. Figure 3-3 is a view upstream of County Road 85 in 2023 and 2024, where the clay hardpan exposed by erosion increased from the previous wet year. There are also new deposits of fresh sediment from the 2024 peak flows, but overall erosion and deposition patterns a very similar to 2023.



Figure 3-3. Looking upstream of CR-85 in Water Year 2023 (left) and 2024 (right) showing loss of vegetation, sediment deposition, and minor erosion, scour, and channel migration in Water Year 2023.

Figure 3-4 and Table 3-2 summarize locations with current and recent past evidence of channel change and provide recommendations for each location. It is important to remember that some bank retreat is beneficial, allowing natural channel processes to occur and valuable habitat to form. Beneficial bank retreat can provide regeneration of riparian habitat, bank swallow habitat, and diversity of in-channel habitat (e.g., pool and riffle habitat) that might not exist otherwise. Therefore, bank retreat from prior years that does not threaten CCAP boundaries does not necessarily require treatment. While the second year in a row of wet conditions in Water Year 2024 did cause some erosion, scour, and channel migration in all reaches of Cache Creek, changes were relatively minor because of a lack of extreme peak flows and in most locations nearly identical to the changes seen in 2023. The recommendations in Table 4-2 this year remain the same as in Water Year 2023. However, recommendations for potential action should be revisited during the Winter of 2024/25 if extreme peak flows occur as channel conditions remain conducive to further change than in the years immediately preceding 2023. Visit <https://flowwest.shinyapps.io/cache-creek/> to explore the CCTAC Geomorphologist recommendations in more detail.



Figure 3-4. Locations of CCTAC Geomorphologist recommendations for Water Year 2024.

Table 3-2. Summary of channel change tracking. (2021-2024)

RM	Location Description	2021	2022	2023	2024	Recommendation
RM 28.2-28.4	Near Capay Dam	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Notify dam owner and repair left bank erosion behind concrete wall.
RM 26.9	PG&E "Palisades" Pipe Crossing	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Accelerate coordination with PG&E on removal of concrete pillow bed armoring.
RM 26.7	Upstream end of left bank bar	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Monitor
RM 26.4	Near Capay Bridge	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Notify bridge owner of channel change at bridge.
RM 26.3	Mid-channel near Capay Bridge	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Notify bridge owner of channel change at bridge.
RM 26.0	Hungry Hollow	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Reassess proposed CFT location and evaluate need for treatment.
RM 25.4 - 25.5	Near Jensen Property	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Reassess proposed CFT location and evaluate need for treatment.
RM 24.6 - 25.1	Near Granite Capay	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Accelerate implementation of proposed gravel bar skimming project.
RM 23.5	Madison Reach	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Reassess proposed CFT location and evaluate need for treatment.
RM 23.1	Madison Reach	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Repair bank at captured tailings pile, consider potential for gravel bar skimming project, and reassess proposed CFT location.
RM 22.0	Near Syar	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Reassess proposed CFT location, evaluate need for treatment, and consider potential for gravel bar skimming project.
RM 21.8	Near Syar	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Reassess proposed CFT location, evaluate need for treatment, and consider potential for gravel bar skimming project.
RM 21.6	Near the Old Madison Bridge	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Reassess proposed CFT location, evaluate need for treatment, and consider potential for gravel bar skimming project.

Table continues on the following page.

RM 21.4	Downstream from the Old Madison Bridge	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Reassess proposed CFT location, evaluate need for treatment, and consider potential for gravel bar skimming project.
RM 21.1	Upstream of 505 Bridge	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Notify bridge owner of channel change at bridge, reassess proposed CFT location, and evaluate need for treatment.
RM 20.8	Near CEMEX right bank protection	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Monitor
RM 20.1 - 20.5	Near CEMEX conveyor belt	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Accelerate implementation of proposed gravel bar skimming project.
RM18.8-18.7	Dunnigan Hills Reach	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Continue to monitor
RM18.2-18.0	Upstream of Moore's Siphon	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Reassess proposed CFT location and evaluate need for treatment.
RM 17.8	Dunnigan hills	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Continue to monitor
RM 15.9	Near CR 94B	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Notify bridge owner of channel change at bridge and monitor.
RM 15.4	Near Teichert Woodland	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Continue to monitor
RM 15.0	Near Teichert Woodland	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Continue to monitor
RM 14.0	Near Woodland Reiff Breach	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Implement levee breach channel enhancement / stabilization
RM 12	Rio Jesus Maria Reach	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Continue to monitor
RM 11.3	Near Huff's Corner	No change	No change	Minor erosion, scour, and vegetation loss	Minor erosion, scour, and vegetation loss	Assess need to remove fine sediment deposited along bar.

Note: **Orange** boxes denote observations of channel change. **Blue** boxes denote areas recommended for evaluation and possible action. **Green** boxes denote project implementation. Observations from 2021 to 2023 are presented in grey to differentiate them from observations made during the current Water Year.

3.3 Evidence of Bed Degradation or Aggradation and Significant Changes in the Locations or Sizes of Bars and Other Channel Features

“Bar skimming” has been identified as a possible management action for areas where significant channel bed aggradation has occurred (CCIP, p. 20). Bar skimming is the removal of channel bed sediment (generally gravel and coarser material) that has deposited and created significant mid-

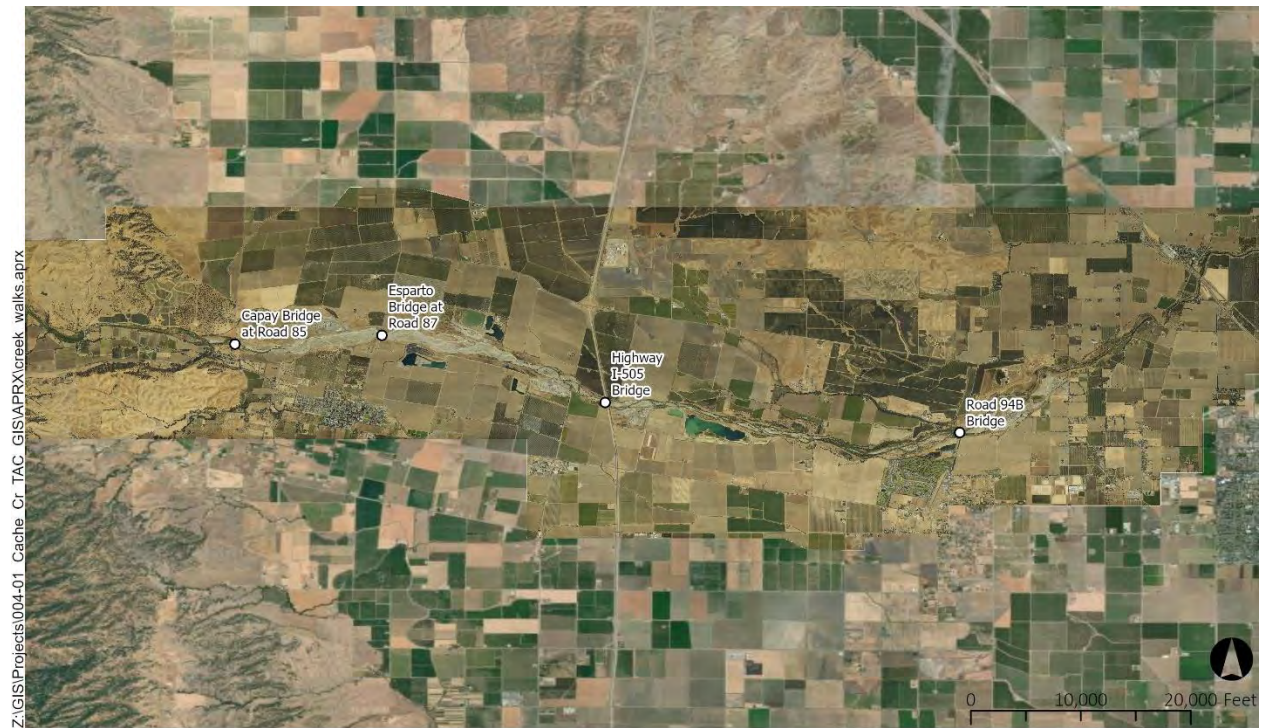
channel bars in Cache Creek. Gravel bar skimming can reduce erosion and scour potential and increase flow conveyance capacity. The CCIP authorizes gravel bar skimming as a routine channel maintenance activity to maintain hydraulic capacity and reduce the probability of excessive and damaging bank erosion. All bar skimming proposals must be reviewed and approved by the Cache Creek TAC and be designed to limit excavation volumes in balance with sediment supply volumes transported through lower Cache Creek, as well as to protect and enhance creek ecosystem and geomorphic conditions, where possible. Sediment deposition in bars or other channel forms reduces channel capacity and increases flow energy acting on the channel bed and banks. Depending on the location of the gravel bar, erosive pressure on one or both creek banks may increase as deposited sediment accumulates. In addition, gravel bars may become vegetated, further reducing flood capacity. The CCIP encourages gravel bar skimming in areas where the gravel bar could potentially reduce flood capacity required for effective flood management or in areas where the bar may affect bank stability.

The potential bar skimming locations identified Table 3-2 above have not changed since 2017. These locations include portions of the creek channel near the Granite Capay Plant (River Mile 24.6 – 25.1) and CEMEX (River Mile 20.1 – 20.5) off-channel gravel operations. Each of these locations changed slightly in Water Year 2024 due to relatively minor erosion, scour, and deposition, with accumulations of new fine and coarse sediment typical at each location. Therefore, the need to consider bar skimming at the locations in Table 3-2 remains.

3.4 Bridge Conditions

The CCIP directs the Cache Creek TAC to “monitor bridges, levees, and other infrastructure to detect and prevent damage” (CCIP, p. 33). Responsibility for the maintenance and repair of public bridges is held by other agencies (e.g., Caltrans or Yolo County Community Services Department). Current conditions at the bridges were observed and documented during the 2023 Creek Walk and compared to observations made in previous years.

The general geomorphic conditions at bridges in Water Year 2024 remained almost identical to conditions observed in Water Year 2023. While some new erosion and deposition occurred in 2024, the overall channel patterns bridge conveyance capacities remained the same as in 2023. Geomorphic conditions and vegetation should continue to be monitored in future years to ensure that additional erosion or scour from high flows does not compromise bridge conditions. Table 3-3 and Figure 3-5 summarize bridge condition observations and recommendations for Water Year 2024. The primary recommendation is to inform bridge owners of riparian vegetation loss and localized erosion, scour, and deposition, and monitor conditions going into Water Year 2025.



Legend

- Bridge Location



Data Sources
Aerial Imagery - FlowWest 2017

Figure 3-5. Locations of CCTAC Geomorphologist bridge inspections for Water Year 2024.

Table 3-3. Summary of observations of bridge conditions. (2021-2024)

Location	General Conditions	2021	2022	2023	2024	Recommendations
Capay Bridge at CR 85 (RM 26.35)	2007 CalTrans report: "no scour." Some erosion of the south bank upstream of the bridge in 2010, with no observable consequences to the bridge.	No significant change since 2020	No significant change since 2021	Minor vegetation removal and localized erosion, scour, and deposition.	Minor vegetation removal and localized erosion, scour, and deposition.	Inform bridge owner and monitor vegetation establishment in Water Year 2024.
Esparto Bridge at CR 87 (RM 24.35)	2006 CalTrans report: "signs of aggradation." Observed in 2010. Tendency for erosion on the north side, and the northern-most pier is slightly undercut.	No significant change since 2020	No significant change since 2021	Minor vegetation removal and localized erosion, scour, and deposition.	Minor vegetation removal and localized erosion, scour, and deposition.	Inform bridge owner and monitor vegetation establishment in Water Year 2024.
Highway I-505 Bridge (RM 21.0)	2005 CalTrans report: "Scour holes at each pier." 2010: two-ten feet of sediment build up (aggradation) around the two southern bridge bays, with vegetation growing on the deposited material.	No significant change since 2020	No significant change since 2021	Minor vegetation removal and localized erosion, scour, and deposition.	Minor vegetation removal and localized erosion, scour, and deposition.	Inform bridge owner and monitor vegetation establishment in Water Year 2024.

Table continues on the following page.

Stephen's Bridge at CR 94B (RM 15.9)	2007 CalTrans report: "Abutment 1 is undermined up to 18 inches." Relatively stable channel conditions in 2010.	No significant change since 2020	No significant change since 2021	Minor vegetation removal and localized erosion, scour, and deposition.	Minor vegetation removal and localized erosion, scour, and deposition.	Inform bridge owner and monitor vegetation establishment in Water Year 2024.
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3.5 Summary of Changes in Channel Topography and Form

The CCIP describes one of the objectives of the annual monitoring program as the observation and assessment of “changes in channel form and topography” (CCIP, p. 33). This information is used to locate areas of aggradation and degradation in the creek (CCIP, p. 39). A summary of changes in channel topography and form was provided in Table 3-2 in Section 3.2 above.

3.6 Location and Volume of Annual Sediment Replenishment

3.6.1 Volumetric Change Analysis

The flow trigger of 20,000 cfs for collection of new topographic data on Lower Cache Creek was not reached in Water Year 2024; therefore, no volumetric change analysis was conducted this year. Because it has been five years since the last collection of aerial survey data, the County is making arraignments for the data to be collected in 2025. As discussed in the previous sections, high flows in Water Year 2024 were relatively low, and while significant sediment transport did occur this year, it only resulted in minor and localized erosion, scour, and channel change.

3.7 Channel Maintenance Activities

The CCIP (p. 20) describes typical channel maintenance activities that can be implemented to achieve improved equilibrium channel conditions and protect and enhance channel and riparian habitats. The CCTAC reviewed all of the recommended channel maintenance activities listed in the CCIP and identified sites where various maintenance activities could be implemented to achieve the objectives of the CCIP. Some of the recommended channel maintenance activities in Table 3-4 and Figure 3-6 are also described in the summary of channel changes in Table 3-2 above.

Again, because erosion, scour, deposition, and channel change were localized and relatively minor in Water Year 2024, the recommendations for 2024 remain the same as in 2023. Conditions at the Huff's Corner In-Channel Reconfiguration Project location (RM 11.6) completed prior to the Water Year 2023 Creek Walk continued to evolve through the relatively wet 2024 Water Year. In Fall 2024, the County completed repairs to the previously constructed channel stabilization project. Conditions at this site should be carefully monitored in Water Year 2025 and addressed if excessive channel change occurs. Visit <https://flowwest.shinyapps.io/cache->

[creek/](#) to explore the CCTAC Geomorphologist channel maintenance recommendations in more detail.

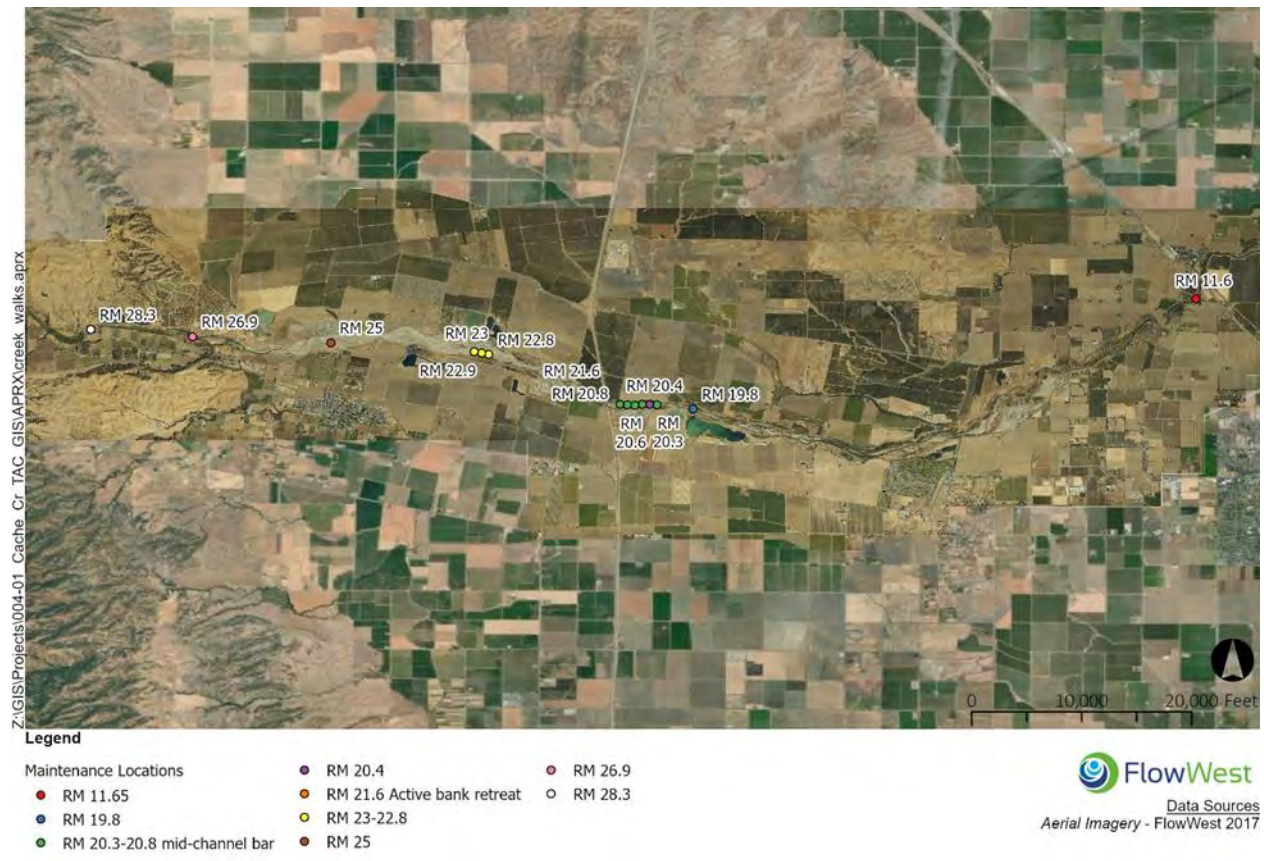


Figure 3-6. CCTAC Geomorphologist channel maintenance locations for Water Year 2024.

Table 3-4. Summary of recommended channel maintenance activities. (2021-2024)

Site	Description	2021	2022	2023	2024	Recommendation
RM 28.3	Removal of concrete rubble in creek channel.	No significant change.	No significant change.	Localized erosion, scour, deposition, and vegetation removal.	Localized erosion, scour, deposition, and vegetation removal.	Monitor in conjunction with monitoring of repaired left bank.
RM 26.9	Removal of exposed webbing at the PG&E Palisades site.	No significant change.	No significant change.	Localized erosion, scour, deposition, and vegetation removal.	Localized erosion, scour, deposition, and vegetation removal.	Accelerate coordination of palisades removal with PG&E.
RM 25.0	Removal of mid-channel gravel bar to alleviate pressure on the north bank in this vicinity.	No significant change.	No significant change.	Localized erosion, scour, deposition, and vegetation removal.	Localized erosion, scour, deposition, and vegetation removal.	Reevaluate and accelerate implementation of Granite Capay gravel bar skim plans initiated in 2015.
RM 23.0 to 22.8	Monitoring of levee erosion site.	No significant change.	No significant change.	Localized erosion, scour, deposition, and vegetation removal.	Localized erosion, scour, deposition, and vegetation removal.	Evaluate and implement treatment for left bank erosion site and evaluate potential value of gravel bar skimming project.
RM 21.6 active bank retreat	Mid-channel experimental bar skimming to relieve erosive pressure on the north bank.	No significant change.	<i>Table continues on the following page.</i> No significant change.	Localized erosion, scour, deposition, and vegetation removal.	Localized erosion, scour, deposition, and vegetation removal.	Evaluate the need to treat left bank erosion and migration sites.
RM 20.3 to 20.8 mid-channel bar	Removal of mid-channel gravel bar to alleviate pressure on the south bank in this vicinity.	No significant change.	No significant change.	Localized erosion, scour, deposition, and vegetation removal.	Localized erosion, scour, deposition, and vegetation removal.	Evaluate the need to treat left bank erosion and re-activate CEMEX gravel bar skim plans initiated in 2014.
RM 20.4	Protection against further bank toe erosion on bank.	No significant change.	No significant change.	Localized erosion, scour, deposition, and vegetation removal.	Localized erosion, scour, deposition, and vegetation removal.	Incorporate into CEMEX gravel bar skim plans (if reactivated) initiated in 2014.
RM 19.8	Protection against further bank toe and slope erosion.	No significant change.	No significant change.	Localized erosion, scour, deposition, and vegetation removal.	Localized erosion, scour, deposition, and vegetation removal.	Monitor and consider as part of the CEMEX gravel bar skim plans, if reactivated.
RM 11.65	Removal of the bar near Huff's Corner.	No significant change.	Bar removed November 2022.	Major erosion, scour, and deposition at island removal site.	Major erosion, scour, and deposition at island removal site.	Monitor channel change from high flows and evaluate need for stabilization maintenance measures.

Note: Table entries with RM and descriptions in "purple" are also described in Table 3-2.

4. Biological Resources

Biological resources along Lower Cache Creek include native vegetation, wildlife, invertebrates, and fish. Lower Cache Creek is a hotspot of native biodiversity in a landscape mostly developed and converted to agricultural, residential, and urban land uses. In addition to native trees, shrubs, and herbaceous plant species, at least 233 common and special-status native species of wildlife, invertebrates, and fish have been observed within the CCRMP and broader-scale CCAP areas over the past two decades since CCAP adoption. Non-native and invasive species are also assessed within the biological resource framework because of the negative impacts they have on native species, habitats, and channel dynamics. For example, invasive plants species such as arundo (*Arundo donax*), tamarisk (*Tamarix* spp.), perennial pepperweed (*Lepidium latifolium*), and non-native annual grasses displace native vegetation, degrade wildlife habitat, increase wildfire risk, impact creek flows, and diminish outdoor experiences for people. Additional influences on biological resources along Lower Cache Creek include human land use, climate, soil, groundwater dynamics, outdoor recreation pressure including off-highway vehicles (OHVs), and the timing, magnitude, and extent of surface flows, as well as flow effects on sediment transport and deposition.

4.1 Native Vegetation

The distribution and extent of native riparian and upland vegetation within the CCRMP area reflect the dynamic geomorphologic and hydrologic processes of Cache Creek, regional climate, competition with non-native species, interactions between plants and wildlife, and both past and present human influences. Lower Cache Creek's position in the broad Central Valley Plain, low channel gradient, annual lateral channel movement, and channel braiding provide for a dynamic mosaic of riverine, riparian, wetland, and upland habitat types. Soil moisture, depth to groundwater, the presence of surface water in the low-flow channel, scour of established and newly planted or newly established vegetation by high flows, competition with non-native and invasive species, short- and long-term climate fluctuations (e.g., drought), and suitable soil substrates are the major limiting factors for establishment and maintenance of native riparian vegetation including riparian forests, willow scrub, and herbaceous communities (Fig. 4-1). In more upland areas on upper banks and higher terraces, factors such as soil moisture, depth to groundwater, grazing, fire, and competition with non-native and invasive species are the major limiting factors in establishment and persistence of native vegetation including oak woodlands and grasslands (Fig. 4-1). Prior to 2022, OHV damage had also been increasingly impacting both in-channel and upland vegetation (Section 4.1.2). Observations in 2022 suggested that OHV activity and associated damage to native plants and wildlife habitat (e.g., beaver dams) had greatly diminished. However, in 2023 and especially in 2024, observations suggested that OHV activity was once again increasing with potential negative impacts on native plants and wildlife (Section 4.1.2).

4.1.1 Current Condition of Native Vegetation

The 2024 assessment of biological resource conditions along Lower Cache Creek, including native vegetation, was based primarily on observations made during the 2024 Creek Walk in addition to ancillary observations made by various CCRMP collaborators and stakeholders, project site descriptions, and reports. Aerial photography was not collected in 2021–2024 since winter flows during these years did not exceed the CCIP’s trigger of 20,000 cfs that requires aerial data to be collected. As described below in Section 4.1.2, the distribution, extent, and condition of native vegetation along Lower Cache Creek in 2024 was relatively similar to 2023, with the exception of slight increases in in-channel vegetation in areas where vegetation was observed to have been reduced in 2023 due to scour from 2022–2023 winter flows; no significant new observations of drought-stressed native woody vegetation, as well as some recovery in areas observed in 2023 to have been significantly impacted by drought; some minor loss of mature native woody vegetation due to scour and bank erosion resulting from winter 2023–2024 flows; and, increased impacts to native vegetation resulting from increased OHV activity.



Figure 4-1. Representative Photograph of Lower Cache Creek Channel showing a typical mix of vegetation. (2020) (1) mature riparian forest; (2) developing riparian forest; (3) dense shrub scrub; (4) establishing woody and herbaceous vegetation; (5) invasive tamarisk; (6) invasive arundo; (7) herbaceous annual vegetation above and below the slope; and (8) bare ground.

4.1.2 Changes in Native Vegetation

A summary of observations made during 2021–2023 annual Creek Walks provides context for 2024 observations and conclusions. As observed during the 2021 Creek Walk and inferred from the lack of high flows during winter 2020–2021 and the absence of extreme drought conditions, the condition of native vegetation along Lower Cache Creek in 2021 was generally unchanged compared to 2020. Three exceptions to this trend were noted in 2021: (1) increasing in-channel vegetation in select areas; (2) increasing evidence of drought-stressed vegetation in other areas; and (3) increased damage to native vegetation from OHV use (Yolo County 2021). During the 2022 Creek Walk, the distribution, extent, and condition of native vegetation along Lower Cache Creek was observed to be relative similar compared 2021 in most locations, with four notable exceptions: (1) continued increase of in-channel vegetation in the same areas noted in 2021; (2) more significant evidence of drought-stressed vegetation in the same areas noted in 2021 as well as additional areas observed in 2022; (3) signs of native vegetation recovery in areas previously impacted by OHV use; and (4) a slight increase in herbaceous vegetation adjacent to pools created by intact beaver dams in several locations. As noted from 2019–2022, native vegetation conditions have been relatively stable since significant flows and accompanying channel migration in winter 2016–2017 resulted in substantial loss of riparian forest and other native vegetation types (Yolo County 2020, Yolo County 2021, Yolo County 2022). Notably, high flows during winter 2018–2019 did not have the same impact on native vegetation, likely because sediment buildup and associated channel migration was relatively minimal. During the 2023 Creek Walk, the distribution, extent, and condition of native vegetation along Lower Cache Creek was observed to be generally similar compared to 2022. Native vegetation recovery in areas previously impacted by OHV use was again noted, as was increasing herbaceous vegetation adjacent to pools created by intact beaver dams in some locations. There were four notable exceptions regarding the condition of native vegetation in 2023 compared to 2022: (1) further reductions of in-channel vegetation in the same areas noted in 2021–2022 due to winter 2022–2023 flows; (2) additional evidence of drought-stressed vegetation, although there was some vegetative regrowth in areas noted in 2021–2022; (3) significant negative impacts to mature native vegetation due to fire in several locations, and (4) minor loss of native trees in one location due to scour and bank erosion resulting from winter 2022–2023 flows.

During the 2024 Creek Walk, the distribution, extent, and condition of native vegetation along Lower Cache Creek was observed to be generally similar compared to 2023. There were four notable exceptions regarding the condition of native vegetation in 2024 compared to 2023, which are detailed below: (1) increases in in-channel vegetation in areas where vegetation was observed to have been reduced in 2023 due to scour from 2022–2023 winter flows; (2) no significant new observations of drought-stressed native woody vegetation, as well as some recovery in areas observed in 2023 to have been significantly impacted by drought; (3) some minor loss of mature native woody vegetation due to scour and bank erosion resulting from

winter 2023–2024 flows, and (4) increased impacts to native vegetation resulting from increased OHV activity.

First, compared to the reductions in in-channel vegetation observed in 2023 in some locations (e.g., upstream and downstream of the County Road 85 Bridge [RM 26.0–26.4] in the Hungry Hollow Reach), minor increases in in-channel and bank vegetation were observed below the Capay Dam at RM 28.4, upstream of the County Road 85 Bridge at RM 26.3 (Fig. 4-2), and in the Hoppin Reach at RM 15.8. As noted in past Annual Reports, patches of native woody species such as mulefat (*Baccharis salicifolia*), willows (*Salix* spp.), and cottonwoods (*Populus fremontii*) tend to readily reestablish in areas of Lower Cache Creek that are scoured during high winter season flows. In future years, it should be possible to preserve, and even promote, some establishing native vegetation during future channel maintenance activities (e.g., bar skimming), which would accelerate vegetation recovery in those reaches and balance native vegetation removed during channel maintenance. Since increasing in-channel vegetation can potentially create adverse conditions (e.g., by directing flows into adjacent banks, leading to bank undercutting and erosion), locations with increasing vegetation should continue to be monitored annually to determine if active management is required.



Figure 4-2. In-channel vegetation upstream of County Road 85 bridge at RM 26.3 in the Hungry Hollow Reach in 2022 (left), 2023 (center), and 2024 (right). Note significantly reduced vegetation in 2023 due to relatively high winter 2022-2023 flows, with some recovery in 2024.

Second, woody vegetation was observed to be recovering from drought stress in many locations, including at RM 20.5 in the Guesisosi Reach and at RM 16.5 in the Dunnigan Hills Reach (Fig. 4-3). From 2021-2023, observations of drought-stressed and dying woody vegetation were frequently made during annual Creek Walks in all but the Dunnigan Hills and Rio Jesus Maria Reaches, although some limited recovery was observed in 2023 at locations within the Madison, Guesisosi, and Hoppin Reaches. Cycles of drought, dieback, and regrowth are inherent features of resilient semi-arid and arid riparian ecosystems, and native riparian plant species such as willows and cottonwoods have a remarkable ability to resprout after drought or fire. In 2024, native woody vegetation, including Valley oaks (*Quercus lobata*) and black walnuts (*Juglans californica*), was also observed to be continuing to slowly recover from a 2023 fire on the north bank from RM 28.2–28.3 in the Capay Reach. While fire is a natural, albeit generally infrequent, process in California riparian ecosystems, fires along Lower Cache Creek are often the result of

landowner activities and can damage or kill native trees and shrubs that could take decades to recover or restore from planted seedlings. There is also the potential for drought-stressed vegetation to be more vulnerable to fire and less resilient in terms of natural recovery.



Figure 4-3. Native woody vegetation was observed in 2024 to be recovering from drought stress observed in 2023 in many locations. Photos from RM 16.5 in the Dunnigan Hills Reach (left), and RM 20.5 in the Guesisosi Reach (right).

Third, minor loss of woody vegetation resulting from winter 2023-2024 flows was observed below the County Road 85 bridge at RM 28.4, and at both RM 15.7 and RM 15.0 in the Hoppin Reach (Fig. 4-4). Bank erosion is a natural process in a dynamic river system with periodic high flows, erodible soils, and lateral channel migration, which creates habitat for wildlife (e.g., riparian bank swallow [*Riparia riparia*]) and zones of establishment for native vegetation such as willows and cottonwoods. Within the CCRMP area, the ecological benefits of bank erosion must be balanced with the need to stabilize banks to protect adjacent land, roads, structures, and communities.



Figure 4-4. Examples of native woody vegetation displaced from banks into the main stream channel by bank erosion resulting from winter 2023-2024 flows in the Hoppin Reach at RM 15.7 (left) and RM 15.0 (right).

Lastly, significantly increased OHV activity was observed in 2024 compared to 2023 and especially to 2022 (Fig. 4-5). In some areas, OHV activity was observed to have had negative impacts on both woody and herbaceous vegetation. OHV tracks and disturbed soil were observed in the Hungry Hollow Reach at RM 24.3, in the Madison Reach from RM 21.4-22.0, in the Guesisosi Reach from RM 20.4-20.7, in the Dunnigan Hills Reach from RM 16.5-16.6, in the Hoppin Reach from RM 12.8-15.8, and in the Rio Jesus Maria Reach from RM 12.3-12.6. OHV use directly impacts vegetation by crushing and dislodgement (especially establishing seedlings), and further impacts vegetation through soil disturbance and erosion, soil compaction, and when OHV users use chainsaws and other tools to actively clear vegetation when making unauthorized access roads. OHV use can also disturb, injure, or kill wildlife, especially during sensitive times of the year such as nesting and breeding seasons (see Sections 5.4.1 and 5.5 for 2024 observations related to potential OHV impacts on wildlife). In addition, active restoration may be required to repair OHV damage to habitat, and OHV use can also damage revegetation or restoration sites, reducing success and increasing costs.

During the 2021 Creek Walk, vegetation damage and soil disturbance from OHV use was frequently observed in numerous locations (Yolo County 2021). Vegetation damage was especially pronounced within the Dunnigan Hills Reach, at sites near the Cache Creek Nature Preserve. Impacts were significant enough that the conclusion in the 2021 Annual Report was that OHV use has become a significant barrier to achieving the long-term goals of the CCRMP program, such as the stated goal in CCRMP Section 4.2-1 to “provide for a diverse, native riparian ecosystem that is self-sustaining and capable of supporting native wildlife.” Observations made during the 2022 Creek Walk suggested that new restrictions on OHV use in Lower Cache Creek were having a positive effect on native vegetation and potentially wildlife including beaver and native birds (Yolo County 2022). While observations made in 2023 generally suggested the same, OHV use was observed to have been increasing relative to 2022. Observations made in 2024 suggest that OHV use is further increasing, and that ongoing OHV activity within the CCRMP should be closely monitored and discouraged to avoid negative impacts to biological resources along Lower Cache Creek.



Figure 4-5. OHV tracks, soil disturbance, and vegetation impacts observed during the 2024 Creek Walk. Photos from RM 21.4 in the Madison Reach (upper left), RM 15.3 in the Hoppin Reach (upper right), RM 14.9 in the Hoppin Reach (lower left), and RM 12.4 in the Rio Jesus Maria Reach (lower right).

While change is a defining characteristic of Lower Cache Creek and other Central Valley riverine and riparian systems that are subject to irregular flows and climatic conditions, many areas along the creek are relatively stable with similar conditions observed annually. Some areas, especially in more gravelly reaches such as Hungry Hollow, Madison, and Guesisosi, remain devoid of vegetation due to annual scour, exposure, and a lack of establishment (Fig. 4-6).



Figure 4-6. Representative photographs of two locations at which establishment and persistence of native vegetation is severely constrained by site conditions (left: downstream of County Road 87 bridge in the Hungry Hollow reach; right: Madison Reach). Photos from 2020; sites were in a similar condition in 2021, 2022, and 2023.

Conversely, other areas along Lower Cache Creek have reached an apparent successional climax as healthy, mature riparian forest and exhibit little year-to-year change (e.g., RM 17.2; Fig. 4-7). These locations are typically characterized by relatively high soil moisture with groundwater at or near the surface, as well as protection from high flows and associated scour due to relatively stable channel morphology. In other locations, assumptions about vegetation stability have actually been disproven in recent years. For example, the well-developed riparian forest habitat on the south bank at RM 21.1 was assumed in years past to represent the realistic “best-case” maximum habitat recovery that can be expected for in-channel, dynamic, gravelly portions of the Hungry Hollow, Madison, and Guesisosi reaches. In these areas, native vegetation appears to be severely constrained by high flows followed by the complete absence of surface water, gravelly soils, and near-complete exposure to the harsh summer sun. However, mature woody trees and shrubs at RM 21.1 were observed to have been significantly impacted by drought conditions in 2021, 2022, and 2023 (Fig. 4-7). Some recovery from drought was observed in 2024, however.



Figure 4-7. Healthy, stable mature riparian forest on the north bank at RM 17.2 in the Dunnigan Hills Reach (right), and drought-stressed mature riparian forest on the south bank at RM 21.1 in the Guesisosi Reach (right). Some drought recovery was observed at RM 21.1 in 2024 (photo not shown).

4.1.3 Notable Remnant Native Species

In addition to native vegetation described above, large patches of presumably remnant creeping wildrye (*Elymus triticoides*; a native perennial grass) were noted in past years along the upper terraces on the south bank of the creek between RM 13.6–13.7, RM 14.6–14.7, RM 17.6 near the south bank, on upper north banks under trees at RM 27.1 and RM 27.4, and at RM 27.7 on the north bank. In 2024, patches of creeping wildrye were confirmed to still be present at RM 13.8, and these patches could serve as native seed or propagule sources for future restoration projects. Large patches of native mugwort (*Artemisia douglasiana*) are also present in many locations along the creek, as are scattered patches of sedges (*Carex* spp.), wild rose (*Rosa californica*) and California wild grape (*Vitis californica*). Some years ago, a single buckbrush (*Ceanothus cuneatus*) shrub was found on the south edge of the Millsap property, on the north bank uplands between RM 18.4–18.5. Although it is not known if this shrub is still present, buckbrush should still be considered as a suitable species for future restoration projects. Blue elderberry (*Sambucus nigra* ssp. *caerulea*) shrubs are also abundant throughout the CCRMP area (Section 5.4; Rayburn 2017, Rayburn 2018).

4.1.4 Vegetation Monitoring

Vegetation monitoring is necessary to quantify vegetation trends (e.g., notable losses and gains in riparian habitat, shifts in habitat composition, and overall effects of the CCRMP and elimination of in-channel gravel mining). In terms of annual monitoring, the spatially-referenced field photo log updated by the Cache Creek TAC Riparian Biologist during the 2022 Creek Walk was again updated during the 2024 Creek Walk. The photo log is used as a basis during the annual Creek Walk in combination with mobile mapping applications to discern annual changes in vegetation

and habitat conditions in the CCRMP area, with photo updates and new reference locations added to document current conditions.

Acquisition of aerial photography and other data (e.g., topographic data via LiDAR) can occur annually if needed, but is required by the CCIP to be acquired every five years and after major flow events with peak flows >20,000 cfs. The County has continued to implement new methods and tools over the past decade, including UAVs, high-resolution orthophotography, multi-band imagery, and LiDAR data. It is now possible to cost effectively and reliably obtain sub-meter resolution aerial photography and topographic data for the entire CCRMP area, and these data are important components of the biological resource monitoring program. As noted above, aerial imagery and LiDAR data were last acquired in 2019 by a contractor using UAV platforms as a result of >20,000 cfs flows in winter 2018–2019. The TAC Riparian Biologist is exploring approaches for automating the classification of vegetation (versus the manual classification currently performed) from this imagery to increase efficiency.

Long-term vegetation monitoring integrates annual observations and the results of other analyses. Assessments of long-term monitoring data, leading to updated recommendations and adaptive management strategies, occur during CCRMP/CCAP updates and other similar efforts. As a component of the 2016 CCAP Update, a 20-year retrospective analysis of biological resources was performed to determine changes and trends in native and non-native vegetation, wildlife, invertebrates, and fish. A standardized methodology for long-term vegetation monitoring was developed in 2016 and presented in the final report (Yolo County 2017a) and continues to be used as of 2024.

4.1.5 Recommendations Regarding Native Vegetation

Integrating across the preceding sections, the following recommendations are made regarding native vegetation monitoring and management within the CCRMP area:

1. The standardized vegetation monitoring methodology developed in 2016 should continue to be used for subsequent assessment of changes and trends in native vegetation within the CCRMP area, in addition to the annual Creek Walk. Additional vegetation monitoring techniques, such as permanent monitoring plots, should be considered to answer priority management questions, potentially in collaboration with university researchers.
2. LiDAR data should continue to be collected whenever high-resolution aerial photography is acquired (e.g., at the minimum five-year intervals and when flows exceed 20,000 cfs).
3. Monitoring of woody vegetation damage due to beavers should continue during annual Creek Walks, and, if necessary, selective tree protection methods should be used to protect native woody vegetation especially on restoration project sites.

4. Methods for automatic classification of vegetation from remotely-sensed imagery should be explored to increase the efficiency and replicability of the process.
5. Monitoring and assessment of OHV impacts on native vegetation should receive increased attention during annual Creek Walks.

4.2 Restoration Opportunities and Observations on Current and Past Projects

4.2.1 Potential Habitat Enhancement and Restoration Sites

In general, relatively few areas along Lower Cache Creek remain available for riparian habitat expansion as most of the channel is deeply entrenched, bound by levees in some locations, subject to scour during high flow events, restricted by adjacent land uses, and/or characterized by shallow, gravelly soils underlain by relatively deep groundwater (e.g., Hungry Hollow and Madison reaches). However, a number of priority potential habitat enhancement and restoration opportunities have been identified over the past decade. A continued focus should be made on locations where active habitat enhancement or full restoration are realistically feasible, and sustainable with limited management through reliance on natural river processes. Passive restoration (e.g., control of invasive species) remains a viable approach for other areas. For active restoration projects, local ecotypic plant materials should be used, and a high degree of species diversity should be prioritized when designing planting palettes. In addition, County and Cache Creek Conservancy staff should collaborate with the Yocha Dehe Wintun Nation to develop a list of culturally-important native plant species that can be included in planting palettes for enhancement and restoration projects.

Active restoration is recommended on upper banks, terraces, and the surrounding uplands, but observations from the past four years strongly suggest that active restoration on lower banks or on the channel floor may not persist through high flows. For example, 2016–2017 high flows removed a 2010 planting of trees and grasses on the south bank at RM 20.7 in the Guesisosi Reach (Yolo County 2017b). Thus, encouraging passive restoration of native woody vegetation on lower banks and/or the channel floor (through invasive species removal, streamflow enhancement, and strategic channel maintenance projects) is likely a more cost-efficient and effective means of accelerating native vegetation recovery in these areas. The Cache Creek TAC continues to collaborate with County staff and other stakeholders on feasibility assessments regarding potential streamflow enhancement and channel maintenance projects.

One of the locations with the most potential for active habitat restoration continues to be a series of off-channel former mining pits on the north bank from approximately RM 15.0–15.4 in the Dunnigan Hills and Hoppin reaches (Fig. 4-8). Some native woody vegetation has established in

some these areas, although the understory is dominated by arundo, tamarisk, perennial pepperweed, and other invasive species. Restoration would include invasive species removal, and the planting of a native understory in addition to shrubs and trees. During high flow years, these areas are hydraulically connected to Cache Creek leading to significant inundation that should favor riparian habitat establishment. A portion of this area, described below, has been in the process of being restored by Teichert for the past five years (see Section 4.2.2) and could serve as a model for further restoration of the surrounding upstream and downstream areas.



Figure 4-8. Potential restoration sites at off-channel mining pits on the north bank from RM 15.0–15.4 in the Hoppin Reach. Photos are from 2022 and show view upstream (left) and downstream (right). Conditions were essentially unchanged in 2024.

In addition, the PG&E “Palisades” site (RM 26.9–27.0) remains a high-priority habitat restoration site that is now slated for debris removal and revegetation as has been recommended in recent annual reports. As the project proceeds, annual monitoring of the area will be a priority for contractors, the Cache Creek TAC, County staff, and Cache Creek Conservancy staff. The Millsap property (north bank at RM 18.4) also remains a good candidate for a combined restoration/public access project. Habitat restoration goals at the Millsap site could include oak woodland restoration, a native grassland understory, further control of invasive species, and the eventual establishment of public trails and interpretive features.

Other high-priority sites for habitat enhancement and restoration include upland areas on the north bank in the Capay Reach from RM 26.8–27.8 (Fig. 4-9), the Hayes “Bow-Tie” property on the north bank at RM 20.0 in the Guesisosi Reach, the Wild Wings Open Space Park on the south bank at RM 17.0 in the Dunnigan Hills Reach, the primary slough running through the Cache Creek Nature Preserve property at RM 16.1 in the Dunnigan Hills Reach, and the Correll-Rodgers pits on the south bank at RM 13.9 in the Hoppin Reach that could potentially be hydraulically reconnected to the main river channel, at least to degree to facilitate habitat restoration (Fig. 4-10). In addition, a private landowner (Capay Organic, a third-generation family-owned organic farm on the banks of Lower Cache Creek) expressed a desire in 2019 to Cache Creek Conservancy

staff to scope a habitat restoration project along the south bank at RM 27.9 – a priority area for restoration given the abundance of non-native species including arundo and tamarisk.



Figure 4-9. Potential restoration sites on upland portions of the north bank at RM 27.5 (left) and RM 27.8 (right) in the Capay Reach. Photos are from 2022, and conditions were essentially unchanged in 2024.



Figure 4-10. Potential restoration site at the Correll-Rodgers pit on the south bank at RM 13.9 in the Hoppin Reach. Photo is from 2022, and conditions were essentially unchanged in 2024 with exception of increased soil moisture and more robust understory vegetation.

4.2.2 Status of Past and Current Habitat Enhancement and Restoration Projects

Restoration projects within the CCRMP range from bank stabilization projects using native grasses and willows, mitigation plantings of woody vegetation including blue elderberry as habitat for the federally-threatened valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*), habitat enhancement through managed fire, and full restoration projects that include invasive species control, understory establishment, and planting of native shrubs and trees. These active enhancement and restoration approaches are complemented by more passive approaches including invasive species control and managed inundation from high creek flows.

In 2024, the Cache Creek TAC again observed the current state of the completed restoration project at Capay Open Space Park just downstream of the County Road 85 bridge in the Hungry Hollow reach. In 2016, a California Natural Resources Agency (CNRA) River Parkways grant application was successful for Capay Open Space Park, which included habitat restoration as a significant component. In 2021, it was observed that the project is on a trajectory for success, although the site presents unique challenges related to rocky soils and native plant establishment. However, in 2022 it was observed that a large fire (reportedly resulting from ignition during mowing) had damaged a portion of the site, including woody vegetation. The site was observed to be relatively stable and largely recovered from fire in 2023 and again in 2024.

Native grasses were planted in October 2020 on a large bank stabilization site adjacent to Granite's operations on the north bank at RM 24.5, and these grasses still appear to be persisting to some degree even under drought conditions. Previously, a 2010 planting of native grasses and shrubs on the south bank at RM 20.7 in the Guesisosi Reach was lost due to scouring high flows in winter 2016–2017. In 2019, a substantial construction project was initiated to repair the irrigation infrastructure of the Moore Siphon at RM 18.0–18.1 in the Dunnigan Hills Reach. Construction is complete, but the site has yet to be revegetated as of June 2024, although both native and non-native vegetation has continued to establish on the project site. The Cache Creek TAC also observed the wetland portion of the Cache Creek Nature Preserve on the north bank at RM 16.5 in the Dunnigan Hills Reach a year after a prescribed burn that was conducted in April 2022. In 2023, the resulting removal of thatch appears to have stimulated new wetland vegetation growth and reintroduced a degree of habitat heterogeneity that should benefit birds and other wildlife. Conditions were similar in 2024, with the wetland vegetation appearing to be thriving (Fig. 4-11).



Figure 4-11. The results of a prescribed burn of wetlands at the Cache Creek Nature Preserve at RM 16.5 in the Dunnigan Hills Reach in 2022 (left) and two years later in 2024 (right).

As mentioned above, an off-channel mining pit on the north bank at RM 15.1 is in year five of restoration by Teichert (Fig. 4-12; see also Yolo County 2018), and the *Haller/Muller Habitat Enhancement Project* has the potential to be a model for restoration of similar areas in the future (e.g., the Correll and Rodgers properties at RM 13.7). A former aggregate mine, the 3.8-acre site was reclaimed in 1998 and remains within the active floodplain of Lower Cache Creek. The relatively flat basin dominated by non-native and invasive species was regraded to create a series of terraces that were planted with diverse native overstory and understory species. A seasonal wetland should develop at the lowest grade, with native vegetation transitioning from mesic (e.g., cottonwood, willow, California blackberry) to xeric (e.g., Valley oak, blue elderberry, coyote brush) up the slope. The site will fill with at least some water during high-flow events, but will otherwise remain relatively dry for most of the year. Long-term monitoring will ensure that native vegetation successfully establishes, and that non-native and invasive species are adequately controlled. This restoration site is just to the southeast of an older Teichert reclamation site – Teichert Muller “90” – that was last observed during the 2022 Creek Walk, on which native vegetation seemed to be persisting in the face of drought conditions (Fig. 4-12).



Figure 4-12. Teichert-led restoration projects in the Hoppin Reach: the five-year old Haller/Muller Habitat Enhancement Project at RM 15.1 (2023 photo; left), and the Teichert “Muller 90” site just to the northwest (photo from 2022; right). Planted native vegetation on both project sites is persisting through sustained drought conditions.

The status of three blue elderberry mitigation sites in the Hoppin Reach was also evaluated during the 2024 Creek Walk (Fig. 4-13). As described in Section 4.4 below, blue elderberry is a special-status plant since it serves as the sole host for the federally-threatened Valley elderberry longhorn beetle (VELB). When elderberry shrubs are impacted by channel stabilization and other types of priority projects on Lower Cache Creek, mitigation is required, and new patches of elderberry shrubs are established (along with other associated native plant species) to provide suitable habitat for VELB. The first elderberry mitigation site is on the Granite Woodland Reiff property on the north bank at RM 14.5 and appeared in 2022 to be in good condition overall after being planted in 2020; conditions were assumed to be similar in 2024. A second, more recent Yolo Habitat Conservancy elderberry mitigation site was planted in late 2021 and is on the Correll property, on the south bank at RM 13.7. The condition of elderberry shrubs has been challenging to assess in past years given their seedling form and the abundance of non-native vegetation covering the site, as well as impacts from high flows in winter 2022-2023. Additional plantings have recently been conducted in higher-elevation areas, and the site seems to be in overall good condition. Increased control of non-native vegetation continues to be recommended for this site, and it is also recommended that future VELB mitigation sites be located in areas less likely to be impacted during high flow years. A third Yolo Habitat Conservancy elderberry mitigation site at RM 13.8 in the Hoppin Reach was also assessed in 2024, and the site also appears to be in overall good condition.



Figure 4-13. Elderberry mitigation sites at RM 14.5 (left; planted in 2020 and photo from 2022), RM 13.7 (center), and RM 13.8 (right).

In 2022, the Cache Creek TAC also briefly observed a small, historical tree mitigation planting on the north bank at RM 14.4 in the Hoppin Reach; most trees had established and appeared to be persisting through drought conditions.

4.2.3 Recommendations Regarding Habitat Restoration

The following recommendations are made regarding habitat restoration within the CCRMP area:

1. Priority restoration sites should continue to be the focus of grant development, planning efforts, and implementation. These sites include: the Capay Organic creek frontage (RM 27.9), the PG&E “Palisades” site (RM 26.9–27.0), Capay Open Space Park (RM 26.3), the Hayes “Bow-Tie” property (RM 20.0), the Millsap property (RM 18.5), Wild Wings Open Space Park (RM 17.0), portions of the Cache Creek Nature Preserve (RM 16.1), off-channel mining pits from RM 15.0–15.4, and the Correll and Rodgers properties (RM 13.9).
2. The TAC should prioritize allocating sufficient time during annual Creek Walks to visit and assess current and recently completed enhancement and restoration projects along Lower Cache Creek.
3. County and Cache Creek Conservancy staff should collaborate with the Yolo Habitat Conservancy, Yolo County Resource Conservation District (Yolo County RCD), Yolo County Flood Control & Water Conservation District, gravel operators, and other stakeholders to maintain a database of completed, current, and planned habitat enhancement and restoration projects within the CCRMP area. The database should include spatially-explicit project area boundaries, copies of restoration plans and other implementation details, implementation dates, performance criteria, and contact information for project implementers.
4. Native understory species (forbs, grasses, and sedges) should be included in all revegetation and restoration projects in addition to native trees and shrubs.
5. A minimum of three years of effectiveness monitoring, based on established performance criteria (e.g., at least 70% survival of woody species, at least 50% cover of herbaceous species) should be a mandatory component of any future revegetation or restoration project within the CCRMP area. If performance criteria are not achieved, remedial action should be taken on the part of the project implementer.
6. Invasive species treatment projects should be considered as habitat enhancement projects, and bundled with habitat restoration projects whenever possible to increase project footprints and impacts for grant applications.
7. Revegetation or restoration using native woody and herbaceous species should be a standard practice following invasive species treatment.
8. The long-term resilience of revegetation and restoration projects within or adjacent to the active channel should be carefully considered prior to implementation, since such projects can be negatively impacted or completely removed by high flows.
9. Opportunities to increase spring and summer surface flows should continue to be explored to accelerate native vegetation recovery (e.g., passive restoration).

10. Strategic implementation of channel maintenance projects could also accelerate vegetation recovery by increasing flow capacity and promoting vegetation establishment.
11. County and Cache Creek Conservancy staff should collaborate with the Yocha Dehe Wintun Nation to develop a list of culturally-important native plant species that can be included in planting palettes for revegetation and restoration projects.

4.3 Invasive Plant Species Monitoring and Management

4.3.1 Distribution and Extent of Non-Native and Invasive Plant Species

Invasive arundo, tamarisk, and Ravenna grass (*Saccharum ravennae*) have long been priority species for control efforts within the CCRMP area due to their well-documented negative impacts on biological resources including displacement of native vegetation, degradation of wildlife habitat, high rates of evapotranspiration that reduce available soil moisture, fine sediment accumulation, and flow redirection. On-going mechanical and chemical treatment of these species has been the focus of the Cache Creek Conservancy's Invasive Weed Control (IWC) Program since 2006. Prior to 2016, there was not a framework for quantitative assessment of the IWC Program's effectiveness at reducing these three priority invasive species due to a lack of spatial data on the species' distribution and extent. In addition, it was unclear if additional invasive species should be prioritized for treatment as recommended in annual reports dating back to the early 2000s. In 2016, the Cache Creek TAC Riparian Biologist completed a comprehensive invasive species mapping and prioritization project to address these data and information gaps. The goal of this project was to assess the distribution and extent of these species to inform adaptive management of the creek's biological resources. Details are available in the full report (Rayburn 2016a) and are summarized in the 2017 Cache Creek Annual Status Report (Yolo County 2017b).

Results of the 2016 project confirmed that arundo, tamarisk, and Ravenna grass were still found throughout the CCRMP area in the form of (1) resprouts from previously-treated plants and patches, (2) newly-established plants that likely resulted from propagules dispersed downstream from large patches above Capay Dam, (3) plants and patches in secluded locations away from the main channel, and (4) large stands on properties to which access has not been granted by landowners. Results also supported the expansion of the Tier 1 (high priority) invasive species list for Lower Cache Creek to include Himalayan blackberry (*Rubus armeniacus*), perennial pepperweed, poison hemlock (*Conium maculatum*), bull thistle (*Cirsium vulgare*), milk thistle (*Silybum marianum*), Italian thistle (*Carduus pycnocephalus*), tree of heaven (*Ailanthus altissima*), tree tobacco (*Nicotiana glauca*), and yellow starthistle (*Centaurea solstitialis*).

The recommendation was also made to create a second tier (medium priority) of species including barb goatgrass (*Aegilops triuncialis*), common teasel (*Dipsacus fullonum*), edible fig

(*Ficus carica*), fennel (*Foeniculum vulgare*), medusahead (*Elymus caput-medusae*), purple loosestrife (*Lythrum salicaria*), and yellow flag iris (*Iris pseudacorus*), as well as a third tier (lower priority) of species including eucalyptus (*Eucalyptus* spp.), fan palm (*Washingtonia robusta*), oleander (*Nerium oleander*), pampas grass (*Cortaderia selloana*), and stinkwort (*Dittrichia graveolens*). Other non-native species that occur within the CCRMP, but which have not yet been identified as priorities for control include Russian thistle (*Salsola tragus*), white horehound (*Marrubium vulgare*), various filaree species (*Erodium* spp.), shortpod mustard (*Hirschfeldia incana*), and various other non-native grasses including smilo grass (*Stipa miliacea* var. *miliacea*), wild oat (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), and wild rye (*Festuca perennis*). These species ideally should be controlled when and where possible, but are so widespread that elimination or even containment within the CCRMP is likely infeasible in many locations.

Through a separate contract from the Yolo County RCD, the Cache Creek TAC Riparian Biologist then conducted a similar project along the five river miles immediately upstream of Capay Dam (Rayburn 2016b). Downstream dispersal of invasive species from this area had been identified as a contributing factor to invasive species abundance in the CCRMP area. No large-scale invasive species control had been implemented in this area, so the focus of this second project was to map priority invasive species to inform planning and funding of control efforts. Extensive patches of arundo, tamarisk, and Ravenna grass were mapped during this project, and the data continue to serve as impetus for grant development to address this issue.

In 2018, the primary observation related to invasive species during the Creek Walk was that arundo and tamarisk were re-establishing in many locations on or adjacent to the channel floor beginning at RM 22.9 and continuing downstream (Yolo County 2018). At some locations, these new plants occurred in isolation, while in other locations they were intermixed with newly establishing native vegetation. Numerous areas of significant reestablishment were noted, and purple loosestrife was also observed to be more abundant than ever before, especially between RM 17.6–18.0 and RM 27.9–28.1. Other priority invasive species such as perennial pepperweed, Himalayan blackberry, barb goatgrass, and various thistles were commonly observed throughout the seven reaches of Lower Cache Creek as in years past. Two additional species, purple starthistle (*Centaurea calcitrapa*) and canary grass (*Phalaris* spp.), were also recommended to be added to the medium priority tier of the three-tier invasive species priority framework based on baseline assessments for the *Haller/Muller Restoration Project* (Section 4.2.1).

In 2019, it was observed that high flows during winter 2018–2019 had minimal negative impacts on arundo, tamarisk, and other invasive species within or along the banks of the main channel. In fact, observations showed that non-native and invasive species had increased substantially since 2018 within and adjacent to the main channel in many reaches (Yolo County 2019). For example, beginning at the Capay Dam, both new recruits and mature plants of arundo and tamarisk were observed as isolated plants and larger patches in many locations on the channel

floor and adjacent banks through all seven reaches of Lower Cache Creek. Increased establishment and expansion of these two species was also noted in 2018, and high flows in winter 2018–2019 may have actually promoted further recruitment and growth of these two priority species. Included in the 2019 annual report was a summary of the priority areas observed in 2019 that needed treatment to control expanding patches of either arundo and tamarisk. New recruits and mature individuals of Ravenna grass were also observed in 2019 to be widespread in the Dunnigan Hills Reach. These three species are intended to be the priority targets of the IWC program. Other key observations made in 2019 included that:

- Purple loosestrife was more abundant than observed in past years, both in areas documented previously and in new locations;
- Himalayan blackberry and common teasel were present in numerous locations along Lower Cache Creek including the Cache Creek Nature Preserve where treatment should be prioritized;
- Tree tobacco was also abundant along Lower Cache Creek, especially on disturbed areas and eroding banks;
- Water primrose (*Ludwigia* spp.; likely creeping water primrose, *Ludwigia peploides*) was much more abundant than in years past;
- Barbed goatgrass and medusahead patches were still present where rangelands grade into the CCRMP area within the Capay reach; and,
- Numerous other species listed on the CCRMP priority list (Table 4-1) remain common through the CCRMP area, including bull thistle, Italian thistle, milk thistle, perennial pepperweed, poison hemlock, and yellow starthistle.

Based on observations of non-native and invasive species made in 2018 and 2019, new recommendations were made in the 2019 Annual Report to:

- Implement a monitoring and treatment program (including off-channel areas) for purple loosestrife - an aggressive invader of wetlands and riparian areas - before the species spreads further within the CCRMP area;
- Add water primrose as a medium-priority species to the three-tier non-native and invasive species priority list (Table 4-1); and
- Conduct a capacity assessment of the Conservancy's IWC program to determine if the program is adequately resourced and structured to meet present and future needs related to non-native and invasive species management within the CCRMP area.

The three-tier list of priority non-native and invasive species was also updated to reflect California Invasive Species Council (Cal-IPC) and California Noxious Status rankings for each species, in addition to their rank within the CCRMP framework (Table 4-1). No additional updates to the list are proposed in 2024.

Table 4-1. Current (2024) table of priority non-native and invasive species within the CCRMP area.

Common Name	Scientific Name	CCRMP Rank	Cal-IPC Rank ¹	California Noxious Status ²
Arundo	<i>Arundo donax</i>	High	High	-
Bull thistle	<i>Cirsium vulgare</i>		Moderate	-
Himalayan blackberry	<i>Rubus armeniacus</i>		High	-
Italian thistle	<i>Carduus pycnocephalus</i>		Moderate	C list
Milk Thistle	<i>Silybum marianum</i>		Limited	-
Perennial pepperweed	<i>Lepidium latifolium</i>		High	B list
Poison hemlock	<i>Conium maculatum</i>		Moderate	-
Ravenna grass	<i>Saccharum ravennae</i>		Moderate	-
Tamarisk	<i>Tamarix</i> spp.		High	-
Tree of heaven	<i>Ailanthus altissima</i>		Moderate	-
Tree tobacco	<i>Nicotiana glauca</i>		Moderate	-
Yellow starthistle	<i>Centaurea solstitialis</i>		High	C list
Barbed goatgrass	<i>Aegilops triuncialis</i>	Medium	High	B list
Canary grass	<i>Phalaris aquatica</i>		Moderate	-
Common teasel	<i>Dipsacus fullonum</i>		Moderate	-
Edible fig	<i>Ficus carica</i>		Moderate	-
Fennel	<i>Foeniculum vulgare</i>		Moderate	-
Medusahead	<i>Elymus caput-medusae</i>		High	C list
Purple loosestrife	<i>Lythrum</i> spp.		High	B list
Purple starthistle	<i>Centaurea calcitrapa</i>		Moderate	B list
Water primrose	<i>Ludwigia</i> spp.		High	-
Yellow flag iris	<i>Iris pseudacorus</i>		Limited	-
Eucalyptus	<i>Eucalyptus</i> spp.	Low	Limited	-
Fan palm	<i>Washingtonia robusta</i>		Moderate	-
Oleander	<i>Nerium oleander</i>		-	-
Pampas grass	<i>Cortaderia selloana</i>		High	-
Stinkwort	<i>Dittrichia graveolens</i>		Moderate	-

¹ <https://www.cal-ipc.org/plants/inventory/>

² <https://plants.usda.gov/java/noxious?rptType=State&statefips=06>

In 2021, observations made during the Creek Walk confirmed that non-native and invasive species remain abundant along Lower Cache Creek. Established stands and newly-recruiting individuals of arundo and tamarisk were observed in all seven reaches. Ravenna grass was less common but still abundant in places with the Capay, Hungry Hollow, Guesisosi, Dunnigan Hills, and Hoppin reaches. Purple loosestrife was not observed (likely due to the timing of flowering), but was presumably still present along Lower Cache Creek. Thick patches of tree tobacco were also observed in some locations, as in years past.

In 2022, observations made during the Creek Walk once again confirmed that non-native and invasive species remained abundant along Lower Cache Creek; however, it was also observed that significant progress is being made on invasive species control by the Cache Creek Conservancy-especially regarding arundo and tamarisk. For example, large stands of arundo have been treated in the Capay Reach (e.g., RM 27.0) and were observed to be dead or dying, and many stands of tamarisk were observed to be in similar condition in the Guesisosi Reach (e.g., RM 20.9). Poison hemlock, pepperweed, and non-native thistles had also been treated at a heavily invaded site at RM 15.7 in the Hoppin Reach. These were encouraging developments, as invasive species management remains one of the most important strategies for promoting native vegetation recovery, enhancing habitat for wildlife, and preventing vegetative obstructions to channel flow.

During the 2023 Creek Walk, it was observed that non-native and invasive species remained abundant along Lower Cache Creek. In addition, many patches of invasive species appeared to be once again spreading, especially tamarisk. Individuals and patches of arundo, tamarisk, Ravenna grass, and other invasive species were commonly observed in many locations across the seven CCRMP creek reaches, with specific locations documented in the photo log. In addition, while many patches of treated arundo and tamarisk observed in 2022 were still dead in 2023, some were observed to be resprouting. Both of these species are known to at times require several subsequent years of herbicide application to ensure eradication. A single individual purple loosestrife plant was also observed at RM 18.0 in the Dunnigan Hills Reach.

In 2024, similar observations were made during the annual Creek Walk regarding non-native and invasive species along Lower Cache Creek. While the evidence of increased treatment of arundo and other invasive species was apparent (Fig. 4-14), individuals and patches of arundo, tamarisk, and other invasive species were commonly observed in many locations across the seven CCRMP creek reaches (Fig. 4-15). In particular, tamarisk seems to be spreading rapidly in many areas and should be prioritized for treatment. Large, mature stands of both arundo and tamarisk are also persistent in many locations (e.g., RM 17.3-17.5 in the Dunnigan Hills Reach). In addition, purple loosestrife was more often observed than in years past, with flowering plants seen in the Hungry Hollow (RMs 26.2, 26.1, and 25.7) and Dunnigan Hills (RM 18.3) reaches. As the continued persistence and spread of invasive species is likely the single greatest constraint to recovery of native plant communities along Lower Cache Creek (other than soil moisture), it is strongly

recommended that significant invasive species management continue to be prioritized to protect and enhance biological resources within the CCRMP.



Figure 4-14. Treated stands of invasive arundo at RM 28.0 in the Capay Reach (left) and RM 19.3 in the Guesisosi Reach (right).



Figure 4-15. Stands of invasive arundo and tamarisk at RM 26.8 in the Capay Reach (top), Ravenna grass at RM 17.2 in the Dunnigan Hills Reach (bottom left), and purple loosestrife at RM 26.1 in the Hungry Hollow Reach (bottom right).

4.3.2 Recommendations for Invasive Plant Species Management

The following recommendations are made to balance cost-effective non-native and invasive species monitoring and management with the goals and objectives associated with CCRMP implementation.

1. Tier 1 (high priority) species should continue to be prioritized for treatment based on their extent, distribution, and impacts. Treatment of tier 2 (medium priority) and tier 3 (lower priority) species should be conducted when and where feasible.
2. Cache Creek Conservancy and County staff should jointly conduct an annual capacity assessment of the Conservancy’s IWC program to determine if the program is adequately structured and resourced to meet present and future needs related to non-native and invasive species management within the CCRMP area.
3. The annual “Creek Spray” program and other IWC program efforts should be expanded over time to include additional priority species (e.g., purple loosestrife) and areas not immediately adjacent to the main channel. Spatially-explicit methods should be used to monitor the location and status (e.g., treated or not) of non-native and invasive species, and the database should be updated annually.
4. Woody and wood-like biomass of treated invasive species should be either burned on site or transported out of the area whenever feasible. Arundo and tamarisk biomass does not readily degrade after treatment and creates dense debris piles that have inhibited native vegetation establishment in some areas and also mobilized during high flows.
5. Invasive species treatment should be followed as soon as feasible by revegetation of treated sites using local native species to reduce erosion and re-invasion of invasive species. Passive restoration – treating invasive species and assuming that native vegetation will establish without the need for seeding or planting – is challenging along Lower Cache Creek because of the abundance of invasive species that readily colonize disturbed areas, such as perennial pepperweed.
 - a. Besides native trees (cottonwood, black willow, box elder, Valley oak, buckeye) and shrubs (e.g., wild rose, blue elderberry, quailbush), a cost-effective mix of competitive native herbaceous species should be developed for revegetation or restoration of treated areas. Such a mix would be kept in bulk supply for widespread application, and would likely include creeping wildrye, mugwort, various sedges or rushes, pollinator-supporting species such as milkweeds, and other species.
 - b. Removal of invasive species that provide resources for native wildlife (e.g., tree tobacco, which hummingbirds utilize as nectar resources) should be balanced with

replacement by local native species that provide the same wildlife benefits (e.g., hummingbird sage).

6. Comprehensive field-based monitoring of invasive species should be regularly conducted across the CCRMP area using methods summarized in Rayburn (2016a). This scale of monitoring would allow for a broader evaluation of the effectiveness of invasive species control efforts across the region, as well as identification of new priority species or areas in which rapid spread of invasive species is occurring. Alternatively, reach-scale monitoring may also suffice and could be aligned with annual treatment of priority reaches.
7. Invasive species mapping and treatment efforts within the CCRMP area should be leveraged to support additional mapping and treatment efforts upstream of Capay Dam to target source populations that continue to disperse downstream to Lower Cache Creek. Opportunities for collaboration with the Yolo County Resource Conservation District (Yolo RCD), the Bureau of Land Management, and private landowners (e.g., the Yocha Dehe Wintun Nation) on invasive species mapping and treatment projects should continue to be prioritized.

4.4 Special-Status Species

4.4.1 Observations of Special-Status Species and Additional Data

Special-status species are those classified as California State Species of Species Concern (SSC), State Fully Protected (SFP), State Threatened (ST), State Endangered (SE), Federally Threatened (FT), and Federally Endangered (FE). A wide range of special-status species have been observed on Lower Cache Creek, including birds, herpetofauna (amphibians and reptiles), mammals, insects, and fish (Table 4-2). The master list of special-status species observed within the CCRMP area was last updated in 2018 with the addition of six bird species (Table 4-2). Five are special status in California: American white pelican (*Pelecanus erythrorhynchos*; [SSC]), Black tern (*Chlidonias niger*; SSC), least bittern (*Ixobrychus exilis*; SSC), willow flycatcher (*Empidonax traillii*; SE), and yellow breasted chat (*Icteria virens*; SSC). Olive-sided flycatcher (*Contopus cooperi*; SSC) was previously observed for Lower Cache Creek, but had not been added to the special-status species list until 2018. No additional species-status species were observed or added to the list since 2018, but a thorough review is slated for 2024 or 2025.

Table 4-2. Master list of special-status species observed within the CCRMP area.

Common Name	Scientific Name	Status ¹
Birds		
American white pelican	<i>Pelecanus erythrorhynchos</i>	SSC
Bald eagle	<i>Haliaeetus leucocephalus</i>	SFP, SE
Bank swallow	<i>Riparia</i>	ST
Black tern	<i>Chlidonias niger</i>	SSC
Burrowing owl	<i>Athene cunicularia</i>	SSC
Golden eagle	<i>Aquila chrysaetos</i>	SFP
Least bittern	<i>Ixobrychus exilis</i>	SSC
Loggerhead shrike	<i>Lanius ludovicianus</i>	SSC
Long-eared owl	<i>Asio otus</i>	SSC
Northern harrier	<i>Circus cyaneus</i>	SSC
Olive-sided flycatcher	<i>Contopus cooperi</i>	SSC
Song sparrow ²	<i>Melospiza melodia</i>	SSC
Swainson's hawk	<i>Buteo swainsoni</i>	ST
Tricolored blackbird	<i>Aegelaius tricolor</i>	SFP, SSC
Vaux's swift	<i>Chaetura vauxi</i>	SSC
White-tailed kite	<i>Elanus leucurus</i>	SFP
Willow flycatcher	<i>Empidonax traillii</i>	SE
Yellow-breasted chat	<i>Icteria virens</i>	SSC
Yellow-headed blackbird	<i>Xanthcephalus xanotocephalus</i>	SSC
Yellow warbler	<i>Setophaga petechia</i>	SSC
Herpetofauna		
California red-legged frog	<i>Rana aurora draytonii</i>	FT, SSC
Western pond turtle	<i>Emys marmorata</i>	SSC
Mammals		
American badger	<i>Taxidea taxus</i>	SSC
Ring-tailed cat	<i>Bassariscus astutus</i>	SFP
Invertebrates		
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT
Fish		
California roach	<i>Hesperoleucus symmetricus</i>	SSC
Chinook salmon ³	<i>Oncorhynchus tshawytscha</i>	SSC
Hardhead	<i>Mylopharodon conocephalus</i>	SSC
Sacramento hitch	<i>Lavinia exilicauda</i>	SSC

¹ ST = State threatened; SE = State endangered; SSC = California bird species of special concern; SFP = State fully protected species; FT = Federally threatened; FE = Federally endangered

² "Modesto" population only

³ Limited to historical observations; see Moyle et al. (1995) and Moyle and Ayers (2000)

As in years past, Swainson's hawks (*Buteo swainsoni*; ST; Fig. 4-16) were frequently observed during the 2024 Creek Walk in six of the seven reaches (Capay, Hungry Hollow, Madison, Guesisosi, Dunnigan Hills, and Hoppin). In addition, as in 2022 and 2023, Swainson's hawks were observed to be nesting at a location on the Cache Creek Nature Preserve in the Dunnigan Hills Reach. Bald eagles (*Haliaeetus leucocephalus*; SFP, SE; Fig. 4-16) were observed at the Capay Dam (as in previous years) and also in the Hungry Hollow Reach. A large flock of American white pelicans (*Pelecanus erythrorhynchos*; SSC) was observed flying overhead in the Hoppin Reach (Fig. 4-17).



Figure 4-16. Special-status species observed during the 2023 Creek Walk included bald eagles (*Haliaeetus leucocephalus*; left) and Swainson's hawks (*Buteo swainsoni*; right).



Figure 4-17. A flock of American white pelicans (*Pelecanus erythrorhynchos*) was observed during the 2024 Creek Walk flying overhead in the Hoppin Reach.

Notably, at least five active riparian bank swallow (*Riparia riparia*; ST) colonies were observed during the 2024 Creek Walk, which represented the greatest number of colonies and holes observed on Lower Cache Creek for at least the last 10 years. A large colony (approx. 190 holes) was observed on the south bank at RM 15.6 in the Hoppin Reach, with a smaller (approx. 25 holes) colony just downstream that could have been an extension of the former. Likewise, an additional large colony (approx. 100 holes) was observed several hundred feet further downstream on the south bank at RM 15.5 (Fig. 4-18), and all three locations may have been part of a single colony. An additional colony (approx. 40 holes) was observed on the south bank at RM 14.6 in the Hoppin Reach, and lastly a very large (approx. 250 holes) colony was observed on the south bank at RM 14.2 in the Hoppin Reach. Other potential bank swallow nesting locations were observed and evaluated beginning at the south bank at RM 26.4 in the Hungry Hollow Reach and downstream at numerous locations including north and south banks from RM 22.8–23.4 in the Madison Reach, the north bank at RM 20.5 in the Guesisosi Reach, the south bank at RM 19.2 in the Guesisosi Reach, north and south banks from RM 18.2–18.7 in the Dunnigan Hills Reach, north and south banks from RM 15.4–15.7 in the Hoppin Reach, and north and south banks from RM 15.1–15.3 in the Hoppin Reach. Biologists from the Cache Creek Conservancy once again assisted with assessing potential bank swallow colony locations, verifying bank swallow presence, and estimating the number of burrows, which was greatly appreciated.

In terms of factors potentially having negative impacts on bank swallows along Lower Cache Creek, significant OHV activity was observed to have specifically occurred adjacent to multiple occupied bank swallow colonies at RMs 14.2, 15.4, and 15.7 in the Hoppin Reach, as well as adjacent to potential bank swallow habitat (suitable but unoccupied) at RM 14.7 in the Hoppin Reach. This level of OHV activity adjacent to the breeding habitat of a sensitive, State threatened bird is concerning and could be having adverse effects on bank swallow reproduction. Also, new bank modifications and hardening actions were once again observed on the south bank from RM 25.3–23.5 in the Hungry Hollow Reach that would likely prevent bank swallows from establishing an active colony, although the habitat was generally suitable otherwise.



Figure 4-18. A large, active bank swallow (*Riparia riparia*) colony on the south bank at RM 15.4 in the Hoppin Reach observed during the 2024 Creek Walk.

Western pond turtles (*Emys marmorata*; SSC) were observed during the 2024 Creek Walk at deeper pools at RM 28.2 in the Capay Reach, and at RM 19.4 and RM 18.9 in the Guesisosi Reach. No special-status species of fish were observed during the 2024 Creek Walk; however, any fish observations made during Creek Walks are opportunistic and made in passing. However, in May 2024 four adult Chinook salmon (*Oncorhynchus tsawytscha*; SSC) carcasses of an unknown run were found along Lower Cache Creek in the Hungry Hollow Reach, approximately two miles below the Capay Diversion Dam. This is only the second record of Chinook salmon within the CCRMP/CCAP area since the program's inception; the previous record was from 2000. Both

observations likely represent individuals that strayed from the Sacramento River into Cache Creek via the Yolo Bypass during high flows.

As summarized in the 2016 Annual Report, the Cache Creek TAC Riparian Biologist mapped all blue elderberry shrubs throughout the CCRMP from 2015–2016 (Yolo County 2016, Rayburn 2017, Rayburn 2018). Elderberry shrubs are a special-status plant because they serve as the sole host for the federally-threatened Valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*). Over 10,000 elderberry shrubs were mapped within the CCRMP area and included seedlings, resprouts, mature shrubs, and older treelike plants. Numerous seedlings, often found under the canopies of larger elderberry shrubs, strongly suggested that the elderberry population is increasing. Most elderberry shrubs were found on benches and upper terraces, with only a few scattered shrubs on the channel floor. No significant observations of elderberry shrubs were noted in 2024, beyond evaluation of mitigation plantings (Section 4.2.2). In 2022, several elderberry shrubs located on or near the channel floor were observed to be severely stressed or dying as a result of drought conditions (e.g., at RM 15.4 in the Hoppin Reach).

4.4.2 Recommendations Regarding Special-Status Species

Similar to previous years, the following recommendations are made regarding special-status species in the CCRMP area:

1. Opportunities for expanded inventory and monitoring of common and special-status wildlife, invertebrate, and fish species should be explored to provide a more complete assessment of biological resources, potentially in collaboration with university researchers.
 - a. Species of particular interest include birds (bank swallow, loggerhead shrike, Northern harrier, Swainson’s hawk, various owls, white-tailed kite, and yellow warbler), mammals (American badger, bobcat, Columbian black-tailed deer, coyote, mountain lion, ringtail, river otter, and Sacramento Valley red fox), reptiles (Western pond turtle), invertebrates (VELB), and fish (California roach, hardhead, and Sacramento hitch).
 - b. Potential monitoring methods include game camera networks, track plates, point count or transect surveys for nesting birds, native fish surveys, and telemetry (e.g., radio collars or GPS collars).
2. All observations of special-status species should be logged annually by the Cache Creek TAC Riparian Biologist in the California Natural Diversity Data Bank (CNDDDB; <https://www.wildlife.ca.gov/Data/CNDDDB>).

3. Opportunities to increase surface flows in Lower Cache Creek should be explored, since increased flows should benefit Western pond turtle and other special-status species in addition to native vegetation.

4.5 Additional Biological Resource Observations

Including special-status species described above, a total of 55 unique bird species were observed during the 2024 Creek Walk (Table 4-3; Fig. 4-19). In addition to Swainson's hawks and bald eagles, four additional raptor species were observed: barn owl (*Tyto alba*; dead individual) in the Madison Reach, great horned owl (*Bubo virginianus*) in the Madison Reach, osprey (*Pandion haliaetus*) in the Dunnigan Hills Reach, and red-tailed hawks (*Buteo jamaicensis*) in all seven reaches.

Cliff swallows (*Petrichelidon pyrrhonota*) and swallow nests were once again present at the Capay Dam and under the County Road 85, 87, 94B, and Interstate 505 bridges as in years past, and barn swallows (*Hirundo rustica*), northern rough-winged swallows (*Stelgidopteryx ruficollis*), and tree swallows (*Tachycineta bicolor*) were also observed during the 2024 Creek Walk. Numerous other songbirds were also observed (Table 4-3), including Anna's hummingbird (*Calypte anna*), acorn woodpecker (*Melanerpes formicivorus*), ash-throated flycatcher (*Myiarchus cinerascens*), belted kingfisher (*Megaceryle alcyon*), blue grosbeak (*Passerina caerulea*), Bullock's oriole (*Icterus bullockii*), lesser goldfinch (*Spinus psaltria*), marsh wren (*Cistothorus palustris*), song sparrow (*Melospiza melodia*), and wood duck (*Aix sponsa*).

Other bird species of interest (Fig. 4-20) included black-crowned night heron (*Nycticorax nycticorax*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), green heron (*Butorides virescens*), and lesser nighthawk (*Chordeiles acutipennis*). As in 2023, more lesser nighthawks were again observed in a greater number of locations compared to years prior to 2022, which was potentially a result of the significant decrease in OHV traffic. However, OHV tracks were also observed in 2024 in areas where multiple lesser nighthawks were observed. Also, as in 2023, OHV tracks were once again observed adjacent to an occupied killdeer (*Charadrius vociferus*) nest with both eggs and new hatchlings. Both killdeer and lesser nighthawks are native ground-nesting birds that are also sensitive to vehicle use and other human activities that can disturb, injure, or kill both juvenile and adult birds. If OHV use continues to increase along Lower Cache Creek, there is the potential for negative impacts on native birds. As in years past, Cache Creek Conservancy biologists and experienced volunteers that participated in the 2024 Creek Walk greatly increased the number of bird observations that were made, and their contributions were much appreciated.

Table 4-3. The 55 unique bird species observed during the 2024 Creek Walk.

Acorn woodpecker	Great-tailed grackle
American pelican	Green heron
Anna’s hummingbird	House finch
Ash-throated flycatcher	House sparrow
Bald eagle	House wren
Barn owl	Killdeer
Barn swallow	Lesser goldfinch
Belted kingfisher	Lesser nighthawk
Bewick’s wren	Mallard
Black phoebe	Mourning dove
Black-crowned night heron	Northern flicker
Blue grosbeak	Northern mockingbird
Brewer’s blackbird	Northern rough-winged swallow
Brown-headed cowbird	Nuttall’s woodpecker
Bullock’s oriole	Osprey
Bushtit	Red-tailed hawk
California quail	Red-winged blackbird
California scrub-jay	Snowy egret
California towhee	Song sparrow
Cliff swallow	Spotted towhee
Common raven	Swainson’s hawk
Double-crested cormorant	Tree swallow
Downy woodpecker	Turkey vulture
Eurasian collared dove	Western kingbird
European starling	White-breasted nuthatch
Great blue heron	Wild turkey
Great egret	Wood Duck
Great horned owl	



Figure 4-19. Various native bird species observed during the 2024 Creek Walk. Left column, top to bottom: ash-throated flycatcher (*Myiarchus cinerascens*), California scrub jay (*Aphelocoma californica*), and great blue heron (*Ardea herodias*). Center column, top to bottom: black-crowned night heron (*Nycticorax nycticorax*), black phoebe (*Sayornis nigricans*), and great horned owl (*Bubo virginianus*). Right column, top to bottom: lesser nighthawk (*Chordeiles acutipennis*), great egret (*Ardea alba*), and northern flicker (*Colaptes auratus*) feeding young.

Other wildlife species observed during the 2024 Creek Walk included beaver (*Castor canadensis*), black-tailed jackrabbit (*Lepus californicus*), Columbian black-tailed deer (*Odocoileus hemionus columbianus*), coyote (*Canis latrans*), desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Otospermophilus beecheyi*), river otter (*Lontra canadensis*), non-native bullfrog (*Lithobates catesbeianus*), Pacific tree frog (*Pseudacris regilla*), Western fence lizard (*Sceloporus occidentalis*), Western toad (*Anaxyrus* spp., likely California toad), and non-native wild pig (*Sus scrofa*). In addition to OHV activity noted elsewhere in the 2024 Annual Report, OHV tracks were also observed in the Rio Jesus Maria Reach running through pools and cobbles with dense populations of young adults and tadpoles of Western toads (*Anaxyrus* spp.) – with disturbance, injury, and/or mortality a likely outcome. Bobcats (*Lynx rufus*) were not observed during the 2024 Creek Walk but are commonly observed at the Cache Creek Nature Preserve and along Lower Cache Creek. California black bears (*Ursus americanus californiensis*) are also occasionally spotted in the area, including a 2022 siting of a bear near the town of Capay. Several fish species were also observed during the 2024 Creek Walk, including bluegill (*Lepomis macrochirus*),

common carp (*Cyprinus carpio*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), and mosquito fish (*Gambusia affinis*). In January 2024, researchers from the University of California Davis observed at least one native Sacramento sucker (*Catostomus occidentalis*) along with a variety of nonnative fish during a nighttime snorkeling and filming project near the Cache Creek Nature Preserve in the Dunnigan Hills Reach.

Regarding beaver, one of the most notable observations during the 2022 Creek Walk was the significant increase in beaver activity beginning with a few downed trees at RM 20.5 in the Guesisosi Reach and continuing downstream to the Rio Jesus Maria Reach. In 2022, beaver dams and associated pools were observed at RMs 18.9 and 19.7 in the Guesisosi Reach, frequently within the Dunnigan Hills Reach (in which a beaver lodge was also observed), and at RM 15.8 in the Hoppin Reach. None of these beaver dams were observed to be creating adverse conditions, nor were beaver impacts on woody vegetation overly harmful. Conversely, the deep pools and pool-and-riffle complexes formed by these dams were observed to be providing habitat for fish, amphibians including western pond turtle, a wide variety of birds including green and great blue herons, and mammals including black-tailed deer. It was noted that pools resulting from beaver dams may serve as the sole source of available water for wildlife in warmer months, and may also be maintaining soil moisture for native plant species. The potential that beaver pools were contributing to groundwater recharge was also noted. It was concluded that was very likely that the significant decrease in OHV activity resulting from new restrictions was resulting in the dramatic increase in beaver dams and resulting pools, as OHV damage to beaver dams has been a frequent occurrence over at least the last decade. This was identified as a positive factor influencing the continued recovery of biological resources within the CCRMP, which would be closely monitored by the Cache Creek TAC in the years to come.

Observations made during the 2023 Creek Walk further reinforced these conclusions regarding the relationship between beaver, native vegetation, available surface water, OHV use, other wildlife, and potential groundwater recharge. In 2023, both beaver and beaver dams were observed at a frequency similar to 2022, with dams observed beginning at RM 19.4 in the Guesisosi Reach and then at RMs 18.6, from 18.0–18.1, 17.8, 17.6, and from 17.2–17.3. None of these beaver dams were observed to be creating adverse flow conditions, nor were beaver impacts on woody vegetation overly harmful. Pools resulting from beaver dams were observed to be frequently used by native wildlife, and pools seemed to be having a positive impact on surrounding native vegetation. No OHV damage to beaver dams was observed, nor was any reported by Cache Creek Conservancy staff.

Similar observations were made during the 2024 Creek Walk, with potential beaver dams observed as far upstream as the Capay Reach below the Capay Dam at RM 28.2 and just downstream at RM 26.8. The small size of the potential dams, smaller diameter of the logs and branches piled together, and obscurement from dense vegetation prevented confirmation that these structures were truly beaver dams, but they appeared to be so and would represent the

furthest upstream observations of beaver dams for at least 10 years. Beaver dams were confidentially observed in the Dunnigan Hills Reach at RM 17.9 and at RM 17.3, where a complex of dams and pools was observed (Fig. 4-20). As in 2023, none of these beaver dams were observed to be creating adverse flow conditions, nor were beaver impacts on woody vegetation overly harmful. Pools resulting from beaver dams were again observed to be frequently used by native wildlife, and pools seemed to be having a positive impact on surrounding native vegetation. No OHV damage to beaver dams was observed, nor was any reported by Cache Creek Conservancy staff.



Figure 4-20. Beaver dams and resulting pools observed during the 2024 Creek Walk at RM 17.3 (left) and, RM 17.9 (right) in the Dunnigan Hills Reach.

4.6 References

Rayburn, A.P. 2016a. Lower Cache Creek Invasive Species Mapping and Prioritization Project. Prepared for the Cache Creek Conservancy.

Rayburn, A.P. 2016b. Capay Valley Invasive Species Mapping and Prioritization Project. Prepared for the Yolo County Resource Conservation District.

Rayburn, A.P. 2017. Abundance and distribution of blue elderberry (*Sambucus nigra* ssp. *caerulea*) on lower Cache Creek. Prepared for the Yolo County Administrator's Office.

Rayburn, A.P. 2018. Status and distribution of blue elderberry (*Sambucus nigra* ssp. *caerulea*) on lower Cache Creek: implications for adaptive floodplain management. *San Francisco Estuary and Watershed Science* 16(3).

Yolo County. 2016. 2016 Cache Creek Annual Status Report. Prepared by the Cache Creek Technical Advisory Committee for the Yolo County Administrator's Office.

Yolo County. 2017a. 2017 Technical Studies and 20-year Retrospective for the Cache Creek Area Plan. Prepared for the Yolo County Administrator's Office.

Yolo County. 2017b. 2017 Cache Creek Annual Status Report. Prepared by the Cache Creek Technical Advisory Committee for the Yolo County Administrator's Office.

Yolo County. 2018. 2018 Cache Creek Annual Status Report. Prepared by the Cache Creek Technical Advisory Committee for the Yolo County Administrator's Office.

Yolo County. 2019. 2019 Cache Creek Annual Status Report. Prepared by the Cache Creek Technical Advisory Committee for the Yolo County Administrator's Office.

Yolo County. 2020. 2020 Cache Creek Annual Status Report. Prepared by the Cache Creek Technical Advisory Committee for the Yolo County Administrator's Office.

Yolo County. 2021. 2021 Cache Creek Annual Status Report. Prepared by the Cache Creek Technical Advisory Committee for the Yolo County Administrator's Office.

Yolo County. 2022. 2022 Cache Creek Annual Status Report. Prepared by the Cache Creek Technical Advisory Committee for the Yolo County Administrator's Office.

5. Status of Prior Recommendations

Beginning in 2011, the Cache Creek Annual Status Report has provided a prioritized list (high, medium, and low) of programmatic and channel improvement recommendations. These recommendations are based on the geomorphic, hydrologic, and biological assessments of Cache Creek and are pursuant to the goals, policies, and actions of the CCRMP. The physical observations and data collected this Water Year were combined with recommendations from prior years and formed the analytical basis for the Cache Creek TAC's 2024 recommendations summarized in Section 1.6 of the Introduction and Overview. Any new recommendations from this 2024 report will be added to this list once the report is reviewed and accepted by the Yolo County Board of Supervisors.

The status of prior recommendations, **as of January 2025**, can be found below.

5.1 High Priority Recommendations

1. **Coordinate with full Cache Creek TAC, County staff, Cache Creek Conservancy staff, Yolo RCD staff, and landowners to identify areas and sites best suited for natural regeneration (passive restoration) and active restoration of riparian and upland habitat.**
 - Recommendation made by Riparian Biologist in 2011
 - Status: Ongoing (see recommended sites in Annual Report)
 - Level of Effort: Medium

2. **Significantly increase monitoring and management of non-native and invasive plant species, prioritizing Tier 1 (high priority) species including arundo and tamarisk.**
 - Recommendation made by Riparian Biologist in 2021
 - Status: In Progress
 - Level of Effort: High

3. **Continue to participate in the implementation of the Cache Creek Watershed Wide Invasive Management Plan.**
 - Recommendation made by Riparian Biologist in 2011
 - Status: Ongoing
 - Level of Effort: Low

- 4. Remove fine sediment accumulation north of “island” to reduce erosive pressure on south bank at RM 11.7 (upstream from Huff’s Corner on north side).**
 - Recommendation made by Fluvial Geomorphologist in 2014
 - Status: Complete – Monitoring and Maintenance Underway
 - Level of Effort: High

- 5. Implement proposed bar skimming projects at RM 24.6–25 and RM 20.1–20.5.**
 - Recommendation made by Fluvial Geomorphologist in 2017
 - Status: RM 24.6-25 = Planning and design started but then stalled; RM 20.1-20.5 = Stalled
 - Level of Effort: High

- 6. Consider potential bar skimming projects at RM 23.1, RM 22, RM 21.8, RM 21.6, and RM 21.4.**
 - Recommendation made by Fluvial Geomorphologist in 2017
 - Status: Not Started
 - Level of Effort: High

- 7. Reassess proposed Channel Form Template (CFT) location and evaluate need for treatment (in-stream maintenance) at RM 26.0, RM 25.4-25.5, RM 22.0, RM 21.8, RM 21.6, RM 21.1, and RM 18.0-18.12.**
 - Recommendation made by Fluvial Geomorphologist in 2017
 - Status: In Progress (annually after each Creek Walk)
 - Level of Effort: Medium

- 8. Implement spatially-explicit monitoring to track location and status (e.g., treated or not) of non-native and invasive plant species.**
 - Recommendation made by Riparian Biologist in 2017
 - Status: Ongoing
 - Level of Effort: Medium

- 9. Survey water surface elevation profiles of Cache Creek at high flows (30,000+ cfs) to assist in calibrating the 2D Hydraulic Model.**

- Recommendation made by Hydraulic Engineer in 2017
- Status: In Progress
- Level of Effort: Medium

10. Monitor erosion sites at Jensen Bend (RM 25.4); Granite Esparto (RM 24.8-24.4); Esparto Bridge Pier Scour (RM 24.4); Bank Erosion across from Teichert Esparto Site (RM 23.3); Teichert Esparto Aggregate Pile Site (RM 22.8); Payne Property (RM 22.0); and Woodland Reiff Levee Erosion (RM 14.3). Monitor and consider enforcement actions against waste disposal around RM 25.4.

- Recommendation made by the Hydraulic Engineer in 2019 and updated annually
- Status: In Progress
- Level of Effort: Medium

11. Cache Creek Conservancy and County staff should jointly conduct a capacity assessment of the Conservancy' Invasive Weed Control program to determine if the program is adequately resources to meet present and future needs related to invasive species control within the CCRMP area.

- Recommendation made by the Riparian Biologist in 2019
- Status: In Progress
- Level of Effort: Medium

12. Notify the Yolo County Flood Control and Water Conservation District of the need to evaluate the erosion at the emergency bank stabilization retaining wall immediately downstream of the Capay Dam, and implement remedies.

- Recommendation made by the Hydraulic Engineer in 2019
- Status: In Progress
- Level of Effort: Medium

5.2 Medium Priority Recommendations

1. Implement water temperature monitoring by placing water temperature data loggers in each reach.

- Recommendation made by Hydraulic Engineer in 2011

- Status: Not Started
 - Level of Effort: Low
- 2. In collaboration with university researchers, non-profit scientists, and/or private consultants, implement monitoring of wildlife (e.g., birds, mammals, reptiles, and amphibians), insects (e.g., VELB), and fish to complement vegetation monitoring.**
- Recommendation made by Riparian Biologist in 2011 and updated in 2022
 - Status: In Progress
 - Level of Effort: Medium
- 3. Explore opportunities to increase surface water flows in Cache Creek to improve conditions for native riparian vegetation and enhance habitat for native fish and wildlife.**
- Recommendation made by Riparian Biologist in 2013 and updated in 2024
 - Status: In Progress
 - Level of Effort: Medium
- 4. PG&E site (RM 26.9) – erosion control blanket and all associated infrastructure should be removed; the palisades should either be removed entirely or cut at ground level or below; remove exposed webbing; and revegetation/natural stabilization project be implemented.**
- Recommendation made by Fluvial Geomorphologist in 2014; Updated by Hydraulic Engineer annually
 - Status: Flood Hazard Development Permit Approved, Construction Pending
 - Level of Effort: Medium
- 5. Capay Dam damage due to flows in December 2014 be addressed and corrective actions implemented to prevent similar future damage. The December event was approximately a 2-3 year return event and this structure should not have sustained this damage for such a small magnitude flow event.**
- Recommendation made by Hydraulic Engineer in 2015
 - Status: In Progress
 - Level of Effort: Low

6. Burn or otherwise remove biomass from treated invasive species within the CCRMP where feasible, and plant native species on all invasive species treatment sites where feasible to prevent reinvasion and accelerate recovery of native vegetation.

- Recommendation made by Riparian Biologist in 2015 and updated in 2022
- Status: Ongoing
- Level of Effort: Medium

7. Implement best management practices for planning, implementation, and evaluation of habitat enhancement and restoration projects (e.g., include native understory species, identify native plant species of cultural importance to the Yocha Dehe Wintun Nation for inclusion in planting palettes, implement effectiveness monitoring).

- Recommendation made by Riparian Biologist in 2017 and updated in 2024
- Status: Ongoing
- Level of Effort: Medium

8. Reinitiate voluntary bar skimming project evaluation at RM 21.6.

- Recommendation made by Fluvial Geomorphologist in 2019
- Status: Not Started
- Level of Effort: Medium

9. Detailed monitoring and assessment of channel treatments at locations of 2017 channel migration and erosion (RM 26, 25.5, 23.5, 22, 21.5, and 18).

- Recommendation made by Fluvial Geomorphologist in 2017
- Status: Ongoing at annual Creek Walks
- Level of Effort: Medium

10. Yolo County, Cache Creek TAC, Cache Creek Conservancy, Yolo County Resource Conservation District, and Yolo County Flood Control and Water Conservation District should work together to develop a comprehensive invasive species removal, ecosystem restoration, flood management and water supply bundle of projects based on prior Cache Creek TAC recommendations and submit additional Proposition 1 (and other) grant proposals to fund such projects in Water Year 2023.

- Recommendation made by Fluvial Geomorphologist in 2019
- Status: Revising previous unfunded proposals for new funding programs
- Level of Effort: Medium

11. Perform regular evaluation of the CCAP water quality monitoring program.

- Recommendation made by the Hydraulic Engineer starting in 2020 and considered annually
- Status: In Program
- Level of Effort: Medium

12. Consider removal of some bank stabilization weirs and replacement with more modern approaches to bank stabilization.

- Recommendation made by the Hydraulic Engineer starting in 2021
- Status: Not implemented. Requires funding for planning, design, and implementation.
- Level of Effort: High

13. Conduct focused monitoring of OHV impacts on native vegetation and wildlife (e.g., beaver, riparian bank swallows, and ground-nesting birds) especially in the Hoppin Reach, as well as vegetation recovery on sites previously impacted by OHV activities.

- Recommendation made by Riparian Biologist starting in 2021 and updated in 2024
- Status: In Progress
- Level of Effort: Low

5.3 Low Priority Recommendations

1. Evaluate modifications to the berm separating the upstream and downstream cells at Correll Rodgers (RM 13.7)

- Recommendation made by Fluvial Geomorphologist in 2012
- Status: Complete – no current action required
- Level of Effort: Medium

2. Continue to monitor beaver activity in relation to potential impacts on native vegetation and wildlife, flows, and channel capacity.

- Recommendation made by Riparian Biologist in 2015
- Status: Ongoing
- Level of Effort: Low

3. Notify bridge owners and assess need for in-stream or channel bank maintenance immediately after Water Years with peak flows exceeding 20,000 cfs.

- Recommendation made Fluvial Geomorphologist in 2017
- Status: Ongoing as follow up after annual Creek Walks
- Level of Effort: Low

4. Evaluate the potential for additional bar skimming at RM 21 and RM 22.

- Recommendation made Fluvial Geomorphologist in 2017
- Status: In Progress
- Level of Effort: Low

APPENDIX A

2024 NATURAL RESOURCES DIVISION UPDATE

2024

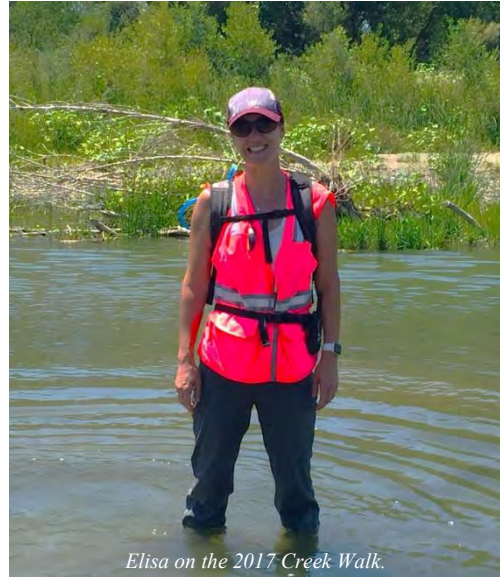
Natural Resources Division Update



*Prepared by:
Casey Liebler, Natural Resources Planner
Department of Community Services*

A Special “Thank You”

Many of the accomplishments in this report are due to the incredible leadership and work conducted by Elisa Sabatini, former Manager of Natural Resources. Elisa’s last day with Yolo County was October 22, 2024, after 12 devoted years of service. Elisa was a true steward of the County’s natural resources and was the epitome of “The Yolo Way.” She will be missed dearly by her team and colleagues. We wish her all the best in her next chapter and will forever be grateful for the amazing work she did!



On her last day, Elisa received a Yolo County Board of Supervisors Proclamation from Supervisors Villegas, Frerichs, and Vixie Sandy for her exemplary service to the County.

Cache Creek Area Plan Implementation

The Cache Creek Area Plan (“CCAP”) program is administered by the Natural Resources Division of the Department of Community Services. This section highlights major projects that assist in the implementation actions and the goals of the CCAP, in addition to the annual monitoring program outlined in the Cache Creek TAC’s Annual Status Report.

Flood Hazard Development Permits

As described in Section 8-4.201 of the County’s Flood Protection ordinance, a “Flood Hazard Development Permit” means the approval required pursuant to Section 8-4.404 for proposed in-channel activities allowed under the CCRMP/CCIP that would occur within the special flood hazard area (i.e., 100-year floodplain) of Lower Cache Creek. Applications for a Flood Hazard Development Permit (“FHDP”) are submitted to the Planning Division.

After deeming the application is complete, the Planning Division routes it through an agency review process. Following the agency review, the Natural Resources Division sends the application materials to the Cache Creek TAC for their review. A public TAC meeting is then held, where the TAC will give their recommendation on permit approval to the Director (e.g., the Manager of Natural Resources). A FHDP may be approved pursuant to Section 8-4.404, only if all of the following findings are made:

1. *The proposed channel modification is consistent with any County-administered general permits from agencies of jurisdiction (e.g., California Department of Fish and Wildlife, U.S. Army Corps of Engineers, Regional Water Quality Control Board); or alternatively, that all other State and Federal permits have been obtained;*
2. *That any sand and gravel removed from the channel as a result of the proposed modification is necessary for one or more of the following reasons:*
 - i. *To maintain flood flow capacity,*
 - ii. *To protect existing structures, infrastructure, and/or farmland*
 - iii. *To minimize bank erosion, and*
 - iv. *To implement the Channel Form Template;*
3. *That the proposed channel modification is consistent with the requirements of both the CCRMP, the CCIP, and Title 10, Chapter 3 of the County Code entitled Cache Creek Area Plan In-Channel Ordinance; and*
4. *That existing flooding problems are not exacerbated by the proposed channel modification.*

The County did not issue any FHDPs in 2024.

Off-Channel Mining Plan

Annual Compliance Report

By November 1st of each year, the aggregate producers that are regulated by the Cache Creek Area Plan are required to provide annual reporting of their operations to the County pursuant to Article 7 (Annual Reports) of the Off-Channel Surface Mining Ordinance (“OCSMO”). Staff uses the information contained within these reports, independent staff analysis, and field inspections, to put together an “Annual Compliance Report.”

Each site’s compliance is reviewed against the applicable regulations, including the State's Surface Mining and Reclamation Act (“SMARA”), the County's Off-Channel Mining Plan (“OCMP”) – including the Off-Channel Surface Mining Ordinance and Surface Mining Reclamation Ordinance – and individual permit approvals and Development Agreements, including Mitigation Monitoring Plans and Conditions of Approval. This report, consistent with Section 10-4.703 of the OCSMO, is then sent to the Yolo County Planning Commission to determine compliance.

On October 10, 2024, the Yolo County Planning Commission held a public hearing and determined, via unanimous vote (5 ayes, 0 nays, 2 absent), that all mining operations are in “*substantial compliance*” for calendar year with all applicable regulations. The staff report for that item can be accessed [here](#).

The Division’s “Mining Planning” team is currently reviewing the annual reports submitted by the operators for 2024.

Granite Capay Permit Extension (ZF #2023-0034)

On October 20, 2023, Granite Construction Company (“Granite”) applied for a 10-year extension of their existing Granite Capay Facility Mining and Reclamation Permit (ZF #2001-096). Entitlements for the Capay Facility were originally approved by the County on November 25, 1996, and have been amended over time. The existing permit expires on January 1, 2028. Through this application, Granite is seeking a 10-year time extension to the permit to align the entitlement with the life of the remaining permitted aggregate reserves. Other than the extension of time, Granite seeks no change to any element of the approved operations or the permit. This application is currently undergoing environmental review.

On November 14, 2024, following a public hearing, the Yolo County Planning Commission voted unanimously (6 ayes, 0 nays, 1 absent) to approve the proposed extension request. The permit’s new expiration date to January 1, 2038. In addition to approving the request, the Planning Commission adopted an Addendum to the previously certified environmental impact reports as the appropriate level of environmental review in accordance with the California Environmental Quality Act. The staff report for the item can be found [here](#).

Cache Creek Area Plan Funding

Implementation of CCAP is completely self-funded by revenue generated from fees collected through the Gravel Mining Fee Ordinance (see Title 10, Chapter 11 of the Yolo County Code of Ordinances). This ordinance was adopted by the Board of Supervisors in 1996, when the program was developed, and has been further amended in December 2013, December 2019 as a part of the 20-Year CCAP Update, and most recently on October 6, 2020 (Minute Order No. 20-133, Item #8).

The intent of this ordinance is to establish set fees amounts to be paid annually by the gravel operators for each ton of gravel sold, as well as identify how the fees will be spent.

Section 10-11.01 of the Gravel Fee Ordinance establishes five Yolo County aggregate mining fees. Those fees, and their purposes defined by Section 10-11.02, are as follows:

CCRMP Implementation Fee

The purpose of the **CCRMP Implementation (Creek Stabilization) Fee** is to fund implementation of the CCRMP and CCIP, including but not limited to:

- Design and construction of projects for channel stabilization and bridge protection.
- Design and construction/implementation of channel maintenance projects and activities.
- Monitoring, modeling, and flood watch as described in the CCIP.
- Compensation of the Technical Advisory Committee.

Maintenance and Remediation Fee

The purpose of the **Maintenance and Remediation Fee** is to fund a long-term, interest-bearing account for the following future activities:

- Remediation of problems related to mercury bioaccumulation in wildlife, should they occur.
- Remediation of hazardous materials contamination, should it occur.
- Environmental monitoring including data gathering and groundwater monitoring beyond, or as an extension of, that required by the operators under the CCAP and permits issued or extended under the CCAP, should it be necessary.
- Ongoing site maintenance of publicly held reclaimed lakes including but not limited to fencing, berms, drainage, and levees.

OCMP Administration Fee

The purpose of the **OCMP Administration Fee** is to:

- Implement the OCMP.
- Administer long-term mining permits.
- Administer development agreements.
- Inspect mining and reclamation operations.

Cache Creek Conservancy Contribution

The purpose of the **Cache Creek Conservancy Contribution (Habitat Restoration Fee)** is to fund activities that promote and facilitate the restoration, enhancement, conservation, and wise management of natural vegetation and wildlife habitat within the lower Cache Creek watershed (between Capay Dam and the Town of Yolo), consistent with the CCRMP and the Cache Creek Conservancy’s mission to preserve, restore, and enhance the Cache Creek watershed.

Twenty Percent Production Exception Surcharge

The **Twenty Percent Production Exception Surcharge** fee is collected to offset additional costs anticipated with mining allowed in excess of approved annual permitting production to meet temporary increase in market demand. The revenue from this fee is divided evenly between the CCRMP Implementation fund and the Maintenance and Remediation fund.

Section 10-11.01(c) of the ordinance also sets a fee schedule that increases at a rate of 4% each year. Table 1 displays the current fee schedule. Tonnage sold during the 2024 calendar year will be subject to the \$0.724 per ton fee. These fees will be collected from the operators on a quarterly basis throughout the 2025 calendar year.

Table 1. Current Gravel Mining Fee Schedule

Fee Effective	Fee per Ton	Fee Effective	Fee per Ton
Jan. 1, 2013	\$0.470	Jan. 1, 2020	\$0.618
Jan. 1, 2014	\$0.489	Jan. 1, 2021	\$0.643
Jan. 1, 2015	\$0.508	Jan. 1, 2022	\$0.669
Jan. 1, 2016	\$0.529	Jan. 1, 2023	\$0.696
Jan. 1, 2017	\$0.550	Jan. 1, 2024	\$0.724
Jan. 1, 2018	\$0.572	Jan. 1, 2025	\$0.753
Jan. 1, 2019	\$0.595	Jan. 1, 2026	\$0.783

The annual per ton fee is distributed amongst the four different fees (*except for the Twenty Percent Production Exception Surcharge*). The distribution of the fees is displayed in Figure 1, and the calculated fee split is displayed in Table 2.

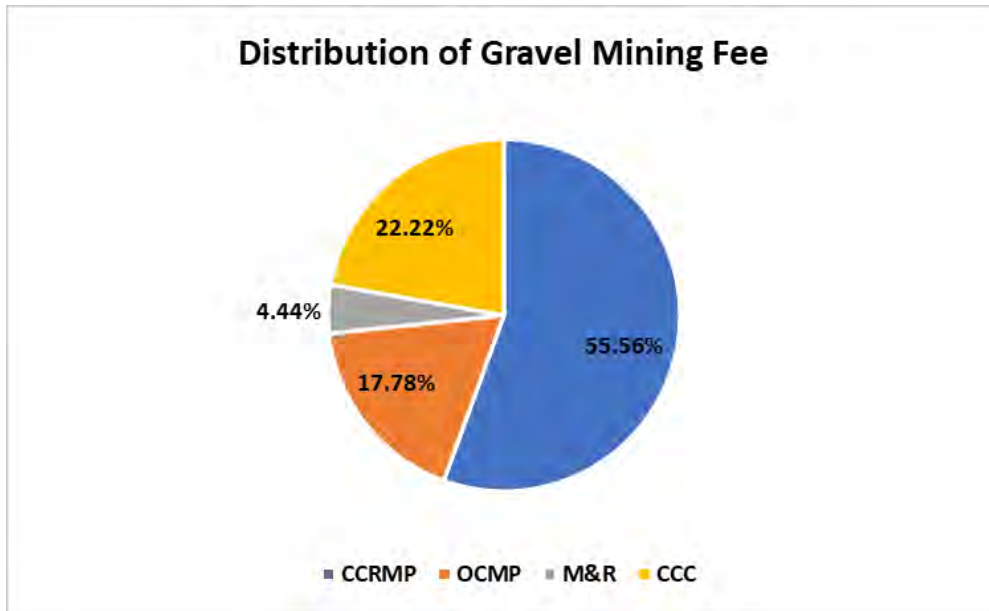


Figure 1. Distribution of Annual Per Ton Fee

Table 2. Calculated Mining Fee Split (2023-2026)

Year	Fee per Ton	CCRMP	OCMP	M & R	CCC
2023	\$0.696	\$0.3867	\$0.1237	\$0.0309	\$0.1547
2024	\$0.724	\$0.4022	\$0.1287	\$0.0322	\$0.1609
2025	\$0.752	\$0.4178	\$0.1337	\$0.0322	\$0.1671
2026	\$0.783	\$0.4350	\$0.1392	\$0.0348	\$0.1740

Table 3 and Figure 2 show the cumulative total amount of aggregate sold every year since the program’s inception in 1997. In 2023, a total of 3,062,843 tons were sold which represents a 7.2% decrease when compared to the previous year’s sold tonnage amount (3,302,925 tons). The five-year average is 3,224,409 tons sold.

Table 3. Cumulative Tonnage Sold (1997-2023)

Year	Total Tons Sold	Year	Total Tons Sold	Year	Total Tons Sold
1997	2,777,449	2007	3,530,359	2017	3,134,564
1998	3,365,199	2008	2,813,908	2018	3,147,831
1999	3,565,232	2009	2,190,454	2019	3,245,864
2000	4,177,068	2010	1,730,834	2020	3,324,791
2001	4,269,819	2011	1,869,151	2021	3,185,623
2002	5,239,823	2012	1,517,741	2022	3,302,925
2003	5,334,183	2013	2,090,247	2023	3,062,843
2004	4,788,238	2014	2,156,620	2024	
2005	4,676,979	2015	2,690,800	2025	
2006	4,602,402	2016	2,624,169	2026	

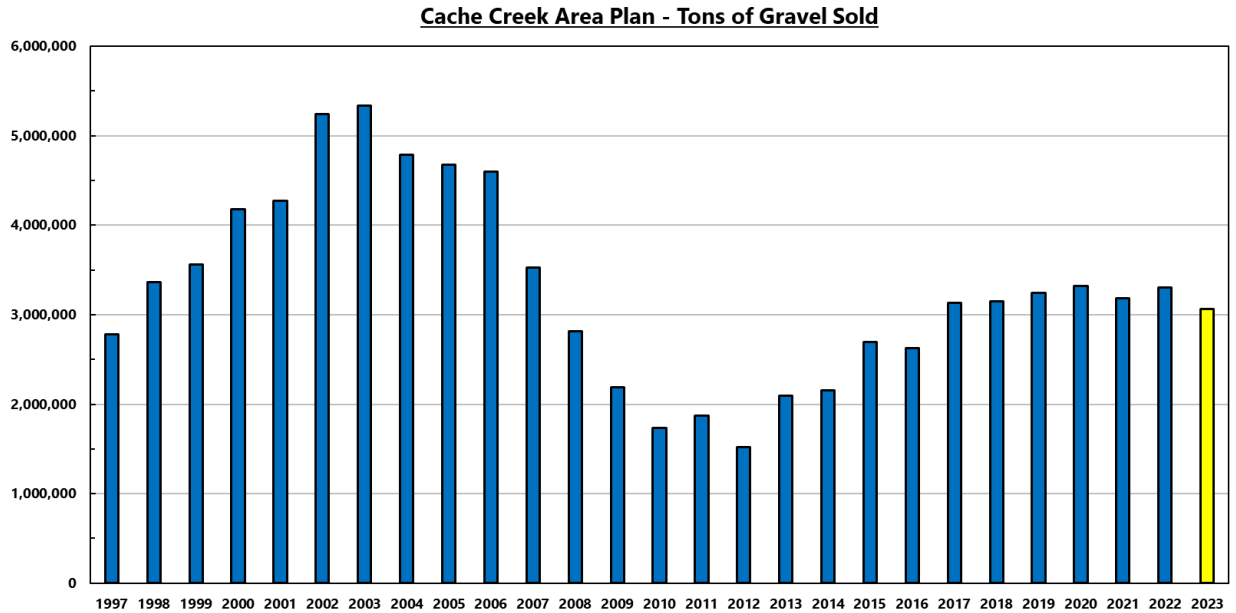


Figure 2. Bar Chart of Cumulative Tonnage Sold (1997-2023)

As of the drafting of this update, the Natural Resources Division is collecting the 2024 tonnage reports from the operators. The cumulative tonnage sold for 2024 will be available in late February 2025.

Grants

Huff’s Corner Levee Raise & Channel Reconfiguration Project

	Phase I	Phase II
Project Amount:	\$2,845,000	\$2,477,500
Grant Funding Amount:	\$2,418,250	\$2,229,750
Agreement Number:	DWR No. 4600013693	DWR No. 4600015709
Funding Agency:	California Department of Water Resources	
Project Scope:	Levee repairs on the Huff’s Corner levee located on the right bank of Cache Creek, approximately 2,700 feet upstream of Interstate 5, as well as erosion control and reconfiguration of the Lower Cache Creek channel.	

The in-channel reconfiguration component of the project was completed in late December 2022 before a series of winter storms caused high flows in Lower Cache Creek. These high flows caused damage to the newly constructed terraces and channel banks (Fig. 3).



Figure 3. State of the Huff's Corner In-Channel Reconfiguration Project after Winter 22-23 flows damaged the newly constructed right bank terrace. Photo taken June 2, 2023.

In Summer 2023, DWR presented the County with a second funding agreement (“Phase II Agreement”), in the amount of \$2,477,500, so that the project could be constructed in its entirety. The original agreement did not have sufficient funding to complete the whole project due to unforeseen costs associated with construction, environmental mitigation, and securing land acquisitions/right-of-way. On September 26, 2023, the Yolo County Board of Supervisors adopted Resolution No. 23-139 accepting these funds from DWR, and on April 10, 2024, the Phase II Agreement was fully executed by the State Department of General Services.

The remaining portions of the project to be completed under the Phase II Agreement include: the levee raise component of the project; remediation of the “damages” to the in-channel project that resulted from the 22-23 Winter Storms; and construction of an off-site mitigation project.

As of the drafting of this update, the “In-Channel Repairs Project” and the “Levee Maintenance Project” were substantially completed by Martin Brothers Construction and Nordic Industries, respectfully. Some representative project photos are provided below (Figs. 4 and 5).



Figure 4. A portion of the completed Huff's Corner In-Channel Repairs Project. Photo taken November 18, 2024.



Figure 5. Representative photos showing the completed Huff's Corner Levee Maintenance Project. Photo 1 depicts the waterside slope looking upstream towards I-5. Photo 2 depicts the landslide slope looking downstream. Photos taken January 22, 2025.

Partner Organizations

The following organizations (listed in alphabetical order) are important partners to the County in implementing the CCRMP and CCIP.

Cache Creek Conservancy

The Cache Creek Conservancy (CCC) is a 501(c)(3) non-profit public benefit corporation that preserves, restores, and enhances the Cache Creek watershed. The CCC, created in 1996, manages land for wildlife habitat, carries out invasive weed management, implements restoration projects, and provides environmental education opportunities within the lower Cache Creek. It receives fees generated by the Cache Creek Area Plan, as well as funding from state, federal, and foundation grants.



Website: <https://cachecreekconservancy.org/>

California Construction and Industrial Materials Association (Yolo/Cache Creek Work Group)

The California Construction and Industrial Materials Association (“CalcIMA”) is the statewide voice of the construction and industrial materials industry. In all, there are over 70 member companies that include over 500 local plants and facilities throughout the state. Specifically, the members of the Yolo/Cache Creek work group of CalcIMA are CEMEX Construction Materials Pacific, LLC., Granite Construction, Syar Industries, LLC., and Teichert Materials.



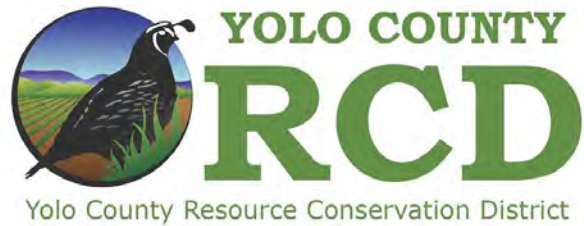
CalcIMA and the producers are active partners in the implementation of the CCAP. The original effort to develop the CCAP was initiated by the producers, who subsequently paid for the planning process. Both the industry and the County have benefited greatly from the resulting program which continues to be a model throughout the state. Producer representatives regularly attend Cache Creek TAC meetings, the annual Creek Walk, and other program related activities.

Website: <https://www.calcima.org/>

Yolo County Resource Conservation District

The Yolo County Resource Conservation District (“YCRCD” or “District”) is a non-regulatory special district serving over 650,000 acres of diverse agricultural operations, rangeland, public open space and developed areas in Yolo County. The YCRCD’s mission is to “protect, improve, and sustain the natural resources of Yolo County.”

The District employs a watershed approach that allows an integrated assessment of resource inputs, outputs and impacts. Additionally, the District promotes responsible stewardship by: developing, evaluating and implementing conservation practices through cooperative land



users; providing technical guidance, and on-site expertise; educating agencies and the public in resource conservation and enhancement; and, sponsoring partnerships and networks. The YCRCD also works closely with the USDA Natural Resource Conservation Service to provide technical services to the residents, landowners, agricultural producers, and government agencies of Yolo County.

Website: <https://yolorcd.org/>

Yolo County Flood Control and Water Conservation District

The mission of the Yolo County Flood Control and Water Conservation District (“YCFWCWCD” or “District”) is “to plan, develop, and manage the conjunctive use of the District's surface and groundwater resources to provide a safe and reliable water supply at a reasonable cost, and to sustain the socioeconomic and environmental well-being of Yolo County.” The YCFWCWCD’s boundaries cover 195,000 acres of Yolo County, including the entire CCRMP area.



The District operates Clear Lake, Indian Valley Reservoir, and owns the majority of water rights for Cache Creek. As such, the YCFWCWCD plays a central role in determining the flow of surface water within the Cache Creek watershed. The Capay Diversion Dam, at the upstream end of the CCRMP area, provides some of the water that the District distributes through more than 150 miles of canals and laterals. YCFWCWCD also acts as an important partner in stream restoration projects. YCFWCWCD manages the WRA’s groundwater monitoring program that provides valuable data that helps inform the CCRMP’s impacts on groundwater.

Website: <https://www.ycfwcwd.org/>

Yolo Habitat Conservancy



The mission of the Yolo Habitat Conservancy is to conserve natural and working landscapes, and the species on which they depend, by working with local communities and conservation partners to coordinate mitigation and implement regional habitat conservation.

The Yolo Habitat Conservancy is a joint powers agency comprised of the County of Yolo and the cities of Davis, West Sacramento, Winters, and Woodland.

The Yolo Habitat Conservancy has prepared the Yolo Habitat Conservation Plan/Natural Community Conservation Plan (Yolo HCP/NCCP), a model conservation plan to provide Endangered Species Act permits and associated mitigation for infrastructure (e.g., roads, bridges, and levees) and development activities (e.g., agricultural facilities, housing, and commercial buildings), identified for construction over the next 50 years in Yolo County. The Yolo Habitat Conservancy is also developing a voluntary, non-regulatory, Yolo Regional Conservation Investment Strategy/Local Conservation Plan (RCIS/LCP) that will provide a framework for the conservation of natural communities and certain sensitive species not covered by the Yolo HCP/NCCP.

Website: <https://www.yolohabitatconservancy.org/>

Yolo Subbasin Groundwater Agency

The Yolo Subbasin Groundwater Agency (“YSGA”) is charged with planning and implementing the state’s Sustainable Groundwater Management Act (“SGMA”) process in Yolo County. The mission of the YSGA is to “provide a dynamic, cost-effective, flexible collegial organization to ensure compliance with SGMA within the Yolo Subbasin.”

The YSGA is made up of 26 members, including Yolo County, representing urban, agricultural, and environmental interests. The YSGA covers the extent of the Yolo Subbasin which covers approximately 540,700 acres, spanning nearly 845 square miles.



Website: <https://www.yologroundwater.org/>

APPENDIX B

2024 CREEK WALK OBSERVATIONS

RM	REACH	OBSERVER	OBSERVATION	PRIORITY LEVEL
28.4	Capay	Rayburn (BIO)	Pair of bald eagles (BAEA)	Observation
28.3	Capay	Rayburn (BIO)	Cliff swallows (CLSW) at dam as in years past	Observation
28.3	Capay	Rayburn (BIO)	Vegetation below dam	Observation
28.3	Capay	Rayburn (BIO)	Carp in pool	Observation
28.3	Capay	Rayburn (BIO)	Tamarisk	Monitoring Required
28.3	Capay	Rayburn (BIO)	Potential restoration site viewed from north bank	Observation
28.3	Capay	Rayburn (BIO)	Vegetation below dam	Monitoring Required
28.3	Capay	Tompkins (GEO)	Capay dam. No major changes to dam.	Observation
28.3	Capay	Tompkins (GEO)	Capay dam. No major changes to dam.	Observation
28.3	Capay	Tompkins (GEO)	At erosion control wall downstream of Capay Dam. Major soil loss behind wall appears to have expanded.	Monitoring Required
28.3	Capay	Frank (HYDRO)	Capay Dam	Observation
28.3	Capay	Frank (HYDRO)	Looking up stream at Capay Dam	Observation
28.3	Capay	Frank (HYDRO)	Upstream edge of emergency repair wall showing significant loss of soil	Monitoring Required

28.3	Capay	Frank (HYDRO)	Backside of emergency wall repair, showing significant new scalloping and erosion	Monitoring Required
28.2	Capay	Rayburn (BIO)	Looking west, upstream, into adjoining property	Observation
28.2	Capay	Rayburn (BIO)	Northwestern pond turtle	Observation
28.2	Capay	Rayburn (BIO)	Potential restoration site	Observation
28.2	Capay	Rayburn (BIO)	Potential beaver dam	Observation
28.2	Capay	Rayburn (BIO)	Recovery of vegetation from fire damage	Observation
28.2	Capay	Rayburn (BIO)	Site damaged by fire last year	Observation
28.2	Capay	Tompkins (GEO)	Downstream end of erosion control wall. Eroding bank.	Monitoring Required
28.2	Capay	Frank (HYDRO)	Looking up stream at Capay Dam	Observation
28.1	Capay	Rayburn (BIO)	Looking east	Observation
28.1	Capay	Tompkins (GEO)	Along left bank downstream of Capay Dam. Some in channel vegetation growth. No major channel change.	Observation
28.0	Capay	Rayburn (BIO)	Large mature elderberry	Observation
28.0	Capay	Rayburn (BIO)	Current woody vegetation	Observation
28.0	Capay	Rayburn (BIO)	Potential restoration site	Observation

28.0	Capay	Rayburn (BIO)	Largemouth bass	Observation
28.0	Capay	Rayburn (BIO)	Treated arundo resprouting	Monitoring Required
28.0	Capay	Rayburn (BIO)	Treated arundo	Monitoring Required
28.0	Capay	Tompkins (GEO)	Rock riprap left bank. No major channel change.	Observation
28.0	Capay	Frank (HYDRO)	Looking downstream at riprap on bank	Observation
27.9	Capay	Rayburn (BIO)	Looking downstream	Observation
27.9	Capay	Rayburn (BIO)	Looking upstream downstream, and at the berm	Observation
27.9	Capay	Rayburn (BIO)	Treated arundo	Monitoring Required
27.8	Capay	Rayburn (BIO)	Looking south	Observation
27.8	Capay	Rayburn (BIO)	Large mature elderberry	Observation
27.8	Capay	Rayburn (BIO)	Osprey (OSPR)	Observation
27.8	Capay	Rayburn (BIO)	Potential restoration site	Observation
27.7	Capay	Rayburn (BIO)	Large mature elderberry (~18 ft tall)	Observation
27.7	Capay	Rayburn (BIO)	Looking east	Observation

27.7	Capay	Rayburn (BIO)	Looking east	Observation
27.7	Capay	Rayburn (BIO)	Potential restoration site	Observation
27.7	Capay	Rayburn (BIO)	Current state of vegetation	Observation
27.7	Capay	Tompkins (GEO)	Beaver dam downstream of photopoint.	Observation
27.7	Capay	Tompkins (GEO)	Sedge patch. No major channel change.	Observation
27.6	Capay	Rayburn (BIO)	Potential restoration site	Observation
27.6	Capay	Rayburn (BIO)	Looking west	Observation
27.6	Capay	Rayburn (BIO)	Potential restoration site	Observation
27.6	Capay	Rayburn (BIO)	Invasive species on potential restoration site	Observation
27.6	Capay	Rayburn (BIO)	Treated arundo with living elderberry	Observation
27.6	Capay	Rayburn (BIO)	Bank on potential restoration site	Observation
27.6	Capay	Rayburn (BIO)	Looking east	Observation
27.6	Capay	Rayburn (BIO)	Looking west	Observation
27.6	Capay	Rayburn (BIO)	Looking east	Observation

27.5	Capay	Rayburn (BIO)	2008 mitigation oak planting	Observation
27.5	Capay	Rayburn (BIO)	Current state of vegetation	Observation
27.4	Capay	Rayburn (BIO)	Swainson's hawk (SWHA)	Observation
27.4	Capay	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
27.4	Capay	Rayburn (BIO)	Swainson's hawk (SWHA)	Observation
27.4	Capay	Rayburn (BIO)	Native vegetation and invasive ravenna grass	Monitoring Required
27.4	Capay	Rayburn (BIO)	Potential restoration site	Observation
27.4	Capay	Frank (HYDRO)	Arundo site showing no apparent regrowth in this area	Observation
27.4	Capay	Frank (HYDRO)		Observation
27.3	Capay	Rayburn (BIO)	Channel remnant? Looking west	Observation
27.3	Capay	Tompkins (GEO)	Upstream of PG&E Palisades. Less thistle. Decent channel habitat. No major channel change.	Observation
26.9	Capay	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
26.8	Capay	Rayburn (BIO)	Palisades site looking upstream	Monitoring Required
26.8	Capay	Rayburn (BIO)	Palisades site looking downstream	Observation

26.8	Capay	Rayburn (BIO)	Beaver dam	Observation
26.8	Capay	Rayburn (BIO)	Beaver dam	Observation
26.8	Capay	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
26.8	Capay	Rayburn (BIO)	Deep pool with fish created by dam at Palisades site	Observation
26.8	Capay	Rayburn (BIO)	Pool enhanced by beaver dam	Observation
26.8	Capay	Tompkins (GEO)	At PG&E Palisades. Persistent scour and erosion.	Monitoring Required
26.8	Capay	Tompkins (GEO)	At PG&E Palisades. Continued scour and erosion of concrete pillows and erosion around old pipes.	Monitoring Required
26.8	Capay	Tompkins (GEO)	Groundwater monitoring well.	Observation
26.8	Capay	Frank (HYDRO)	PG&E palisades site showing substantial growth of vegetation, including cottonwoods, willows, tamarisk, etc.	Monitoring Required
26.8	Capay	Frank (HYDRO)	Palisades	Observation
26.7	Capay	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
26.7	Capay	Rayburn (BIO)	Potential restoration site	Observation
26.3	Hungry Hollow	Rayburn (BIO)	Looking upstream at Rd 85 bridge	Observation
26.3	Hungry Hollow	Rayburn (BIO)	Tamarisk	Monitoring Required

26.3	Hungry Hollow	Rayburn (BIO)	Minor increase in vegetation, looking upstream, no major change, no significant veg loss on boneyard bank	Observation
26.3	Hungry Hollow	Rayburn (BIO)	Some loss of native vegetation on banks and in main channel, but primary woody vegetation on channel edges largely unchanged	Observation
26.3	Hungry Hollow	Tompkins (GEO)	County Road 85. Some new vegetation. Some bar scour.	Observation
26.3	Hungry Hollow	Tompkins (GEO)	County Road 85 looking downstream. Some new vegetation on gravel bars. Some scour and erosion.	Observation
26.3	Hungry Hollow	Frank (HYDRO)	Capay Bridge	Observation
26.3	Hungry Hollow	Frank (HYDRO)	Capay bridge pier	Observation
26.3	Hungry Hollow	Frank (HYDRO)	Underneath Capay bridge	Observation
26.2	Hungry Hollow	Rayburn (BIO)	Capay Open Space Park restoration site	Observation
26.2	Hungry Hollow	Rayburn (BIO)	Vegetation looking upstream	Observation
26.2	Hungry Hollow	Rayburn (BIO)	Green sunfish	Observation
26.2	Hungry Hollow	Rayburn (BIO)	Tamarisk	Monitoring Required
26.2	Hungry Hollow	Tompkins (GEO)	Cache Creek fishing warning sign.	Observation
26.2	Hungry Hollow	Tompkins (GEO)	Hardpan pools. No major change.	Observation
26.2	Hungry Hollow	Frank (HYDRO)	Looking upstream at Capay bridge	Observation

26.1	Hungry Hollow	Rayburn (BIO)	Purple loosestrife	Monitoring Required
26.1	Hungry Hollow	Rayburn (BIO)	Purple loosestrife	Monitoring Required
26.0	Hungry Hollow	Rayburn (BIO)	Tamarisk	Monitoring Required
26.0	Hungry Hollow	Rayburn (BIO)	Beginning of eroded banks (relevant for potential bank swallow [BANS] habitat)	Monitoring Required
26.0	Hungry Hollow	Tompkins (GEO)	Downstream of County Road 85. Left bank. Bar deposition. Minor bank erosion.	Observation
26.0	Hungry Hollow	Frank (HYDRO)	Looking up stream at Capay bridge	Observation
26.0	Hungry Hollow	Frank (HYDRO)	Right bank erosion, some exposed erosion fabric	Monitoring Required
25.9	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
25.9	Hungry Hollow	Frank (HYDRO)	More right bank erosion	Monitoring Required
25.8	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
25.8	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
25.8	Hungry Hollow	Rayburn (BIO)	Scattered large tamarisk	Monitoring Required
25.8	Hungry Hollow	Tompkins (GEO)	Upstream of Granite Capay plant. Erosion on right bank.	Observation
25.8	Hungry Hollow	Frank (HYDRO)	More right bank erosion observed	Monitoring Required

25.7	Hungry Hollow	Rayburn (BIO)	Purple loosestrife	Monitoring Required
25.7	Hungry Hollow	Rayburn (BIO)	Vegetation looking upstream	Observation
25.6	Hungry Hollow	Rayburn (BIO)	Swainson's hawk (SWHA)	Observation
25.6	Hungry Hollow	Tompkins (GEO)	Large right bank bar upstream of Granite Capay plant.	Observation
25.6	Hungry Hollow	Frank (HYDRO)	Looking down stream from gravel bar	Observation
25.5	Hungry Hollow	Rayburn (BIO)	Bald eagle (BAEA)	Observation
25.5	Hungry Hollow	Tompkins (GEO)	Cobble bar control point with grade change upstream.	Observation
25.5	Hungry Hollow	Frank (HYDRO)	Natural weir, or cascade.	Observation
25.4	Hungry Hollow	Rayburn (BIO)	Eroded bank and potential BANS habitat, no holes but check next year for BANS	Monitoring Required
25.4	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
25.4	Hungry Hollow	Rayburn (BIO)	Ongoing bank modification and hardening, would prevent use by BANS	Monitoring Required
25.4	Hungry Hollow	Tompkins (GEO)	Right bank dirt and debris fill into channel.	Monitoring Required
25.4	Hungry Hollow	Frank (HYDRO)	Soil embankment on the right bank	Monitoring Required
25.4	Hungry Hollow	Frank (HYDRO)	Concrete rubble stabilization installation	Monitoring Required

25.3	Hungry Hollow	Rayburn (BIO)	Scattered arundo and tamarisk	Monitoring Required
25.3	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
25.3	Hungry Hollow	Frank (HYDRO)	Concrete rubble, and Arundo	Monitoring Required
25.3	Hungry Hollow	Frank (HYDRO)	Waste concrete stabilization structures	Monitoring Required
25.3	Hungry Hollow	Frank (HYDRO)	Scour hole	Monitoring Required
25.1	Hungry Hollow	Rayburn (BIO)	Lesser nighthawk	Observation
25.1	Hungry Hollow	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
25.0	Hungry Hollow	Rayburn (BIO)	Abundant scattered tamarisk	Monitoring Required
24.9	Hungry Hollow	Rayburn (BIO)	Abundant tamarisk	Monitoring Required
24.8	Hungry Hollow	Rayburn (BIO)	Vegetation looking upstream	Observation
24.8	Hungry Hollow	Rayburn (BIO)	Vegetation looking downstream	Observation
24.8	Hungry Hollow	Tompkins (GEO)	Along Granite Capay plant. No major channel change.	Observation
24.6	Hungry Hollow	Rayburn (BIO)	Vegetation looking downstream	Observation
24.6	Hungry Hollow	Rayburn (BIO)	Willow growth and persistence at Granite bank protection project	Monitoring Required

24.6	Hungry Hollow	Rayburn (BIO)	Tamarisk	Monitoring Required
24.6	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
24.6	Hungry Hollow	Tompkins (GEO)	Granite Capay bank stabilization. No major channel change.	Observation
24.6	Hungry Hollow	Frank (HYDRO)	Granite bank protection project	Observation
24.4	Hungry Hollow	Rayburn (BIO)	Tamarisk	Monitoring Required
24.4	Hungry Hollow	Rayburn (BIO)	Vegetation looking upstream	Observation
24.4	Hungry Hollow	Rayburn (BIO)	Vegetation looking downstream	Observation
24.4	Hungry Hollow	Tompkins (GEO)	Granite repair left bank bar. No major change.	Observation
24.4	Hungry Hollow	Frank (HYDRO)	Looking at the left Bank looks like active channel is migrated southward away from left bank and there's a new cut gravel bar well in front of the stabilization project	Observation
24.4	Hungry Hollow	Frank (HYDRO)	24 looking down the stream at esparto bridge	Observation
24.3	Hungry Hollow	Rayburn (BIO)	OHV activity	Monitoring Required
24.3	Hungry Hollow	Rayburn (BIO)	Cliff swallows (CLSW) under bridge	Observation
24.3	Hungry Hollow	Tompkins (GEO)	Looking upstream from County Road 87. Some channel migration.	Observation
24.3	Hungry Hollow	Tompkins (GEO)	Looking downstream from County Road 87. Some channel migration.	Observation

24.3	Hungry Hollow	Frank (HYDRO)	Esparto bridge Piers numbers, six and seven	Observation
24.3	Hungry Hollow	Frank (HYDRO)	Esparto bridge Piers numbers, four and five	Observation
24.3	Hungry Hollow	Frank (HYDRO)	Esparto bridge piers numbers, 12 and three. No significant scouring footers are adequately covered with sediment no significant vegetation in the underway of the bridge.	Observation
24.2	Hungry Hollow	Frank (HYDRO)	Looking upstream at esparto bridge	Observation
24.1	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
24.1	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
24.0	Hungry Hollow	Frank (HYDRO)	Eroded tips of spur Dikes	Observation
23.9	Hungry Hollow	Tompkins (GEO)	On left bank bar. Training berms eroding. Bank area damaged by OHV use appears to be recovering.	Observation
23.8	Hungry Hollow	Rayburn (BIO)	Two red-tailed hawks (RTHA)	Observation
23.7	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
23.7	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
23.6	Hungry Hollow	Tompkins (GEO)	Wide bar. No major channel change.	Observation
23.5	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
23.5	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required

23.4	Hungry Hollow	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
23.4	Hungry Hollow	Frank (HYDRO)	Looking down stream at right bank cut Bank	Observation
23.3	Madison	Rayburn (BIO)	Erodible bank, potential bank swallow (BANS) habitat, no holes	Monitoring Required
23.3	Madison	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
23.2	Madison	Tompkins (GEO)	Long straight reach. No major channel change.	Observation
22.8	Madison	Rayburn (BIO)	Erodible bank, potential bank swallow (BANS) habitat, no holes	Monitoring Required
22.8	Madison	Frank (HYDRO)	Teicher Plant bank. It looks like some of the material may have been removed from above the bank, but it also looks like especially if the upstream and the creek channel has started to cut into the pile and it's releasing material	Observation
22.7	Madison	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
22.7	Madison	Rayburn (BIO)	Erodible bank, potential bank swallow (BANS) habitat, no holes	Monitoring Required
22.6	Madison	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
22.6	Madison	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
22.5	Madison	Tompkins (GEO)	Massive gravel bar. No major channel change.	Observation
22.5	Madison	Frank (HYDRO)	Looking down stream at the right bank	Observation
22.4	Madison	Rayburn (BIO)	Scattered tamarisk	Monitoring Required

22.4	Madison	Frank (HYDRO)	Newly exposed pipe in the right bank	Monitoring Required
22.3	Madison	Rayburn (BIO)	Tamarisk	Monitoring Required
22.1	Madison	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
22.1	Madison	Tompkins (GEO)	Still on massive gravel bar. No major channel change.	Observation
22.0	Madison	Rayburn (BIO)	OHV activity	Monitoring Required
22.0	Madison	Frank (HYDRO)	Looking at left the bank of the Payne property with significant Willow in Cottonwood recruitment in front	Observation
21.9	Madison	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
21.9	Madison	Tompkins (GEO)	Gravel bar along Payne eroded bank. Toe of left bank maturing vegetation. Gravel bar height appears to be increasing.	Observation
21.9	Madison	Frank (HYDRO)	More photos of Payne property	Observation
21.8	Madison	Rayburn (BIO)	Three lesser nighthawks (LENI)	Observation
21.8	Madison	Rayburn (BIO)	OHV activity	Monitoring Required
21.7	Madison	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
21.7	Madison	Rayburn (BIO)	Great horned owl (GHOW)	Observation
21.6	Madison	Rayburn (BIO)	Tamarisk	Monitoring Required

21.5	Madison	Rayburn (BIO)	Pair of green herons day 1 (GRHE)	Observation
21.5	Madison	Tompkins (GEO)	Start of day one. Test point. Gathering at Syar.	Observation
21.5	Madison	Tompkins (GEO)	At Syar. No major channel change. More OHV damage than upstream.	Observation
21.4	Madison	Rayburn (BIO)	OHV activity	Monitoring Required
21.4	Madison	Rayburn (BIO)	OHV activity	Monitoring Required
21.4	Madison	Tompkins (GEO)	Start of day two at Syar plant. No major channel change.	Observation
21.4	Madison	Frank (HYDRO)	Eroding bank and car in bank	Observation
21.3	Madison	Rayburn (BIO)	Tamarisk	Monitoring Required
21.3	Madison	Rayburn (BIO)	Some drought recovery of vegetation, no initial signs of new drought impacts this year	Observation
21.3	Madison	Rayburn (BIO)	Tamarisk	Monitoring Required
21.3	Madison	Tompkins (GEO)	At eroding training berms. Some new erosion and scour.	Observation
21.3	Madison	Frank (HYDRO)	End of spur Dike	Observation
21.3	Madison	Frank (HYDRO)	End of spur Dike	Observation
21.2	Madison	Rayburn (BIO)	Dead barn owl (BNOW)	Observation

21.2	Madison	Rayburn (BIO)	No obvious new drought stress of vegetation	Observation
21.1	Madison	Frank (HYDRO)	Looking down stream at 5:05 bridge	Observation
21.1	Madison	Frank (HYDRO)	Left bank just upstream of 505 bridge apparent new, erosion and extruded dangling corrugated metal pipe	Monitoring Required
21.0	Madison	Rayburn (BIO)	Annually monitored "barometer" patch of mature woody vegetation	Observation
21.0	Madison	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
21.0	Madison	Rayburn (BIO)	Annually monitored "barometer" patch of mature woody vegetation	Observation
21.0	Madison	Rayburn (BIO)	Pair of Swainson's hawks (SWHA)	Observation
21.0	Madison	Tompkins (GEO)	Upstream of 505. New left bank erosion close to undermining abutment rock slope protection. Possible influence of right bank training berms and vegetation pushing channel to left bank.	Action Required
21.0	Guesisosi	Frank (HYDRO)	Looking down stream at 5:05 bridge with very uniform channel	Monitoring Required
21.0	Guesisosi	Frank (HYDRO)	Car on the left Bank	Monitoring Required
21.0	Guesisosi	Frank (HYDRO)	505 Bridge Piers, 432 and one	Observation
20.9	Guesisosi	Rayburn (BIO)	Vegetation under Hwy 505 bridge, no negative impacts	Monitoring Required
20.9	Guesisosi	Rayburn (BIO)	Cliff swallows (CLSW) under bridge	Observation
20.9	Guesisosi	Rayburn (BIO)	Vegetation at Hwy 505 bridge looking upstream	Monitoring Required

20.9	Guesisosi	Rayburn (BIO)	Vegetation at Hwy 505 bridge looking downstream	Observation
20.9	Guesisosi	Frank (HYDRO)	505 Bridge number two footer showing no signs of undermining and likely additional deposition this year	Observation
20.9	Guesisosi	Frank (HYDRO)	505 Bridge. Number three also showing signs of deposition this year.	Observation
20.8	Guesisosi	Rayburn (BIO)	Recovery of vegetation from drought	Observation
20.8	Guesisosi	Rayburn (BIO)	Arundo	Monitoring Required
20.8	Guesisosi	Tompkins (GEO)	Downstream of 505. Right two bridge bays full with large gravel bar.	Observation
20.8	Guesisosi	Frank (HYDRO)	Looking upstream at 505 Bridge	Observation
20.8	Guesisosi	Frank (HYDRO)	Looking at CEMEX, right bank stabilization project with fairly maturing Willows and a cottonwood growing up in front of it on the bar	Monitoring Required
20.7	Guesisosi	Rayburn (BIO)	OHV activity	Monitoring Required
20.7	Guesisosi	Rayburn (BIO)	Swainson's hawk (SWHA)	Observation
20.7	Guesisosi	Frank (HYDRO)	Cemex rock stabilization project	Monitoring Required
20.6	Guesisosi	Rayburn (BIO)	Arundo	Monitoring Required
20.6	Guesisosi	Rayburn (BIO)	Arundo	Monitoring Required
20.6	Guesisosi	Rayburn (BIO)	Arundo	Monitoring Required

20.6	Guesisosi	Tompkins (GEO)	Large mid channel bar. More mature vegetation	Observation
20.6	Guesisosi	Frank (HYDRO)	Looking down stream near CEMEX, maturing vegetation in the middle of channel	Observation
20.5	Guesisosi	Rayburn (BIO)	Recovery of vegetation from drought	Observation
20.5	Guesisosi	Rayburn (BIO)	Erodible bank, potential bank swallow (BANS) habitat, no holes	Monitoring Required
20.4	Guesisosi	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
20.4	Guesisosi	Rayburn (BIO)	Tamarisk and arundo	Monitoring Required
20.4	Guesisosi	Rayburn (BIO)	Abundant scattered tamarisk and arundo	Monitoring Required
20.4	Guesisosi	Rayburn (BIO)	Abundant arundo and tamarisk	Monitoring Required
20.4	Guesisosi	Tompkins (GEO)	CEMEX large midchannel bar. Still some old bank erosion scars along right bank conveyor corridor.	Observation
20.4	Guesisosi	Frank (HYDRO)	Cemex embankment channel is generally on the other side of the corridor. The toe is protected with Willows	Monitoring Required
20.4	Guesisosi	Frank (HYDRO)	Looking at CEMEX bank is not showing signs of any new erosion, but bank is very, very steep probably steeper than 1 to 1 and conveyor is probably less than 20 feet away from that edge. Worth looking at in more detail whether or not this is hazardous.	Monitoring Required
20.3	Guesisosi	Rayburn (BIO)	Recovery of vegetation from drought	Observation
20.3	Guesisosi	Rayburn (BIO)	OHV activity	Monitoring Required
20.3	Guesisosi	Rayburn (BIO)	Large arundo	Monitoring Required

20.3	Guesisosi	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
20.3	Guesisosi	Rayburn (BIO)	Large arundo	Monitoring Required
20.3	Guesisosi	Tompkins (GEO)	CEMEX mid channel bar. Bar seems higher and finer with more vegetation including lots of tamarisk.	Observation
20.2	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
20.2	Guesisosi	Rayburn (BIO)	Large arundo	Monitoring Required
20.2	Guesisosi	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
20.2	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
20.2	Guesisosi	Rayburn (BIO)	Two lesser nighthawks (LENI)	Observation
20.2	Guesisosi	Frank (HYDRO)	Eroding section of the left bank	Observation
20.1	Guesisosi	Rayburn (BIO)	Large arundo and tam	Monitoring Required
20.1	Guesisosi	Rayburn (BIO)	Arundo	Monitoring Required
20.1	Guesisosi	Rayburn (BIO)	Tamarisk and arundo	Monitoring Required
20.1	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
20.1	Guesisosi	Rayburn (BIO)	Persistent in-channel vegetation	Observation

20.1	Guesisosi	Frank (HYDRO)	Looking down stream fairly dense vegetation on sides of Channel	Observation
20.1	Guesisosi	Frank (HYDRO)	Looking at left bank with maturing vegetations	Observation
20.0	Guesisosi	Rayburn (BIO)	Tamarisk and arundo	Monitoring Required
20.0	Guesisosi	Rayburn (BIO)	Upstream vegetation, on banks, increasingly stable and mature, some drought recovery, no significant other changes	Observation
20.0	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
20.0	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
20.0	Guesisosi	Rayburn (BIO)	Pools and flow	Observation
20.0	Guesisosi	Tompkins (GEO)	Upstream end of narrowing reach. Large mid channel bar growth upstream.	Observation
19.9	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
19.9	Guesisosi	Rayburn (BIO)	Stable mature vegetation	Observation
19.9	Guesisosi	Rayburn (BIO)	Three river otters	Observation
19.8	Guesisosi	Rayburn (BIO)	Abundant tamarisk and arundo	Monitoring Required
19.8	Guesisosi	Tompkins (GEO)	Active channel migration to right bank and lowering likely related to mid channel bar growth. Erosion of toe large rock.	Observation
19.8	Guesisosi	Frank (HYDRO)	CEMEX, right Bank showing evidence of degradation of channel that is making fill rock slump into the channel and exposing just above the toe	Monitoring Required

19.7	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
19.7	Guesisosi	Rayburn (BIO)	Gallery forest of mature native vegetation	Observation
19.7	Guesisosi	Rayburn (BIO)	Scattered tamarisk and arundo	Monitoring Required
19.7	Guesisosi	Rayburn (BIO)	"Bow Tie" potential restoration site, needs reconnection and invasive management	Observation
19.7	Guesisosi	Rayburn (BIO)	Arundo	Monitoring Required
19.7	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
19.7	Guesisosi	Rayburn (BIO)	Tamarisk and arundo	Monitoring Required
19.6	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
19.6	Guesisosi	Tompkins (GEO)	Newly exposed hard pan "reef" that provides grade control and large scour pool downstream.	Monitoring Required
19.6	Guesisosi	Tompkins (GEO)	Left bank and mid channel fine gravel bar.	Observation
19.5	Guesisosi	Rayburn (BIO)	Arundo	Monitoring Required
19.5	Guesisosi	Frank (HYDRO)	Looking down stream	Observation
19.4	Guesisosi	Rayburn (BIO)	Looking upstream	Observation
19.4	Guesisosi	Rayburn (BIO)	Looking downstream	Observation

19.4	Guesisosi	Rayburn (BIO)	Two Northwestern pond turtles	Observation
19.3	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
19.3	Guesisosi	Rayburn (BIO)	Large tamarisk	Monitoring Required
19.3	Guesisosi	Rayburn (BIO)	Pair of red-tailed hawks (RTHA)	Observation
19.2	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
19.2	Guesisosi	Rayburn (BIO)	Erodible bank, potential bank swallow (BANS) habitat, no holes	Monitoring Required
19.2	Guesisosi	Frank (HYDRO)		Monitoring Required
19.1	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
19.1	Guesisosi	Tompkins (GEO)	Narrow reach. Clear mid channel bar.	Observation
19.1	Guesisosi	Frank (HYDRO)	Looking down stream	Observation
19.0	Guesisosi	Rayburn (BIO)	Large arundo	Monitoring Required
19.0	Guesisosi	Rayburn (BIO)	Stable vegetation	Observation
19.0	Guesisosi	Rayburn (BIO)	Arundo	Monitoring Required
19.0	Guesisosi	Tompkins (GEO)	Giant blazing star patch. No major channel change.	Observation

18.9	Guesisosi	Rayburn (BIO)	Treated arundo	Monitoring Required
18.9	Guesisosi	Rayburn (BIO)	Tamarisk and arundo	Monitoring Required
18.9	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
18.9	Guesisosi	Rayburn (BIO)	Tamarisk	Monitoring Required
18.8	Guesisosi	Rayburn (BIO)	Largemouth bass	Observation
18.8	Guesisosi	Rayburn (BIO)	Large arundo and tamarisk	Monitoring Required
18.8	Guesisosi	Rayburn (BIO)	Northwestern pond turtle	Observation
18.8	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.8	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.8	Dunnigan Hills	Rayburn (BIO)	Arundo	Monitoring Required
18.7	Dunnigan Hills	Rayburn (BIO)	Scattered large tamarisk	Monitoring Required
18.7	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.7	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.7	Dunnigan Hills	Rayburn (BIO)	Erodible bank, potential bank swallow (BANS) habitat, no holes	Monitoring Required

18.7	Dunnigan Hills	Tompkins (GEO)	Narrow creek corridor section. Mature vegetation. Clear left bank gravel bar. No major channel change.	Observation
18.7	Dunnigan Hills	Tompkins (GEO)	Eroding right bank appears to be from this Water Year.	Monitoring Required
18.7	Dunnigan Hills	Frank (HYDRO)		Observation
18.7	Dunnigan Hills	Frank (HYDRO)	Eroding right bank	Monitoring Required
18.6	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.6	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.6	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.6	Dunnigan Hills	Rayburn (BIO)	Two red-tailed hawks (RTHA)	Observation
18.5	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.5	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.5	Dunnigan Hills	Frank (HYDRO)	Open upstream at eroding right bank and currently new channel form carving. Has the channel degraded significantly in this reach in the last year? Check when we get the LiDAR data for 2024.	Monitoring Required
18.4	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.3	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.3	Dunnigan Hills	Rayburn (BIO)	Vegetation die-back, unknown cause but potentially rapid water drop and hot temps on exposed roots	Monitoring Required

18.3	Dunnigan Hills	Rayburn (BIO)	Vegetation die-back, unknown cause but potentially rapid water drop and hot temps on exposed roots	Monitoring Required
18.3	Dunnigan Hills	Rayburn (BIO)	Vegetation die-back, unknown cause but potentially rapid water drop and hot temps on exposed roots	Monitoring Required
18.3	Dunnigan Hills	Frank (HYDRO)	What evidence of pick up truck travel in the channel?	Action Required
18.2	Dunnigan Hills	Rayburn (BIO)	Purple loosestrife	Monitoring Required
18.2	Dunnigan Hills	Rayburn (BIO)	Vegetation die-back, unknown cause but potentially rapid water drop and hot temps on exposed roots	Monitoring Required
18.2	Dunnigan Hills	Rayburn (BIO)	Erodible bank, potential bank swallow (BANS) habitat, no holes	Monitoring Required
18.2	Dunnigan Hills	Tompkins (GEO)	Previous excavation. Active OHV or other vehicle tracks.	Action Required
18.2	Dunnigan Hills	Frank (HYDRO)		Action Required
18.2	Dunnigan Hills	Frank (HYDRO)	Illicit gravel removal site with evidence of find deposition and more truck travel	Monitoring Required
18.2	Dunnigan Hills	Frank (HYDRO)	Left bank erosion, is this new?	Monitoring Required
18.1	Dunnigan Hills	Rayburn (BIO)	Large patch of tamarisk	Monitoring Required
18.1	Dunnigan Hills	Rayburn (BIO)	Arundo	Monitoring Required
18.0	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
18.0	Dunnigan Hills	Tompkins (GEO)	Upstream of Moore's Siphon. Left bank erosion. Enormous school of large carp.	Observation

18.0	Dunnigan Hills	Frank (HYDRO)	Left bank just up stream of Moore's Siphon	Observation
17.9	Dunnigan Hills	Rayburn (BIO)	Beaver dam	Observation
17.9	Dunnigan Hills	Rayburn (BIO)	Arundo	Monitoring Required
17.9	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
17.9	Dunnigan Hills	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
17.9	Dunnigan Hills	Tompkins (GEO)	Moore's Siphon. No major channel change.	Observation
17.9	Dunnigan Hills	Frank (HYDRO)	Super nice lunch spot	Observation
17.8	Dunnigan Hills	Rayburn (BIO)	Arundo	Monitoring Required
17.7	Dunnigan Hills	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
17.7	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
17.7	Dunnigan Hills	Rayburn (BIO)	Arundo	Monitoring Required
17.7	Dunnigan Hills	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
17.7	Dunnigan Hills	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
17.6	Dunnigan Hills	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required

17.5	Dunnigan Hills	Rayburn (BIO)	Large ravenna grass	Monitoring Required
17.5	Dunnigan Hills	Rayburn (BIO)	Arundo	Monitoring Required
17.4	Dunnigan Hills	Rayburn (BIO)	Arundo	Monitoring Required
17.4	Dunnigan Hills	Rayburn (BIO)	Very large patch of arundo and tamarisk	Monitoring Required
17.4	Dunnigan Hills	Rayburn (BIO)	Swainson's hawk (SWHA)	Observation
17.4	Dunnigan Hills	Rayburn (BIO)	Huge patch of arundo and tamarisk on both sides of creek	Monitoring Required
17.4	Dunnigan Hills	Tompkins (GEO)	Narrow deep channel - no major channel change.	Observation
17.3	Dunnigan Hills	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
17.2	Dunnigan Hills	Rayburn (BIO)	End of huge patch of arundo and tamarisk on both sides of creek	Monitoring Required
17.2	Dunnigan Hills	Rayburn (BIO)	Beaver chewing trees	Observation
17.2	Dunnigan Hills	Rayburn (BIO)	Ravenna grass	Monitoring Required
17.2	Dunnigan Hills	Rayburn (BIO)	Beaver dam complex	Monitoring Required
17.2	Dunnigan Hills	Rayburn (BIO)	Beaver dam, part of a complex with lots of trees down, beaver, slides, and secondary pools on the south bank in the woods	Monitoring Required
17.2	Dunnigan Hills	Rayburn (BIO)	Beaver dam, part of a complex with lots of trees down, beaver, slides, and secondary pools on the south bank in the woods	Monitoring Required

17.2	Dunnigan Hills	Rayburn (BIO)	Bullfrog	Observation
17.2	Dunnigan Hills	Tompkins (GEO)	Long beaver pond and dam reach.	Observation
17.2	Dunnigan Hills	Tompkins (GEO)	Beaver dam branch packing.	Observation
17.1	Dunnigan Hills	Rayburn (BIO)	Swainson's hawk (SWHA) and osprey (OSPR)	Observation
17.1	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
17.1	Dunnigan Hills	Tompkins (GEO)	Left bank split channel from beaver dam with upstream bar flow.	Observation
17.0	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
16.9	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
16.8	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
16.8	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
16.6	Dunnigan Hills	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
16.6	Dunnigan Hills	Tompkins (GEO)	Upstream of conveyor bridge. No major channel change.	Observation
16.5	Dunnigan Hills	Rayburn (BIO)	Native vegetation doing well, no drought stress	Observation
16.5	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required

16.5	Dunnigan Hills	Rayburn (BIO)	Arundo	Monitoring Required
16.5	Dunnigan Hills	Rayburn (BIO)	Vegetation looking downstream	Observation
16.5	Dunnigan Hills	Rayburn (BIO)	Vegetation looking downstream	Observation
16.5	Dunnigan Hills	Rayburn (BIO)	Cliff swallows (CLSW) under bridge	Observation
16.5	Dunnigan Hills	Rayburn (BIO)	Vegetation looking upstream	Observation
16.5	Dunnigan Hills	Rayburn (BIO)	Vegetation looking upstream	Observation
16.5	Dunnigan Hills	Rayburn (BIO)	Tamarisk	Monitoring Required
16.5	Dunnigan Hills	Tompkins (GEO)	Conveyor bridge. No major channel change.	Observation
16.5	Dunnigan Hills	Tompkins (GEO)	Conveyor bridge. No major channel change.	Observation
16.5	Dunnigan Hills	Frank (HYDRO)	Looking at the channel from the conveyor bridge	Observation
16.4	Dunnigan Hills	Rayburn (BIO)	Cache Creek Nature Preserve wetland	Monitoring Required
16.4	Dunnigan Hills	Rayburn (BIO)	Swainson's hawk (SWHA) nest	Observation
16.1	Dunnigan Hills	Rayburn (BIO)	Erosion repair project	Observation
15.9	Dunnigan Hills	Frank (HYDRO)	Looking upstream from Gordon slough confluence	Observation

15.9	Dunnigan Hills	Frank (HYDRO)	Gordon slough outlet	Observation
15.9	Dunnigan Hills	Frank (HYDRO)	Looking downstream at Stephens bridge	Observation
15.8	Hoppin	Rayburn (BIO)	Cliff swallows (CLSW) under bridge	Observation
15.8	Hoppin	Rayburn (BIO)	Vegetation looking upstream	Observation
15.8	Hoppin	Rayburn (BIO)	Vegetation under bridge	Monitoring Required
15.8	Hoppin	Rayburn (BIO)	Ravenna grass	Monitoring Required
15.8	Hoppin	Rayburn (BIO)	Vegetation looking downstream	Observation
15.8	Hoppin	Rayburn (BIO)	Arundo	Monitoring Required
15.8	Hoppin	Rayburn (BIO)	Vegetation slowly increasing on banks and in-channels, no new erosion	Observation
15.8	Hoppin	Rayburn (BIO)	Tamarisk	Monitoring Required
15.8	Hoppin	Rayburn (BIO)	Vegetation increasing somewhat	Observation
15.8	Hoppin	Tompkins (GEO)	Road 94b bridge. Upstream gravel bar scoured clear. No major channel change downstream.	Observation
15.8	Hoppin	Frank (HYDRO)	Stevens bridge Piers, number one and number two	Observation
15.8	Hoppin	Frank (HYDRO)	Stephens bridge pier number three	Observation

15.8	Hoppin	Frank (HYDRO)	Looking upstream at Stevens bridge channel is hugging the right bank and a gravel bar on the left Bank is barely have a leave agitated with Willow's	Observation
15.7	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
15.7	Hoppin	Rayburn (BIO)	Arundo	Monitoring Required
15.7	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
15.7	Hoppin	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
15.7	Hoppin	Rayburn (BIO)	2023 bank swallow (BANS) site but no holes	Monitoring Required
15.7	Hoppin	Rayburn (BIO)	Killdeer nest next to OHV activity	Observation
15.7	Hoppin	Frank (HYDRO)	Looking up stream at Stevens bridge	Observation
15.7	Hoppin	Frank (HYDRO)	Right vertical bank, check for evidence of any change from last two years	Observation
15.6	Hoppin	Rayburn (BIO)	OHV activity near BANS site	Monitoring Required
15.6	Hoppin	Rayburn (BIO)	Trees lost to erosion in 2023	Observation
15.6	Hoppin	Rayburn (BIO)	Vegetation loss from erosion	Observation
15.6	Hoppin	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
15.6	Hoppin	Rayburn (BIO)	Large scattered arundo	Monitoring Required

15.6	Hoppin	Rayburn (BIO)	End of bank swallow (BANS) colony	Monitoring Required
15.6	Hoppin	Tompkins (GEO)	No major channel change.	Observation
15.6	Hoppin	Frank (HYDRO)	Looking up stream	Observation
15.5	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
15.5	Hoppin	Rayburn (BIO)	Bank stabilization planted in winter	Monitoring Required
15.5	Hoppin	Rayburn (BIO)	Dead wild pig	Observation
15.5	Hoppin	Rayburn (BIO)	Start of "Shifler" bank swallow (BANS) colony (active)	Monitoring Required
15.5	Hoppin	Rayburn (BIO)	Bank swallow (BANS) colony, approximately 80 holes	Monitoring Required
15.5	Hoppin	Tompkins (GEO)	Excellent habitat for bank swallows on right eroded bank.	Observation
15.5	Hoppin	Frank (HYDRO)	Walking across the channel at Teichert bank stabilization project. Make sure to ask Casey for teichert's report on the project and evaluate.	Action Required
15.5	Hoppin	Frank (HYDRO)	Dead pig	Observation
15.5	Hoppin	Frank (HYDRO)	Right cut bank	Observation
15.4	Hoppin	Rayburn (BIO)	Large bank swallow (BANS) colony, approximately 190 holes	Monitoring Required
15.4	Hoppin	Rayburn (BIO)	Bank swallow (BANS) colony	Monitoring Required

15.4	Hoppin	Rayburn (BIO)	Bank swallow (BANS) colony con't	Monitoring Required
15.4	Hoppin	Rayburn (BIO)	Bank swallow (BANS) colony, approximately 25 holes	Monitoring Required
15.4	Hoppin	Rayburn (BIO)	Bank swallow (BANS) colony, approximately 100 holes	Monitoring Required
15.4	Hoppin	Frank (HYDRO)	right bank check for new erosion	Observation
15.3	Hoppin	Rayburn (BIO)	End bank swallow (BANS) colonies	Monitoring Required
15.3	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
15.3	Hoppin	Rayburn (BIO)	Arundo	Monitoring Required
15.3	Hoppin	Rayburn (BIO)	Begin potential restoration site, also arundo and tamarisk	Monitoring Required
15.3	Hoppin	Rayburn (BIO)	Potential restoration site con't	Monitoring Required
15.3	Hoppin	Tompkins (GEO)	Channel migration through 2016 deposits.	Observation
15.2	Hoppin	Rayburn (BIO)	River otter scat	Observation
15.2	Hoppin	Rayburn (BIO)	Erodible bank, potential bank swallow (BANS) habitat, no holes	Monitoring Required
15.2	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
15.2	Hoppin	Rayburn (BIO)	Vegetation looking downstream	Observation

15.2	Hoppin	Rayburn (BIO)	Vegetation looking upstream	Observation
15.2	Hoppin	Frank (HYDRO)	Left bank right at the entrance to Teichert restoration site	Observation
15.1	Hoppin	Rayburn (BIO)	Potential restoration site con't	Monitoring Required
15.1	Hoppin	Rayburn (BIO)	Current active restoration site (year 5 after planting)	Monitoring Required
15.1	Hoppin	Rayburn (BIO)	Erodible bank, potential bank swallow (BANS) habitat, no holes	Monitoring Required
15.1	Hoppin	Rayburn (BIO)	Erodible bank, potential bank swallow (BANS) habitat con't, no holes	Monitoring Required
15.1	Hoppin	Tompkins (GEO)	Triangle side channel restoration pilot project. Good growth and vegetation cover.	Observation
15.1	Hoppin	Frank (HYDRO)	Looking at Teichert restoration flooded one time over the last winter very briefly check flow record	Action Required
15.1	Hoppin	Frank (HYDRO)	Right bank looking very freshly cut	Observation
15.0	Hoppin	Rayburn (BIO)	Minor vegetation loss from erosion	Monitoring Required
15.0	Hoppin	Rayburn (BIO)	Potential bank swallow (BANS) habitat, not eroded enough, no holes	Monitoring Required
15.0	Hoppin	Tompkins (GEO)	Potential right bank bank swallow habitat. OHV crossing tracks downstream.	Observation
14.9	Hoppin	Rayburn (BIO)	Cliff swallows (CLSW) under bridge	Observation
14.9	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required

14.9	Hoppin	Rayburn (BIO)	Major OHV activity	Monitoring Required
14.8	Hoppin	Rayburn (BIO)	Scattered tamarisk	Monitoring Required
14.8	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
14.8	Hoppin	Rayburn (BIO)	Tamarisk	Monitoring Required
14.8	Hoppin	Rayburn (BIO)	Tamarisk	Monitoring Required
14.8	Hoppin	Tompkins (GEO)	No major channel change. Significant flow still - typically channel is close to dry this far downstream.	Observation
14.7	Hoppin	Rayburn (BIO)	Tamarisk	Monitoring Required
14.7	Hoppin	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
14.7	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
14.7	Hoppin	Rayburn (BIO)	Scattered arundo and tamarisk	Monitoring Required
14.7	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
14.6	Hoppin	Rayburn (BIO)	Tamarisk	Monitoring Required
14.6	Hoppin	Rayburn (BIO)	Start of potential bank swallow (BANS) habitat, some holes	Monitoring Required
14.6	Hoppin	Rayburn (BIO)	OHV activity next to potential bank swallow (BANS) habitat	Monitoring Required

14.6	Hoppin	Rayburn (BIO)	Bank swallow (BANS) colony, approximately 40 holes, no birds	Monitoring Required
14.6	Hoppin	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
14.6	Hoppin	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
14.6	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
14.6	Hoppin	Tompkins (GEO)	Right bank bank swallow habitat. No major channel change.	Observation
14.5	Hoppin	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
14.5	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
14.5	Hoppin	Rayburn (BIO)	Swainson's hawk (SWHA)	Observation
14.5	Hoppin	Frank (HYDRO)	Looking downstream	Observation
14.4	Hoppin	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
14.4	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
14.4	Hoppin	Rayburn (BIO)	Tamarisk	Monitoring Required
14.4	Hoppin	Rayburn (BIO)	Ravenna grass	Monitoring Required
14.3	Hoppin	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required

14.3	Hoppin	Rayburn (BIO)	Erodible bank, potential future bank swallow (BANS) habitat	Monitoring Required
14.3	Hoppin	Rayburn (BIO)	Arundo	Monitoring Required
14.2	Hoppin	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
14.2	Hoppin	Rayburn (BIO)	Two red-tailed hawks (RTHA)	Observation
14.2	Hoppin	Rayburn (BIO)	Two Swainson's hawks (SWHA)	Observation
14.2	Hoppin	Rayburn (BIO)	Woodland Reiff	Monitoring Required
14.2	Hoppin	Rayburn (BIO)	Tamarisk	Monitoring Required
14.2	Hoppin	Rayburn (BIO)	Arundo	Monitoring Required
14.2	Hoppin	Rayburn (BIO)	Start of very large bank swallow (BANS) colony	Monitoring Required
14.2	Hoppin	Rayburn (BIO)	Bank swallow (BANS) colony, approximately 240 holes	Monitoring Required
14.2	Hoppin	Tompkins (GEO)	Left bank Woodland Reiff levee. No major erosion.	Observation
14.2	Hoppin	Tompkins (GEO)	Woodland Reiff. No major channel change, but channel through old breach site still likely unstable during extreme high flows.	Observation
14.2	Hoppin	Frank (HYDRO)	Looking down stream	Observation
14.2	Hoppin	Frank (HYDRO)	Looking slightly down stream at right bank	Observation

14.1	Hoppin	Rayburn (BIO)	End bank swallow (BANS) colony	Monitoring Required
14.1	Hoppin	Rayburn (BIO)	OHV activity next to bank swallow (BANS) colony	Monitoring Required
14.1	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
14.1	Hoppin	Tompkins (GEO)	Right bank fresh erosion supporting a bank swallow colony.	Observation
14.1	Hoppin	Tompkins (GEO)	Downstream drainage from Woodland Reiff drain flow.	Monitoring Required
14.1	Hoppin	Frank (HYDRO)	Bank swallow colony	Observation
14.0	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
14.0	Hoppin	Tompkins (GEO)	Final rest stop.	Observation
13.9	Hoppin	Rayburn (BIO)	Woody debris from high flows	Observation
13.9	Hoppin	Rayburn (BIO)	Correll Rodgers site	Monitoring Required
13.9	Hoppin	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
13.9	Hoppin	Rayburn (BIO)	Pair of wood ducks (WODU)	Observation
13.8	Hoppin	Rayburn (BIO)	YHC elderberry mitigation site, looking better, higher up, less flooding	Monitoring Required
13.7	Hoppin	Rayburn (BIO)	Mitigation site	Monitoring Required

13.7	Hoppin	Rayburn (BIO)	Remnant creeping wildrye	Observation
13.7	Hoppin	Rayburn (BIO)	CCC mitigation site	Monitoring Required
13.7	Hoppin	Tompkins (GEO)	Correll Rogers - no major changes to site.	Observation
13.7	Hoppin	Tompkins (GEO)	Long straight reach - no major channel change.	Observation
13.7	Hoppin	Frank (HYDRO)	Looking down stream	Observation
13.6	Hoppin	Rayburn (BIO)	Vegetation looking upstream, no drought stress	Observation
13.6	Hoppin	Rayburn (BIO)	Vegetation looking upstream, no drought stress	Observation
13.6	Hoppin	Rayburn (BIO)	Four red-tailed hawks (RTHA)	Observation
13.6	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
13.6	Hoppin	Rayburn (BIO)	Tamarisk	Monitoring Required
13.6	Hoppin	Frank (HYDRO)	In the channel here, Correll Rogers. Follow up with Charlie about opportunities for water inflow opportunities at Correll Rogers.	Action Required
13.5	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
13.4	Hoppin	Frank (HYDRO)	Looking down stream at pipe protruding into channel	Observation
13.2	Hoppin	Rayburn (BIO)	Scattered large tamarisk	Monitoring Required

13.2	Hoppin	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
13.2	Hoppin	Rayburn (BIO)	Very large tamarisk	Monitoring Required
13.2	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
13.1	Hoppin	Rayburn (BIO)	Woody debris from flows	Observation
13.1	Hoppin	Rayburn (BIO)	Tamarisk	Monitoring Required
13.1	Hoppin	Rayburn (BIO)	Giant tamarisk as in years past	Monitoring Required
13.1	Hoppin	Tompkins (GEO)	Straight reach with no major channel change.	Observation
13.1	Hoppin	Frank (HYDRO)	Looking upstream	Observation
13.0	Hoppin	Rayburn (BIO)	OHV activity in area with toads and many tadpoles	Monitoring Required
12.9	Hoppin	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
12.8	Hoppin	Rayburn (BIO)	Giant tamarisk	Monitoring Required
12.8	Hoppin	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
12.8	Hoppin	Rayburn (BIO)	OHV activity	Monitoring Required
12.8	Hoppin	Tompkins (GEO)	Entering tight "S" bend. No major channel change.	Observation

12.8	Hoppin	Frank (HYDRO)	Looking downstream	Observation
12.6	Hoppin	Frank (HYDRO)	Looking down stream	Observation
12.6	Rio Jesus Maria	Rayburn (BIO)	OHV activity	Monitoring Required
12.5	Rio Jesus Maria	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
12.4	Rio Jesus Maria	Rayburn (BIO)	Tamarisk	Monitoring Required
12.4	Rio Jesus Maria	Tompkins (GEO)	In tight "S" bend. No major channel change.	Observation
12.4	Rio Jesus Maria	Frank (HYDRO)	Looking down stream	Observation
12.3	Rio Jesus Maria	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
12.3	Rio Jesus Maria	Rayburn (BIO)	OHV activity in area with many toads	Monitoring Required
12.3	Rio Jesus Maria	Rayburn (BIO)	OHV activity in area with many toads	Monitoring Required
12.3	Rio Jesus Maria	Tompkins (GEO)	End of surface flow in channel.	Observation
12.2	Rio Jesus Maria	Rayburn (BIO)	Tamarisk	Monitoring Required
12.2	Rio Jesus Maria	Rayburn (BIO)	Tamarisk	Monitoring Required
12.2	Rio Jesus Maria	Rayburn (BIO)	Arundo	Monitoring Required

12.2	Rio Jesus Maria	Rayburn (BIO)	Juvenile red-tailed hawk (RTHA)	Observation
12.2	Rio Jesus Maria	Rayburn (BIO)	Arundo and tamarisk	Monitoring Required
12.2	Rio Jesus Maria	Frank (HYDRO)	Concrete from house above Creek on right bank	Monitoring Required
12.1	Rio Jesus Maria	Rayburn (BIO)	Red-tailed hawk (RTHA)	Observation
12.1	Rio Jesus Maria	Rayburn (BIO)	Tamarisk	Monitoring Required
12.1	Rio Jesus Maria	Tompkins (GEO)	In tight "S" bend - no major channel change.	Observation
11.9	Rio Jesus Maria	Tompkins (GEO)	Long straight reach upstream of Huff's Corner. No major channel change.	Observation
11.9	Rio Jesus Maria	Frank (HYDRO)	Looking downstream	Observation
11.8	Rio Jesus Maria	Rayburn (BIO)	Smaller unknown raptor	Observation
11.7	Rio Jesus Maria	Rayburn (BIO)	Planted willows at corner project doing very well	Monitoring Required
11.7	Rio Jesus Maria	Tompkins (GEO)	Upstream end of Huff's Corner. Strong toe willow growth.	Observation
11.6	Rio Jesus Maria	Tompkins (GEO)	Huffs corner. Maintenance required.	Monitoring Required
11.6	Rio Jesus Maria	Frank (HYDRO)	Looking downstream at Huff's Corner	Observation