

# Mokelumne River Floodplain Reconnection and Restoration Project: Improving Conditions for California's Central Valley Anadromous Fisheries

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Submitted by:

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# 1 Introduction

## 1.1 Date and Applicant Information

Date: June 1, 2023

Applicant Name: East Bay Municipal Utility District (EBMUD)

Applicant City, County, and State: Oakland, Alameda County, California. EBMUD serves communities in Alameda and Contra Costa Counties in California. Project is located in San Joaquin County, California

Category: Category A, Task A

## 1.2 Executive Summary

In the California Central Valley (CCV), cumulative effects resulting from interactions among anthropogenic stressors in the freshwater environment (i.e., water pollution, hydropower development, degradation of spawning and rearing habitats, mining, fisheries overexploitation, introduction of non-native species, and climate change) have had deleterious impacts on aquatic ecosystems and have ultimately been linked to declines in the native CCV anadromous salmonid populations. There is currently a regional effort to restore native anadromous salmonids as part of the California State Water Resources Control Board Water Quality Control Plan Update for the Sacramento-San Joaquin Bay Delta, with a major focus on improving habitat conditions within the natal tributaries and throughout the Sacramento-San Joaquin Bay Delta via flow and non-flow measures. The Lower Mokelumne River (LMR), representing the reach below the lowest impassable dam at Camanche, is one of the participating tributaries. Historically, the Mokelumne River provided an abundance of suitable habitat for natural origin CCV anadromous salmonid populations of Fall-run Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead trout (*Oncorhynchus mykiss*). Over the last 200 years, effects from anthropogenic activities have adversely affected all aspects of these anadromous salmonids' life cycles. The Central Valley Project Improvement Act (CVPIA), Public Law 102-575, Title 34, mandates changes in management of the Central Valley Project, particularly for the protection, restoration, and enhancement of fish and wildlife. Title 34 set a doubling goal of 9,300 adult spawners and their progeny; habitat assessments conducted on the LMR to determine the ability to meet this goal have demonstrated that the population is currently constrained by a lack of sufficient off-channel floodplain rearing habitat, by approximately 50 acres. Due to the critical importance of floodplain habitat to the survival of juvenile salmonids, EBMUD and local stakeholders are proposing a project that will work with willing landowners to plan and design two large-scale, approximately 25 acres each, floodplain restoration projects. These projects will be instrumental in providing much needed high quality rearing habitat along the migration corridor of the Mokelumne River, offering multiple opportunities for fish to access refugia habitat for improved growth rates before out-migrating into the Delta and Estuary environments. Combining these projects will be the first large step towards meeting both the Chinook salmon and steelhead trout's rearing habitat needs in the LMR. This project will also serve to link scientists, managers, and landowners as they work together towards a common goal, which in turn will maximize the effectiveness of any resulting scientific insight, and likely increase future stakeholder participation.

### 1.3 Schedule

Table 1 shows the anticipated schedule for the project. EBMUD has conducted initial scoping with two private residence landowners and one gravel quarry business along the LMR. One landowner is currently in process of developing a conservation easement with the San Joaquin County Council of Governments (SJCOG) to protect the natural resources of the property under the San Joaquin County Multi Species Habitat Conservation Plan. This easement is already publicly noticed (SJCOG 2023). The second landowner is at an earlier stage of the conservation easement process but is proceeding. The gravel quarry, George Reed, Inc, has identified riparian land that they would be willing to put into easement and additional land for which they would request financial compensation, as it would limit their mining abilities. This project would pursue an investigation of those options as a secondary, potential opportunity to be scoped to the 65 percent design phase for future funding considerations.

Table 1. Timeline for project tasks

Tasks	Calendar Year				Calendar Year				Calendar Year			
	2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Task 1 Baseline surveys												
Task 2. Design Analysis and Development												
Task 3. Permitting												
Task 4. Pre-Project Monitoring												
Task 5: Project Management and Public Outreach												

### 1.4 Project Location

The Mokelumne River Watershed, draining approximately 1624 square kilometers (km<sup>2</sup>), is a tributary to the San Joaquin River (Figure 1). While the entirety of the Mokelumne River is 153 river kilometers (rkm), the construction of Camanche Dam has limited anadromous salmonid migration to the lower 103 rkm, with the lowest 37 rkm tidally influenced. From a watershed context, the proposed floodplain design projects are located along the LMR on the south bank (Kramer-Colburn Floodplain; San Joaquin County; Latitude: 38.216810, Longitude: -121.052537; 100 rkm) and at the north bank (George Reed Floodplain; San Joaquin County; Latitude: 38.198250, Longitude: -121.102880; 93-94 rkms). These sites are strategically located to provide high quality rearing habitat for a majority of the rearing juvenile Chinook salmon and steelhead in the Mokelumne River and to provide spatial habitat diversity for migrating juveniles, by providing two opportunities along the migratory route within the primary rearing reach. Based on annual redd surveys conducted by EBMUD, approximately 60% of the adult Chinook salmon spawning in the Mokelumne River occurs upstream of the proposed Kramer-Colburn floodplain location and approximately 85 percent of the adult Chinook salmon spawning in the Mokelumne River occurs upstream of the proposed George Reed floodplain location (annual redd surveys conducted weekly by EBMUD over the past 22 years). Therefore, these floodplains will provide high quality rearing habitat to nearly all the juvenile Chinook salmon and steelhead that will be rearing and migrating annually in the Mokelumne River.

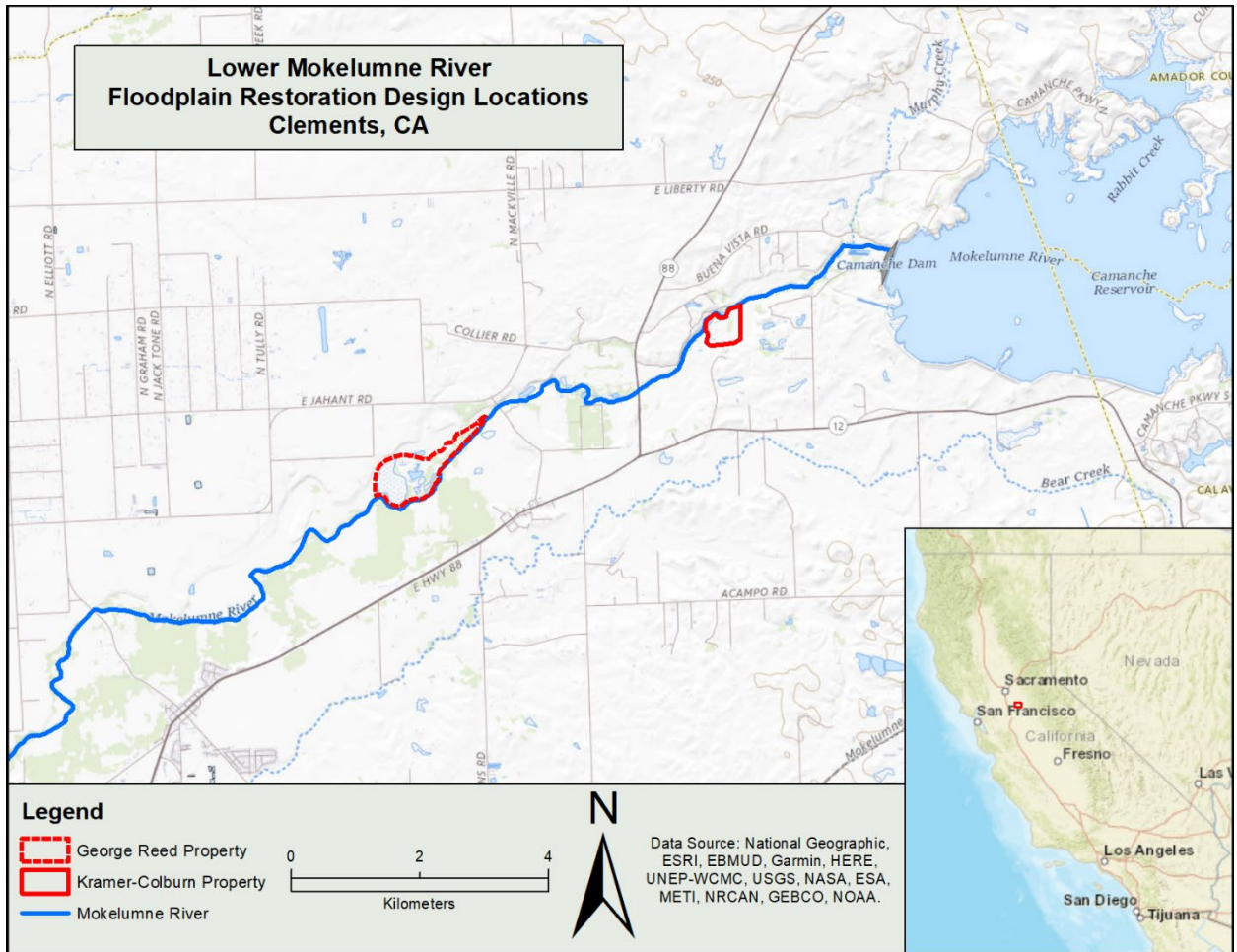


Figure 1. A map depicting the Lower Mokelumne River (blue line) and the two proposed floodplain restoration areas (red lines). The solid red line is encircling the proposed floodplain on the Kramer-Colburn Property and the red dashed line is encircling the proposed floodplain on the George Reed property.

## 2 Technical Project Description

Historically, the Mokelumne River provided an abundance of suitable habitat for two natural origin CCV anadromous salmonid populations, Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead trout (*Oncorhynchus mykiss*). However, over the last 200 years, synergistic effects from current and past anthropogenic activities (e.g., damming, mining, channelization, leveeing, non-native species, etc.) have adversely affected all aspects of the native salmonid population's life cycle. Furthermore, these anthropogenic activities have done such significant harm to the Central Valley Distinct Population Segment (CVDPS) steelhead trout on the Mokelumne River, that both the natural and hatchery origin stocks have been listed as threatened under the Federal Endangered Species Act (ESA). The listing of CVDPS steelhead trout under the ESA was one of the catalysts for federal agencies to create a recovery plan that explicitly identifies restoration actions targeting specific life stages meant to enhance the remnant populations and increase their resiliency (NMFS 2014). More specifically, on the LMR, the recovery plan has identified the lack of floodplain habitat as one of the major stressors to the threatened steelhead trout populations.

Intact riverine floodplain habitats are diverse and complex, connecting the aquatic and terrestrial environments via reciprocal subsidies, and thus are crucial to supporting functioning ecosystems (Wesner et al., 2020). Floodplains provide juvenile salmonids access to critical foraging and refugia habitat during the outmigration phase, with research demonstrating higher rates of growth and survival in the floodplain environment (Sommer et al. 2001; Jeffres et al., 2008; Katz et al., 2017). The increased growth and survival in floodplain habitat are critical to outmigrant juveniles because larger individuals are less vulnerable to size-dependent mortality (i.e., predation; Lindley et al., 2009). Juveniles that attain a larger body size have greater reserves, which make them more resilient to fluctuating food availability as they out-migrate through the dynamic delta and marine environments (Carlson et al., 2011). Furthermore, floodplains also provide benefits to the local community through aquifer recharge, reduction in flood pulses, protection of downstream infrastructure, and increased pollinators (Opperman et al., 2009).

The Central Valley Project Improvement Act of 1991 (Anadromous Fish Restoration Program; USFWS, 2001) established a goal of doubling the natural spawning populations of CCV Chinook salmon in the Mokelumne River (9,300 adult spawners). EBMUD's long term fisheries dataset (1991-present) has been leveraged to assess which limiting factors, and habitat metrics, may be restricting the ability for a population to reach these goals. A recent habitat assessment conducted on the Mokelumne River meant to identify the ability for the natural origin Chinook salmon to reach the CVPIA doubling goal target has demonstrated that the population is currently constrained by a lack of sufficient off-channel floodplain rearing habitat by approximately 50 acres (FlowWest unpublished data). Given the importance of floodplain habitat to the survival of juvenile salmonids, EBMUD in collaboration with local, state, and federal stakeholders, is proposing a project to work with willing landowners to design two large-scale floodplain restoration projects. These projects will be specifically designed to inundate roughly 50 acres of suitable off-channel rearing habitat on a 1.5-2 year recurrence interval (Scientific Basis Report Supplement for Voluntary Agreements Sacramento, Delta, and Tributaries: Page 6-10), thus contributing significantly to meeting the off-channel floodplain rearing habitat requirements of the Chinook salmon and steelhead populations in the Mokelumne River.

Two critical drivers for this project exist: first, the Voluntary Agreements under development being analyzed as an alternative by the State Water Resources Control Board for the Water Quality Control Plan Update for the Sacramento-San Joaquin Bay-Delta include flow and non-flow actions in the Mokelumne River, along with other tributaries in the Central Valley system, to provide cumulative benefits for native anadromous fish populations and; second, the 2014 NMFS “Recovery Plan for The Evolutionarily Significant Units of Sacramento River Winter-Run Chinook Salmon and Central Valley Spring-Run Chinook Salmon and The Distinct Population Segment of California Central Valley Steelhead” (2014 NMFS Recovery Plan) identifies floodplain habitat as critically important to the long-term survival of the federally threatened CVDPS steelhead trout. The proposed floodplain restoration project will likely have a positive effect on the threatened steelhead trout populations in the Mokelumne River.

Ultimately, this project will be broken down into five major implementation components: 1) baseline surveys and assessment, 2) design analysis and development, 3) permitting, 4) pre-project monitoring, and 5) project management and stakeholder outreach.

The baseline surveys and assessment will include surveys of vegetation (including elderberry and gallery trees), wetland delineation, bed material substrate, topography and bathymetry, and bed and bank characteristics. Baseline data is needed for both sites to develop and refine conceptual alternatives that are viable restoration strategies at both sites. The wetland and vegetation surveys will be conducted to document existing resources, so that impacts can be minimized and quantified through permitting. Additional field surveys will be needed to verify the topobathymetric survey, especially in areas in the channel. These surveys will be used to create a base map upon which engineering designs will be based. Existing riverbed substrate and bank and cover characteristics will be mapped to inform existing habitat suitability and design development. A geomorphic and ecohydraulic assessment will be developed that identifies changes to the river corridor and physical habitat as well as characterizing existing conditions. The ecohydraulic assessment will evaluate baseline hydraulic conditions at both sites and will be used to identify whether physical habitat is limited. The ecohydraulic assessment will also inform the development and calibration of hydraulic models used in design. The geomorphic assessment will document historical changes, evaluate the trajectory of each site, map existing geomorphic and mesohabitat units, and document ongoing geomorphic processes relevant to creating and maintaining salmonid habitat.

The design analysis and development will include baseline topographic surveys and ecohydraulic modeling of existing locations to determine the areas that are currently suitable or unsuitable for salmonid rearing and spawning. Two-dimensional hydraulic models will be developed for the purpose of evaluating current physical habitat, geomorphic processes, and base flood elevations. The hydraulic models will be used to model physical habitat suitability, bioenergetic and sediment transport of existing conditions, and to develop potential design scenarios. Based on modeling and refinement to initial design concepts, a 65 percent engineering design will be completed for each site, including project plans, cost estimate and specifications, hydraulic model files, and a basis of design report.

The permitting process will include coordination with state, federal, and local agencies to draft and submit permit applications as well as complete all consultations required for site construction.



The pre-project monitoring will include effectiveness monitoring to document environmental conditions prior to and following restoration. The effectiveness monitoring will enable biologist to test key hypotheses related to changes in primary productivity, macroinvertebrate assemblages, invasive plant and fish species, and salmonid habitat function as a result of restoration actions (see section 2.2 quantification of project benefits).

## 2.1 Regional Effort

The State Water Resources Control Board (State Water Board) is currently in the process of updating and implementing the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan) which would cover flow and nonflow actions in the Mokelumne River along with many other Central Valley anadromous rivers. In 2022, the State Water Board received a Memorandum of Understanding signed by state and federal agencies and Public Water Agencies proposing Voluntary Agreements (VAs) for updating and implementing the Bay-Delta Plan. The VAs include a suite of flow and non-flow actions intended to benefit native and anadromous fisheries and are being considered as one alternative to implementing the Bay-Delta Plan. This project would fund the design of the Mokelumne River non-flow action identified in the VAs to increase available floodplain habitat to benefit anadromous salmonids, while adding additional instream habitat benefits through use of gravel extracted from floodplain benches in the project area to support spawning habitat and in-channel rearing habitat. This action, along with VA non flow actions in neighboring Central Valley Rivers, in the aggregate will provide systemwide benefits to native and anadromous fishes in the Central Valley and seeks to move Chinook salmon toward the CVPIA fish doubling goal (<https://resources.ca.gov/Initiatives/Voluntary-Agreements-Page>).

## 2.2 Quantification of Project benefits

Enhancement of rearing habitat for juvenile salmonids is expected to result in benefits to both measurable physical habitat attributes and biological response variables. While the proposed project only includes design, a description of quantified benefits can be created based on assumptions of ecological responses that would likely develop once the floodplain is created and fully functioning. These ecological responses are described below.

Models constructed by FlowWest (FlowWest unpublished data) that are currently being used by the CVPIA show that the habitat currently available to Chinook salmon in the Mokelumne River can only produce approximately 3.1 million fry. Projected model outputs have demonstrated that increasing the floodplain area on the Mokelumne River by 50 acres would lead to an increase in the overall fry to 7.4 million, which is the number of fry needed to support the Chinook salmon adult escapement doubling goal for instream natural production.

Successful design will be quantified using physical measurements including total acreage of newly created floodplain habitat subject to inundation during chinook salmon and steelhead rearing periods, and whether the area meets design criteria for depth and velocity to provide suitable rearing habitat. Post project, water temperature and dissolved oxygen will be measured as covariates to standard depth and velocity profiles.

Enhanced floodplain rearing habitat will be evaluated for secondary productivity through biomass density measures of drift and benthic macroinvertebrates compared to adjacent sites. This will be quantified using biomass density (measured in weight per unit water volume sampled) of drift and benthic macroinvertebrates sampled on tributary floodplains compared to the densities measured in adjacent riverine habitats. Juvenile salmonid and native fish utilization will be measured by presence/absence, fish density, and relative densities between floodplains and in-channel rearing locations. Growth of juvenile salmon in restored floodplain restoration sites will be measured against in-channel growth as well as historical size-at-date data available from >25 years of rotary screw trap data downstream to indicate the benefit to fish growth.

Stranding potential during inundation recession will also be assessed for newly constructed floodplain habitats. The number of fish sampled in floodplain enhancement project areas in outstanding isolated pools after connectivity with the mainstem of the tributary system has ceased will be measured. In addition to field surveys, it may be possible to investigate the potential for stranding with a mapping exercise in ArcGIS using a high-resolution LiDAR layer to examine the density of potential entrapment areas and the distance to wetted areas connected to the mainstem.

## 3 Evaluation Criteria

### 3.1 Evaluation Criteria A - Project Benefits: (30 Points)

#### 3.1.1 Sub Criterion A.1. General Project Benefits

The critical issues in the watershed are well defined in state and federal restoration plans and recovery plans. The Final Restoration Plan for the Anadromous Fish Restoration Program under CVPIA (1997) outlines the actions needed in the Mokelumne River watershed to meet the doubling goal objective for anadromous salmonids, primarily fall-run Chinook salmon. Among those actions are a suite of habitat and migratory corridor improvements including replenishing gravel for spawning, screening riparian diversions, and improving the riparian corridor to improve rearing habitat for juvenile salmonids.

The 2014 NMFS Recovery Plan addresses the needs of steelhead on the Mokelumne River. This report identifies similar needs for the recovery of steelhead on the Mokelumne River, including working with local landowners to restore riparian habitats.

The Draft Scientific Basis Report Supplement in Support of Proposed Voluntary Agreements for the Sacramento River, Delta, and Tributaries Update to the San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan (Scientific Basis Report Supplement) summarizes limiting factors for the Mokelumne as physical habitat loss or alteration, ecosystem productivity and food supply, water quality (temperature) and habitat connectivity.

These plans highlight the need for restoration of the migration corridor for juvenile salmonids, and this project provides two locations to improve conditions in the migratory pathway. Providing growth opportunities in the freshwater environment increases the chance of survival through the Delta and Estuary, thus improving the opportunity for fish to return as adults.

#### **General Benefits for Native Fish**

Anthropogenic activities have adversely affected all aspects of the native salmonid population's life cycle within the Mokelumne River watershed. More specifically, channelization and leveeing have reduced lateral connectivity between riverine and floodplain habitats and restricted juvenile anadromous salmonids to the mainstem river during the critical outmigration phase. The loss of floodplain connectivity has been identified as one of the major factors threatening salmonid species in the CCV. Furthermore, the combination of anthropogenic activities has done such significant harm to the steelhead trout on the Mokelumne River, that both the natural and hatchery origin steelhead trout stocks have been listed as threatened under the ESA.

The listing of steelhead trout by the ESA was one of the catalysts for federal agencies to create a recovery guide (NFMS 2014 Recovery Plan), which identifies restoration actions targeting specific life stages meant to enhance the remnant populations and increase their resiliency. On the Mokelumne River, the recovery document has identified the lack of floodplain habitat as one of the major stressors to the threatened steelhead trout populations. Therefore, because floodplain habitat has been specifically identified as of critical importance by federal regulators to the long-term survival of the threatened steelhead trout, the proposed floodplain restoration design project should

be of the utmost importance and will likely have a positive effect on the threatened steelhead trout populations in the Mokelumne River.

### **General Benefits for Native Plants and Wildlife**

Floodplains are a riparian habitat that link terrestrial and aquatic ecosystems, and therefore can be extremely dynamic environments. The dynamic nature of floodplains leads to microhabitats that can create the unique conditions necessary for native plants and wildlife. Native vegetation that thrives in the floodplain environment provides critical nutritional forage and shelter for native wildlife species that live within the riparian habitat. Furthermore, native plants that live within the floodplains are in sync with native migratory wildlife species, thus providing time sensitive nutrition to these migratory species at a critical time period of their life cycle. While this project is mainly focused on the significant benefit that floodplains provide to the native salmonid species, floodplains also contribute immensely both directly and indirectly to numerous native plant and wildlife species.

### **General Benefits for the Community**

The proposed floodplain restoration design project will be further beneficial to the local communities surrounding the Mokelumne River because intact floodplains provide aquifer recharge, reduction in flood pulses, and protection of infrastructure.

As flood pulses move downstream, floodwaters inundate low lying areas adjacent to the river (floodplains), which helps dissipate the flood pulse by slowing and spreading the water over the landscape. The slowing of flood waters acts as a natural flood protection for downstream communities and infrastructure. As the water spreads over the landscape, the water percolates into the ground, recharging the depleted local aquifer which is in urgent need of additional water to achieve sustainability, thereby benefitting local communities, farmers, and the environment.

The floodplain project will provide another ecosystem service to the local community in the form of resilience to climate change, by creating large-scale floodplains that can help attenuate future flooding events. This benefit is discussed in more detail in Section 3.4 below.

The implementation of this floodplain project will help demonstrate to the local community the immediate positive benefits of floodplain restoration (social, economic, and ecological), as well as the long-term benefits of climate resilience. Furthermore, the collaborative nature of this project will serve to link biologists, managers, and the local community, increasing the likelihood of future landowner participation in restoration projects along the Mokelumne River.

#### **3.1.2 Sub Criterion A.2. Quantification of Specific Project Benefits**

This project meets the habitat needs for juvenile salmonid floodplain rearing as described in the Scientific Basis Report Supplement. This report provides a succinct quantification of the restoration measures' expected outcomes for salmonids. This analysis is for achievement of 25 percent of the numeric doubling goal target and concludes that the implementation of 25 acres of floodplain would meet the target in 80 percent of years for the Mokelumne River. This project is for 50 acres total, so would provide more benefit toward the long-term (2030) goal of reaching the doubling goal target.

The Central Valley Project Improvement Act established a goal of doubling the natural spawning populations of CCV Chinook salmon and steelhead. To meet these goals, EBMUD’s long term fisheries dataset has been leveraged to assess which limiting factors, and habitat metrics, may be restricting the ability for a population to reach these goals. For instance, a recent habitat assessment conducted on the Mokelumne River meant to identify the ability for the natural origin Chinook salmon to reach the CVPIA doubling goal target has demonstrated that the population is currently constrained by a lack of sufficient off-channel floodplain rearing habitat (≈50 acres). Based on this information, the proposed floodplain restoration design and survey project will likely inundate roughly 50 acres of suitable off-channel rearing habitat which will contribute significantly to meeting the off-channel floodplain rearing habitat requirements of the Chinook salmon population in the Mokelumne River.

From a watershed context, the proposed floodplain restoration design projects are strategically located in an area of the Lower Mokelumne River, which will provide high quality rearing habitat for a majority of the rearing juvenile Chinook salmon in the Mokelumne River. Based on annual redd surveys conducted by EBMUD, approximately 60 percent of the adult Chinook salmon spawning in the Mokelumne River occurs upstream of the proposed Kramer-Colburn floodplain location and approximately 85 percent of the adult Chinook salmon spawning in the Mokelumne River occurs upstream of the proposed George Reed floodplain location (based on annual redd surveys conducted weekly by EBMUD over the past 22 years). Therefore, these floodplains will provide high quality rearing habitat to nearly all the juvenile Chinook salmon that will be rearing annually in the Mokelumne River.

Based on the detailed modeling conducted by FlowWest (FlowWest unpublished data) and the location of these proposed floodplain projects, it is assumed that these projects will have a significant positive impact on the native salmonid population and subsequent adult escapement long-term within the Mokelumne River.

### 3.2 Evaluation Criteria B – Prior Restoration Planning and Stakeholder Involvement and Support (30 Points)

#### 3.2.1 Sub Criterion B.1. Task A: Study and Design Stakeholder Involvement and Support and Restoration Planning

The proposed floodplain restoration project results from EBMUD’s long history of work in the Mokelumne River, including extensive planning and stakeholder involvement.

This project builds on EBMUD’s over 25 years of experience in planning, designing, permitting and conducting salmonid restoration projects on the LMR and working with landowners along the river corridor. Projects have ranged from small scale actions, like the creation of a single spawning riffle, to larger scale projects like the design of a reach-scale restoration program to increase gradient and revive natural river processes (Wheaton et al 2004). Much of the work has been collaborative, working with academia (UC Davis, CSU Sacramento), willing landowners, and funded jointly by state and federal agencies and EBMUD. Multiple publications have been produced documenting the program, and many years of project work have been funded through the CVPIA Restoration Fund

through grants with the Anadromous Fish Restoration Program. Over two decades of successfully implemented restoration highlights EBMUD's solid history of collaboration; project design, management, and implementation; federal grant management, reporting and oversight; post project monitoring and data analysis to drive ongoing restoration projects such as this one. Mokelumne River projects have been low cost and high benefit. EBMUD's internal staff conduct long-term monitoring within our restoration sites, which provides reliable project benefit data in the form of increased spawner abundance with no increase in superimposition rates, and increased egg to fry survival in restored areas. EBMUD has project management experience from collecting bathymetric data for design, to overseeing construction work, to managing permit applications and compliance over the term of the projects. Over the history of river restoration on the LMR, approximately \$2.5 million has been spent placing approximately 55,000 cubic yards of gravel into the LMR to improve a one-mile reach of primary spawning habitat. The most recent projects have incorporated floodplain and side channel improvements. Over the last seven years, EBMUD has designed, permitted, and implemented multiple restoration projects, which in total include 2.14 acres of spawning habitat as well as 3.67 acres of floodplain rearing habitat along the Mokelumne River. Some of this work was recently funded (2021) through the California Natural Resource Agency's Proposition 68 Healthy Rivers and Watersheds Initiative. Throughout these projects, EBMUD has worked with many different construction and consulting companies, state and federal agencies, and the public to get these projects finished on-time and within-budget.

Over the last 20 years, EBMUD has worked to foster confidence within the surrounding community, so that landowners understand that their interests are being considered when planning and implementing floodplain projects. Continued stakeholder engagement will serve to link scientists, managers, and landowners, which in turn will maximize the effectiveness of any resulting scientific insight, and likely increase future stakeholder participation. Based on EBMUD's continued outreach in the local community, three landowners have come forward and acknowledged a willingness to partner with EBMUD to restore the currently degraded floodplain habitat on their properties along the Mokelumne River.

Two of the three properties in this project are currently being considered by project partners with the SJCOG for conservation easements, in which the land will be protected into perpetuity. Furthermore, the third property not currently covered by easements is owned by a company that regularly works with local, state, and federal agencies to restore and preserve habitat.

EBMUD collaborates with multiple organizations throughout the CCV including local, regional, state, and federal partners. EBMUD will also be collaborating on this project with the Mokelumne River Technical Advisory Committee (MRTAC), which is a group that works jointly to restore the native fish populations in the Mokelumne River through strategic management alternatives and targeted restoration actions (MRTAC partners include U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), National Oceanic and Atmospheric Association, National Marine Fisheries Service (NMFS), North San Joaquin Water Conservation District, Woodbridge Irrigation District, Kearns & West, State Water Resources Control Board, California Sportfishing Protection Alliance). EBMUD is part of an existing partnership, the Lower Mokelumne River Partnership, consisting of the USFWS, CDFW, and NMFS. EBMUD will engage this partnership prior to and during the design phase for input on permitting, monitoring and other technical aspects of the project. This group meets 5 times per year currently, and project updates

can be presented during these regularly scheduled meetings during all phases of the project development. Input from these meetings can be incorporated into the study and design process to meet the needs of these partners as appropriate. Furthermore, EBMUD participates in the Lower Mokelumne River Stewardship Coordinating Committee (LMRSCC: partners include City of Lodi, U.S. Department of Agriculture, National Resource Conservation Service). The LMRSCC is a landowner-based group comprised of local landowners, primarily consisting of agricultural users in the watershed with an interest in maintaining and improving the watershed resources. This group meets once per month, and EBMUD representatives will be able to relay information and answer questions about the project during these meetings. Concerns from adjacent landowners regarding potential impacts to their properties, or further opportunities for restoration can be communicated with this group. Addressing any concerns that local stakeholders may have as we develop the 60 percent design will be critical for the project's ultimate success. For all stakeholder groups, there will be ample opportunity for site visits and information sharing with the local community.

### 3.3 Evaluation Criteria C – Project Implementation and Readiness to Proceed (15 points)

#### 3.3.1 Sub Criterion C.1. Task A: Study and Design Project Implementation

EBMUD has conducted initial scoping with two private residence landowners and one gravel quarry business along the LMR. One landowner is currently in process of developing a conservation easement with the SJCOG to protect the natural resources of the property under the San Joaquin County Multi Species Habitat Conservation Plan. This easement is already publicly noticed (SJCOG 2023). The second landowner is at an earlier stage of the conservation easement process but proceeding. The gravel quarry, George Reed, Inc, has identified riparian land that they would be willing to put into easement and additional land that they would ask for financial compensation due to limiting their mining abilities. This project would pursue an investigation of those options as a secondary, potential opportunity to be scoped to the 65 percent design phase for future funding considerations.

This project will be broken down into five major sections including: 1) baseline surveys and assessment, 2) design analysis and development, 3) permitting, 4) pre-project monitoring, and 5) project management and stakeholder outreach. EBMUD biologist will act as the project managers and will help with contracting, planning, baseline surveys and assessment, permitting, pre-project monitoring, and project management, and will ensure that the project is on time, meet all stated goals, and does not exceed the agreed upon budget.

#### *Baseline Surveys and Assessment (CY 2024 Q1 - CY 2024 Q4)*

EBMUD will work with the consultant company to collect all baseline data needed for the design of the floodplain restoration project. Baseline data collection will include surveys of vegetation (including elderberry and gallery trees), wetland delineation, bed material substrate, topography and bathymetry, and bed and bank characteristics. Once complete, the consultant company will submit the final electronic data versions for each baseline assessment component, and a summary baseline assessment technical memorandum to EBMUD.

#### *Design Analysis and Development (CY 2024 Q4 - CY 2026 Q1)*

EBMUD will work with the consultant company to complete all baseline surveys and ecohydraulic modeling of existing locations in order to determine the areas that are currently suitable or unsuitable

for salmonid rearing and spawning. Two-dimensional hydraulic models will be developed for the purpose of evaluating current physical habitat, geomorphic processes, and base flood elevations. The hydraulic models will be used to implement physical habitat suitability, bioenergetic and sediment transport modeling of existing conditions, and potential design scenarios. Based on modeling and refinement to initial design concepts a 65 percent engineering design will be completed for each site. Once complete, the consultant company will submit 65 percent level plans, cost estimate and specifications, hydraulic model files, and basis of design report to EBMUD.

*Permitting (CY 2025 Q3- CY 2026 Q4)*

EBMUD and the consultant company will coordinate with state, federal, and local agencies to draft and submit permit applications as well as complete all consultations required for site construction.

*Pre-project Monitoring (CY 2024 Q1 - CY 2025 Q3)*

An EBMUD biologist and consultant biologist will conduct effectiveness monitoring to document environmental conditions prior to and following restoration. The effectiveness monitoring will enable biologist to test key hypotheses related to changes in primary productivity, macroinvertebrate assemblages, invasive plant and fish species, and salmonid habitat function as a result of restoration actions.

*Project Management and Stakeholder Outreach (CY 2024 Q1 - CY 2026 Q4)*

EBMUD Biologists will use a bidding process to identify an environmental consultant company and a construction company that will assist EBMUD in completing all major project tasks. Furthermore, EBMUD will continue to conduct outreach to local landowners by hosting field tours at past floodplain restoration sites (EBMUD property), attending and presenting at local meetings (i.e., Lodi Grape Growers Association, Mokelumne River Technical Advisory Committee, Lower Mokelumne River Watershed Stewardship Steering Committee, etc.), and engaging local irrigation districts in order to identify areas of potential collaboration for multi-beneficial floodplain projects. During these interactions with local landowners, EBMUD will continue to describe the benefits of floodplain restoration projects to both the surrounding environment (critical foraging and refugia habitat for juvenile salmonids) and the local community (i.e., aquifer recharge, reduction in flood pulses, and protection of infrastructure).

The consultant company will manage their portion of the project under the terms of the grant agreement, which will include coordinating work, managing the budget, performing invoicing, and developing progress reports. EBMUD will work with the consultant company to submit a final report that includes project description, budget summary, engineering design documentation, and monitoring assessments.

### **3.4 Evaluation Criteria D – Presidential and Department of the Interior Priorities**

The Biden-Harris Administration have set forth three major priorities for their administration, which includes tackling issues surrounding climate change, supporting disadvantaged and/or underserved communities, and strengthening tribal communities. EBMUD also feels that these topics are important to address and therefore, all three aspects have been considered during the planning of this project.



## **Climate Change**

The floodplain project will provide an ecosystem service to the local community in the form of increased resilience to climate change. As the earth's climate continues to change due to anthropogenic activity, researchers predict that the CCV will see increased large flooding events (less precipitation falling in the form of snow), which will stress the local flood protection infrastructure. This points to an urgent need to create greater resiliency within the system to offset this negative effect brought about by climate change. Local communities must look to utilize natural flood protection through the restoration of large-scale floodplains, which will naturally dissipate the energy of flood pulse by slowing and spreading the water out over the landscape.

## **Disadvantaged and/or Underserved Communities**

The proposed project is in San Joaquin County (SJC). The CDC prepares an annual Social Vulnerability Index that scores a community's preparedness to respond to large public health events (environmental/anthropogenic); according to this system, SJC's social vulnerability score is 0.89, and the California statewide score is 0.79 (0-1). FEMA's Risk Index Ratings (RIR) model three categories (expected loss from natural hazards, social vulnerability, community resilience). SJC's RIR is *Relatively High*, with 98.1 percent of US counties having a lower score. Based on EPA's flood risk score, communities located along the Mokelumne River rank 24<sup>th</sup> to 99<sup>th</sup> percentile, with communities >80<sup>th</sup> considered at extreme flood risk.

The proposed floodplain restoration design project will be beneficial to local underserved communities through the ecosystem services provided by floodplains (i.e., aquifer recharge, reduced flood intensity, protection of infrastructure, and climate resiliency). Because floodplains dissipate flood energy (slow/spread water), this project will likely protect both people and infrastructure in the most vulnerable communities.

In an arid region, aquifer recharge is critical to the long-term water resiliency of Disadvantaged Communities (DAC, or communities with <60 percent of median household income). Multiple communities along the Mokelumne River fall into the category of DAC or severely DAC (<80% of median household income). DAC often rely 100 percent on groundwater, and therefore can be extremely vulnerable to droughts, and will be increasingly susceptible in the future as droughts are exacerbated by climate change. Aquifer recharge protects and replenishes the ground water supply, and ensure DACs have plentiful high quality drinking water into the future. Therefore, the proposed project could be one small piece of a larger coordination to build water resiliency to help strengthen the local underserved communities.

## **Tribal Communities**

The local Miwok Tribes have access to tribal salmon fishery benefits from the hatchery, and therefore, projects such as the proposed floodplain restoration that are targeted at increasing the salmon population within the Mokelumne River will ensure that managers are able to meet the needs of the local tribes. Furthermore, EBMUD is currently in consultation with the Buena Vista Rancheria Band of Miwok Indians of California (federally recognized tribe) and will incorporate traditional ecological knowledge into the design of the floodplain as recommended.

## 4 Project Budget

### 4.1 Budget Proposal

The proposed project budget summary is provided in Table 2. The discussion that follows provides a detailed explanation of project costs.

Table 2. Proposed Project Budget

<b>Budget Summary</b>			
<b>6. Budget Object Category</b>	<b>Total Cost</b>	<b>Federal Estimated Amount</b>	<b>Non-Federal Estimated Amount</b>
<b>a. Personnel</b>	<b>\$138,608</b>		
<b>b. Fringe Benefits</b>	<b>\$144,208</b>		
<b>c. Travel</b>	<b>\$0</b>		
<b>d. Equipment</b>	<b>\$0</b>		
<b>e. Supplies</b>	<b>\$0</b>		
<b>f. Contractual</b>	<b>\$650,000</b>		
<b>g. Construction</b>	<b>\$0</b>		
<b>h. Other Direct Costs</b>	<b>\$0</b>		
<b>i. Total Direct Costs</b>	<b>\$932,815</b>		
<b>i. Indirect Charges</b>	<b>\$75,597</b>		
<b>Total Costs</b>	<b>\$1,008,412</b>	<b>\$650,000</b>	<b>\$358,412</b>
<b>Cost Share Percentage</b>		<b>64%</b>	<b>36%</b>

### 4.2 Budget Narrative

#### 4.2.1 Personnel

EBMUD will provide in-kind contributions towards this project mainly in the form of personnel time. EBMUD staff will be involved in project management, baseline surveys and assessment, permitting, completion of some portions of the pre-project monitoring, and grant reporting and administration. More specifically, the EBMUD Manager of Fisheries and Wildlife will add to the project through project management and consultant management. The EBMUD Supervising Fisheries and Wildlife Biologist will help via scheduling and coordination of EBMUD staff time as well as via public outreach efforts. Multiple EBMUD Fisheries Biologists (I/II) will help on this project by creating the monitoring plan, aiding in the permitting process, leading the pre-project monitoring, and ultimately preparing the final reports. Lastly, numerous EBMUD Fisheries and Wildlife Technicians will add to the project by conducting pre-project monitoring in collaboration with the consultant company (fish community and water temperature).

#### 4.2.2 Fringe Benefits

Fringe Benefits have two components: Paid Absence (leave) and Employer Paid Benefits. In FY 2023, Paid Absence is approximately 21 percent and Employer Paid Benefit is approximately 67.25

percent. The Paid Absence rate of 21 percent is multiplied by each of the regular hours worked during the bi-weekly payroll period. Then the combined worked hour and paid absence amount is multiplied by the Employer Paid Benefit rate of 67.25 percent. The result is a compounded rate of 102.37 percent on each of the regular hours worked. Attachment B shows the fringe benefit rates for FY2023.

#### 4.2.3 Travel

No significant travel is anticipated for this project. EBMUD will use vehicles in its fleet for site visits, assessment, and monitoring. Consultant travel is included their overall costs.

#### 4.2.4 Equipment

EBMUD will be responsible for supplying equipment to complete the water temperature and fish community monitoring activities.

#### 4.2.5 Supplies

N/A

#### 4.2.6 Contractual

EBMUD will hire a consultant to provide technical support in this project. Following is a detailed description of the consultant team's scope of work.

##### *Baseline data collection and assessment*

Baseline data is needed for both sites to develop and refine conceptual alternatives that are viable restoration strategies at both sites. Baseline data collection will include surveys of vegetation (including elderberry and gallery trees), wetland delineation, bed material substrate, topography and bathymetry, and bed and bank characteristics. The wetland and vegetation surveys will be conducted to document existing resources, so that impacts can be minimized and quantified through permitting. Additional field surveys will be needed to verify the topobathymetric survey, especially in areas in the channel. These surveys will be used to create a base map upon which engineering designs will be based. Existing riverbed substrate and bank and cover characteristics will be mapped to inform existing habitat suitability and design development.

The consultant will develop a geomorphic and ecohydraulic assessment that identifies changes to the river corridor and physical habitat as well as characterizing existing conditions. The ecohydraulic assessment will assess baseline hydraulic conditions at both sites and will be used to identify whether physical habitat is limited. The ecohydraulic assessment will also inform the development and calibration of hydraulic models used in design. Shallow depths less than 1.5 ft in depth will be sampled using a top setting rod at identified transects, approximately 3-4 per site. At each location, vertical velocity profiles will also be collected to characterize shear stress and grain roughness. For moderate to high flows, a boat mounted acoustic doppler current profiler (ADCP) to characterize hydraulic conditions. The geomorphic assessment will document historical changes, evaluate the trajectory of each site, map existing geomorphic and mesohabitat units, and document ongoing geomorphic processes relevant to creating and maintaining salmonid habitat.

Deliverables will include final electronic data versions for each baseline assessment component, and a summary baseline assessment technical memorandum.

### *Engineering design and analysis*

Baseline surveys and ecohydraulic modeling of existing locations will be used to map areas that are currently suitable or unsuitable for salmonid rearing and spawning. Two, two-dimensional hydraulic models will be developed for the purpose of evaluating current physical habitat, geomorphic processes, and base flood elevations. The hydraulic models will be used to implement physical habitat suitability, bioenergetic and sediment transport modeling of existing conditions, and to develop potential design scenarios. Based on modeling and refinement to initial design concepts the consultant team will develop 65 percent engineering design drawings for each site. Budget is also requested to explore relocating a diversion pump on the river at one location so that maximum extent of the site can be optimized.

The development of engineering designs will proceed hierarchically. After initial review by the EBMUD project team, a preferred concept will be selected and advanced to design. The concept mesohabitats units will be refined along with measures of habitat gain, environmental impacts, and cost. These will be translated to topographic design scenarios and evaluated for performance using hydrodynamic models considering ecohydraulic gains and form-process linkages associated with geomorphic units. Once each site is optimized by creating as much habitat as possible for the available budget, a 65 percent engineering drawing will be designed so that permitting can be initiated. A basis of design document will be prepared that describes the basis and rationale for design components and an evaluation of expected outcomes.

The consultant team will prepare 65 percent complete designs submittal that include design drawings, technical specifications, and engineer's estimate of probable costs. Deliverables will include 65 percent level plans, cost estimate and specifications, hydraulic model files, and basis of design report.

### *Permitting*

EBMUD and its consultant will coordinate with state, federal, and local agencies to draft and submit permit applications and complete all consultations required for site construction. These include:

- USFWS and NMFS Section 7 consultation - Programmatic Biological Opinions for Central Valley Restoration Projects
- CEQA compliance - Standard Exemption for Restoration Projects (SERP)
- USACE Section 404 compliance - Regional General Permit 16 for Salmonid Habitat Restoration Projects
- State Water Resources Control Board - Statewide General Order for Habitat Restoration Projects (WQ 2022-0048-DWQ)
- Section 106 consultation and AB 52 compliance
- State Lands Lease
- County grading permit
- CDFW take permit
- Central Valley Flood Board Permit
- Section 1600 Lake and Streambed Alteration Agreement
- Best Management Practices for site construction and Hazard Analysis and Critical Control Points (HACCP)

The budget assumes that: (1) the project will be eligible for all state and federal restoration permitting paths listed above, (2) no significant cultural or tribal resources will be uncovered during cultural resources surveys that would require an archaeological or tribal monitor or Memorandum of Understanding with the State Historical Preservation Officer(3) the project will either not require a state permit for take of species or will be eligible for a Restoration Management Permit, (4) the project will be treated by CDFW as three projects for purposes of the LSAA application (one for each restoration site and one for moving the pump location), and (5) the project only involves moving an existing permitted point of diversion (POD) and not additional water diversion, therefore there will be no requirement for a change of POD for an existing water right permit or a new water right permit.

#### *Monitoring plan*

A comprehensive monitoring plan will be developed to define specific hypotheses to determine effectiveness of restoration actions.

#### *Preproject Monitoring*

The budget includes two years of pre-project monitoring, including the deployment and maintenance of water temperature loggers; submerged aquatic vegetation surveys; primary productivity sampling; macroinvertebrate community sampling; and fish community surveys. Data will be stored in an Access or Excel database and will be subject to regular QA/QC. A final report will be generated that synthesizes all the data.

#### 4.2.7 Construction

No construction is anticipated for this project.

#### 4.2.8 Other Direct Costs

N/A

#### 4.2.9 Indirect Costs

EBMUD has a federally approved overhead rate of 26.73 percent which applies to all costs including salaries, benefits, materials, and contracts. The Negotiated Indirect Cost Rate Agreement is provided in Attachment C.

#### 4.2.10 Total Costs

The total amount necessary to complete the floodplain restoration design project is \$1,008,412. The total amount requested from WaterSMART is \$650,000, with EBMUD contributing an additional \$358,412. The \$650,000 requested from WaterSMART will be used to hire a consultant to help with tasks such as baseline surveys and assessment, design analysis and development, permitting, pre-project monitoring, and project management.,

#### 4.2.11 Reporting

The following reports are required as part of grant funding:

Financial Reports SF-425.

Program Performance Reports (Interim, Annual, Final, and Project Monitoring/Performance Measures Reports)

#### 4.2.12 Budget Form

SF-424A is provided is submitted with this application.

### 4.3 Funding Plan and Letters of Commitment

#### 4.3.1 Applicant Cost Share

The total amount necessary to complete the floodplain restoration design project is \$1,008,412. EBMUD will contribute \$358,412 (36%) of in-kind funding, which will cover some aspects of the permitting, pre-project monitoring, and project management (more detail in budget above).

#### 4.3.2 Costs Incurred before Project Start Date

N/A

#### 4.3.3 Funding Partners (No Letters of Commitment needed)

There are no funding partners.

#### 4.3.4 Funding Requested or Received from other Federal partners

No other federal funding has been requested as of this time for this project.

## 5 Environmental And Cultural Resources Compliance

### 5.1 Impacts to the Environment

Question #1:

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

Answer #1:

This project is a design only project and therefore will not involve any impact on the local environment that would affect the air water or animal habitat.

Question #2:

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

Answer #2:

In the project area there are two stocks of Central Valley Distinct Population Segment steelhead trout (natural and hatchery origin) that are listed as threatened under the Federal Endangered Species Act. This project is a design only project and therefore will not involve any impact on the local environment that would affect the air water or animal habitat.

Question #3:

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as “Waters of the United States”? If so, please describe and estimate any impacts the proposed project may have.

Answer #3:

This project is a design only project and therefore will not involve any impact on the local environment that would affect the air water or animal habitat.

Question #4:

When was the water delivery system constructed?

Answer #4:

Not applicable.

Question #5:

Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

Answer #5:

This project is a design only project, and therefore will not involve the modification of any irrigation features.

Question #6:

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.

Answer #6:

This project is a design only project and therefore will not involve any impact on historic buildings, structures, or features.

Question #7:

Are there any known archeological sites in the proposed project area?

Answer #7:

There are no known archeological sites in the proposed project area.

Question #8:

Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?

Answer #8:

This project is a design only project and therefore will have no negative effect on low income or minority populations.

Question #9:

Will the proposed project limit access to, and ceremonial use of, Indian sacred sites or result in other impacts on tribal lands?

Answer #9:

The proposed floodplain restoration design project will not limit access to Indian sacred sites or result in other impacts on tribal lands.

Question #10:

Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

Answer #10:

While this project is design only, there is a need to collect baseline and monitoring data, and therefore there is the potential to introduce or spread noxious weeds and/or non-native invasive species. However, the EBMUD organization and our collaborators follow all protocols set forth by CDFW pertaining to decontamination of equipment, which is intended to prevent the spread of invasive species (CDFW 2022).



## 6 Required Permits of Approvals

EBMUD and third-party consultant will coordinate with state, federal, and local agencies to draft and submit permit applications and complete all consultations required for site construction. These include:

- USFWS and NMFS Section 7 consultation - Programmatic Biological Opinions for Central Valley Restoration Projects
- CEQA compliance - Standard Exemption for Restoration Projects (SERP)
- USACE Section 404 compliance - Regional General Permit 16 for Salmonid Habitat Restoration Projects
- State Water Resources Control Board - Statewide General Order for Habitat Restoration Projects (WQ 2022-0048-DWQ)
- Section 106 consultation and AB 52 compliance
- State Lands Lease
- County grading permit
- CDFW take permit
- Central Valley Flood Board Permit
- Section 1600 Lake and Streambed Alteration Agreement
- Best Management Practices for site construction and Hazard Analysis and Critical Control Points (HACCP)

## 7 Overlap or Duplication of Effort Statement

EBMUD does not anticipate any overlap with this project and any other project in terms of activities, costs, or commitment of key personnel. This proposal does not duplicate any proposal or project that has or will be submitted for funding consideration, either from a federal or non-federal source.

## 8 Conflict of Interest Disclosure Statement

EBMUD is not aware of any potential conflict of interest with this project and has policies in place to identify, disclose, and mitigate or eliminate identified conflicts of interest, including EBMUD Procedure 601 Conflict of Interest Disqualification Procedure.

### 8.1 Uniform Audit Reporting Statement

EBMUD has not been required to submit any single audit report(s) on or before fiscal year 2021. The upcoming single audit for the District will be for fiscal year 2022 which was submitted to the Federal Audit Clearinghouse and accepted on 03/28/2023. EBMUD has an EIN number of 94-6000590.

## 9 Letters of Support

EBMUD was pleased to receive many Letters of Support from stakeholders, many of whom can directly or indirectly benefit from the completion of this project. Copies of the letters are in Attachment A.

## 10 Official Resolution

If selected, EBMUD will be required to submit an official resolution from its Board of Directors in order to receive funding.

## 11 SAM Identifier

Unique Entity ID: N6LBY2YUZ8C1

CAGE Code: 1UWY8

Legal Entity Name: East Bay Municipal Utility District

DBA: East Bay Municipal Utility District, Water System

## 12 Citations

Carlson, S. M., & Satterthwaite, W. H. (2011). Weakened portfolio effect in a collapsed salmon population complex. *Canadian Journal of Fisheries and Aquatic Sciences*, 68(9), 1579-1589.

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## Attachment A: Letters of support

**Congress of the United States**  
**Washington, DC 20515**

May 31, 2023

The Honorable Camille Calimlim Touton  
Commissioner, U.S. Bureau of Reclamation  
1849 C Street, N.W.  
Washington, D.C. 20240

RE: Support for EBMUD's *Mokelumne River Floodplain Reconnection and Restoration Project: Improving Conditions for California's Central Valley Anadromous Fisheries* for the U.S. Bureau of Reclamation's WaterSMART: Aquatic Ecosystem Restoration Projects Grant (R23AS00106)

Dear Commissioner Touton:

East Bay Municipal Utility District (EBMUD) is submitting a grant proposal for the U.S. Bureau of Reclamation's WaterSMART: Aquatic Ecosystem Restoration Program to enhance Lower Mokelumne River fishery outcomes by improving rearing habitat for Chinook salmon and steelhead trout through completion of planning and design of 50 acres of new floodplain habitat. We are writing today in support of EBMUD's grant application and look forward to a careful review of this restoration project.

We support this project because it has the potential to improve the survival of juvenile salmonids. Habitat assessments on the Mokelumne River have demonstrated that the population is constrained by a lack of sufficient off-channel floodplain rearing habitat. This project would help to close that gap, offering multiple opportunities for juvenile fish to access refugia habitat for improved growth rates before out migrating into the Delta and Estuary environments.

EBMUD has a long and successful history of working with partners including state and federal resource agencies, local agencies, landowners, and other stakeholders to manage as well as enhance the Mokelumne River fishery. Despite the Mokelumne River accounting for less than 3% of Delta outflows, in 2022 Mokelumne River salmon accounted for 51% of the commercial and 44% of the recreational catch off the coast of California. This project would build on that success by providing essential habitat within a framework for cooperative adaptive management.

We request that you give East Bay Municipal Utility District's application full and fair consideration in accordance with all applicable laws, rules, and regulations. Thank you in advance for your consideration of this project.

Sincerely,



Josh Harder  
Member of Congress



Eric Swalwell  
Member of Congress



Barbara Lee  
Member of Congress



Mark DeSaulnier  
Member of Congress



Jared Huffman  
Member of Congress



# SJCOG, INC.

555 E. Weber Avenue • Stockton, California 95202 • P 209.235.0585 • F 209.235.0438 • [www.sjcog.org](http://www.sjcog.org)

June 1, 2023

*Robert Rickman*  
CHAIR

*David Bellinger*  
VICE CHAIR

*Diane Nguyen*  
EXECUTIVE DIRECTOR

*Member Agencies*  
CITIES OF  
ESCALON,  
LATHROP,  
LODI,  
MANTECA,  
RIPON,  
STOCKTON,  
TRACY,  
AND  
THE COUNTY OF  
SAN JOAQUIN

Avra Morgan  
WaterSMART Coordinator  
U.S. Bureau of Reclamation  
Mail Code: 86-63000  
PO Box 25007  
Denver, CO 80225-0007

RE: Support for USBR WaterSMART Aquatic Ecosystem Restoration Projects Grant (R23AS00106) for EBMUD's *Mokelumne River Floodplain Reconnection and Restoration Project: Improving Conditions for California's Central Valley Anadromous Fisheries*

Dear Ms. Morgan:

Our organization, SJCOG, Inc., supports the East Bay Municipal Utility District (EBMUD) in its efforts to improve fisheries outcomes on the Lower Mokelumne River. The proposed project would improve rearing habitat for Chinook salmon and steelhead trout by completing planning and design of 50 acres of floodplain habitat.

SJCOG, Inc. supports this project because it has the potential to significantly improve the survival of juvenile salmonids. Habitat assessments on the Mokelumne River have demonstrated that the population is constrained by a lack of sufficient off-channel floodplain rearing habitat. This project would help to close that gap, offering multiple opportunities for juvenile fish to access refugia habitat for improved growth rates before out migrating into the Delta and Estuary environments.

EBMUD has a long and successful track record of working with partners including State and Federal resource agencies, local agencies, landowners, and other stakeholders to manage and improve the Mokelumne River fishery. As a result, although the Mokelumne River accounts for less than 3% of Delta outflows, in 2022 Mokelumne River salmon accounted for 51% of the commercial and 44% of the recreational catch off the coast of California. This project would build on that success by providing essential habitat within a framework for cooperative adaptive management.

Sincerely,

STEVEN MAYO  
Program Manager

June 1, 2023

Avra Morgan  
WaterSMART Coordinator  
U.S. Bureau of Reclamation  
Mail Code: 86-63000  
PO Box 25007  
Denver, CO 80225-0007

RE: Support for USBR WaterSMART Aquatic Ecosystem Restoration Projects Grant (R23AS00106) for EBMUD's *Mokelumne River Floodplain Reconnection and Restoration Project: Improving Conditions for California's Central Valley Anadromous Fisheries*

Dear Ms. Morgan:

Our organization, Petralogix Holding LLC (and associated officers/owners; Daniel and Nancy Kramer), supports the East Bay Municipal Utility District (EBMUD) in its efforts to improve fisheries outcomes on the Lower Mokelumne River. The proposed project would improve rearing habitat for Chinook salmon and steelhead trout by completing planning and design of 50 acres of floodplain habitat.

Petralogix Holding LLC (and associated officers/owners; Daniel and Nancy Kramer), supports this project because it has the potential to significantly improve the survival of juvenile salmonids. Habitat assessments on the Mokelumne River have demonstrated that the population is constrained by a lack of sufficient off-channel floodplain rearing habitat. This project would help to close that gap, offering multiple opportunities for juvenile fish to access refugia habitat for improved growth rates before out migrating into the Delta and Estuary environments.

EBMUD has a long and successful track record of working with partners including State and Federal resource agencies, local agencies, landowners, and other stakeholders to manage and improve the Mokelumne River fishery. As a result, although the Mokelumne River accounts for less than 3% of Delta outflows, in 2022 Mokelumne River salmon accounted for 51% of the commercial and 44% of the recreational catch off the coast of California. This project would build on that success by providing essential habitat within a framework for cooperative adaptive management.

Sincerely,



Daniel and Nancy Kramer  
Petralogix Holding LLC



June 1, 2023

Avra Morgan  
WaterSMART Coordinator  
U.S. Bureau of Reclamation  
Mail Code: 86-63000  
PO Box 25007  
Denver, CO 80225-0007

RE: Support for USBR WaterSMART Aquatic Ecosystem Restoration Projects Grant (R23AS00106) for EBMUD's *Mokelumne River Floodplain Reconnection and Restoration Project: Improving Conditions for California's Central Valley Anadromous Fisheries*

Dear Ms. Morgan:

The Old Oak Land Company supports the East Bay Municipal Utility District (EBMUD) in its efforts to improve fisheries outcomes on the Lower Mokelumne River. The proposed project would improve rearing habitat for Chinook salmon and steelhead trout by completing planning and design of 50 acres of floodplain habitat.

Old Oak Land Company supports this project because it has the potential to significantly improve the survival of juvenile salmonids. Habitat assessments on the Mokelumne River have demonstrated that the population is constrained by a lack of sufficient off-channel floodplain rearing habitat. This project would help to close that gap, offering multiple opportunities for juvenile fish to access refugia habitat for improved growth rates before out migrating into the Delta and Estuary environments.

EBMUD has a long and successful track record of working with partners including State and Federal resource agencies, local agencies, landowners such as ourselves, and other stakeholders to manage and improve the Mokelumne River fishery. As a result, although the Mokelumne River accounts for less than 3% of Delta outflows, in 2022 Mokelumne River salmon accounted for 51% of the commercial and 44% of the recreational catch off the coast of California. This project would build on that success by providing essential habitat within a framework for cooperative adaptive management.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian Colburn". The signature is fluid and cursive, written in a professional style.

Brian Colburn, General Partner  
Old Oak Land Company