



January 4, 2016

State Water Resources Control Board
Division of Water Rights
Attn: California WaterFix Hearing Staff

Via Email: CWFhearing@waterboards.ca.gov

Re: California WaterFix Hearing

Dear California WaterFix Hearing Staff:

The East Bay Municipal Utility District (EBMUD) is filing the attached Protest and Notice of Intent to Appear in regard to the California Department of Water Resources (DWR) and United States Bureau of Reclamation's (USBR) Joint Petition for Change (Change Petition). The Change Petition was noticed by the State Water Board on October 30, 2015.

EBMUD has four distinct protest grounds. They are described in Attachment A to the Protest form, and include both Part I and Part II hearing issues. In the interest of efficiency, EBMUD has filed a concise protest. If the State Water Board requires more information, we would be happy to supplement the Protest with additional information. EBMUD is currently preparing written testimony for the Part I protest grounds raised in our Protest. That testimony will be submitted by the March 1, 2016 deadline.

To maximize hearing efficiency, EBMUD is working with other parties to coordinate our respective cases-in-chief, with the goal of putting on joint witness panels on discrete issues where two or more parties have similar concerns. Doing so should avoid repetitive hearings on distinct issues.

EBMUD is amenable to negotiating protest dismissal conditions with the petitioners and has begun those settlement discussions. Please contact me at (510) 287-1240 or ltam@ebmud.com if you have any questions.

Very truly yours,

A handwritten signature in black ink that reads 'Lena L. Tam'.

Lena L. Tam
Manager of Water Resources Planning

LLT:sjc

Attachments

cc: James Mizell, California Department of Water Resources, at James.Mizell@water.ca.gov
Amy Aufdemberge, U.S. Bureau of Reclamation, at Amy.Aufdemberge@sol.doi.gov
Richard G. Sykes, Director of Water and Natural Resources

State of California
State Water Resources Control Board
DIVISION OF WATER RIGHTS
P.O. Box 2000, Sacramento, CA 95812-2000
Info: (916) 341-5300, FAX: (916) 341-5400, Web: <http://www.waterboards.ca.gov/waterrights>

PROTEST- PETITION
This form may also be used for objections

**PETITION FOR TIME EXTENSION, CHANGE, TEMPORARY URGENT CHANGE
OR TRANSFER ON**

APPLICATION Several - See Attachment PERMIT _____ LICENSE _____
OF Department of Water Resources and U.S. Bureau of Reclamation

I (We) have carefully read the notice (state name):

Notice of Petition - Requesting Changes In Water Rights Of The Department Of Water Resources
And U.S. Bureau Of Reclamation For The California Waterfix Project

Address, email address and phone number of protestant or authorized agent:

375 11th Street, Oakland, CA 94607-4240
fetherid@ebmud.com, 510-287-0816

Attach supplemental sheets as needed. To simplify this form, all references herein are to protests and protestants although the form may be used to file comments on temporary urgent changes and transfers.

Protest based on ENVIRONMENTAL OR PUBLIC INTEREST CONSIDERATIONS (Prior right protests should be completed in the section below):

- the proposed action will not be within the State Water Resources Control Board's jurisdiction []
- not best serve the public interest []
- be contrary to law []
- have an adverse environmental impact [x]

State facts which support the foregoing allegations See Attachment

Under what conditions may this protest be disregarded and dismissed? (Conditions should be of a nature that the petitioner can address and may include mitigation measures.)

See Attachment

Protest based on INJURY TO PRIOR RIGHTS:

To the best of my (our) information and belief the proposed change or transfer will result in injury as follows:

See Attachment

Protestant claims a right to the use of water from the source from which petitioner is diverting, or proposes to divert, which right is based on (identify type of right protestant claims, such as permit, license, pre-1914 appropriative or riparian right)::

See Attachment

List permit or license or statement of diversion and use numbers, which cover your use of water (if adjudicated right, list decree).

(1) License 11109 (Application 4228) and Permit 10478 (Application 13156)

(2) Central Valley Project Contract No. 14-06-200-5183A-LTR1

Where is your diversion point located? (1) Pardee Dam: South 18° 10' East, 3,420 feet from NW corner of Sec. 26, T5N, R10E, MDB&M being within NW1/4 of SW1/4 of said Section 26, X=6,461,020', Y=2,280,400' CA State Plane Zone III, NAD 83; Camanche Dam: South 41° 33'W, 1,824 feet from E1/4 corner of Sec.6, being within SE1/4 of SE1/4 of Sec. 6, T4N, R9E, MDB&M, X=6,411,400', Y=2,269,000' CA State Plane Zone III, NAD 83; (2) Sacramento River at Freeport.

If new point of diversion is being requested, is your point of diversion downstream from petitioner's proposed point of diversion? No.

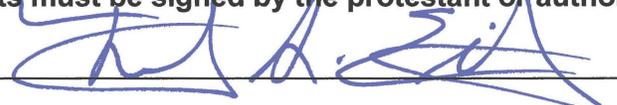
The extent of present and past use of water by protestant or his predecessors in interest is as follows:

- a. Source (1) Mokelumne River (2) Central Valley Project
- b. Approximate date first use made (1) 1929 (License 11109), 1964 (Permit 10478); (2) 1977 (CVP Contract)
- c. Amount used (list units) (1) Up to 364,037 Acre-Feet per year; (2) Up to 133,000 Acre-Feet per year
- d. Diversion season (1) Year-round (License 11109), December 1 to July 1 (Permit 10478); (2) Year-round
- e. Purpose(s) of use Municipal and Industrial

Under what conditions may this protest be disregarded and dismissed?

See Attachment

All protests must be signed by the protestant or authorized representative:

Signed:  Date: 1/4/16

All protests must be served on the petitioner. Provide the date served and method of service used:

Served on 1/4/16 via Email.

Attachment A

EBMUD Protest to Joint Change Petition of DWR and USBR (January 4, 2016)

Introduction

The East Bay Municipal Utility District (EBMUD) protests the Joint Change Petition (Change Petition) filed on August 26, 2015 by the California Department of Water Resources (DWR) and United States Bureau of Reclamation (USBR). The Change Petition seeks to add new points of diversion and rediversion to 15 DWR/USBR water rights¹ to allow the State Water Project (SWP) and Central Valley Project (CVP) to move water through new North Delta intakes identified by Alternative 4A in the Bay Delta Conservation Plan/California WaterFix Partially Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS).

Summary of Grounds for Protest

EBMUD's Protest is based on the grounds that, if approved as requested, the Change Petition (1) will adversely impact EBMUD's existing Mokelumne Aqueducts and potentially adversely impact future planned aqueduct projects, thereby affecting the delivery of Mokelumne River water to EBMUD's service area; (2) will cause an increase in reverse flows at EBMUD's Freeport diversion site, thereby adversely affecting water quality and yield at Freeport; (3) could lead to increased opening of the Delta Cross Channel, thereby adversely impacting the Mokelumne River anadromous fishery; and (4) could redirect flow mitigation responsibilities to parties other than the joint petitioners. The specific grounds for protest are described below.

1. Impacts and Injury to EBMUD's Mokelumne Aqueducts and Delta Tunnel

The construction of conveyance facilities for and the operation of the SWP and CVP (collectively, Projects) in accordance with the Change Petition submitted by DWR and USBR for the Alternative 4A (California WaterFix project) will cause significant injury to EBMUD's existing Mokelumne Aqueducts and its proposed replacement cross Delta tunnel (Delta Tunnel).

¹ The DWR and USBR water rights involved in the Change Petition are: Permits 16478, 16479, 16481, and 16482 (Applications 5630, 14443, 14445A, and 17512, respectively) of DWR for the SWP; and Permits 11315, 11316, 11967, 11968, 11969, 11971, 11973, 12364, 12721, 12722, and 12723 (Applications 13370, 13371, 5628, 15374, 15375, 16767, 17374, 17376, 5626, 9363, and 9364, respectively) of USBR for the CVP.

The requested change includes adding points of diversion and redirection of water on the Sacramento River to divert water and convey it through two proposed new large diameter tunnels (Projects' Twin Tunnels) that would pass directly beneath the existing Mokelumne Aqueducts and in the area of the proposed EBMUD Delta Tunnel.

(a) EBMUD's Existing Mokelumne Aqueducts

The Mokelumne Aqueducts are a vital supply line in EBMUD's water distribution system, providing virtually all (90% on a long-term basis) of EBMUD's drinking water supply to its East Bay service area and its nearly 1.4 million inhabitants. The first Mokelumne Aqueduct was completed in 1929. The current Mokelumne Aqueducts consist of three large diameter steel pipelines measuring from 65 to 87 inches in diameter that extend a distance of approximately 90 miles from Pardee Reservoir in the east, through the Delta region, to Walnut Creek in the west. These steel pipelines have a combination of riveted and welded joints, and operate at internal pressures of several hundred pounds per square inch that vary with location and operational condition. In their east-west crossing of the Delta, the Mokelumne Aqueducts pass over Lower Roberts Island, Upper Jones Tract, Woodward Island, and Palm-Orwood Tract. The aqueducts have several burial and support configurations depending on the aqueduct and the location including: (1) buried, (2) buried on piles, (3) elevated on piles, and (4) dredged river crossings including simple burial, on piles, and with armoring mats. The western reach of the aqueducts crosses the Delta from approximately Holt to Bixler (approximately 10.5 miles) and are primarily elevated on pile supported bents at intervals of 20 to 42 feet. The piles are a combination of timber and precast concrete with depths typically ranging from 30 to 50 feet and as deep as 60 feet, with a minimum elevation of -65 feet mean sea level (msl). Within this reach at river and slough crossings, the aqueducts are buried in dredged trenches with a variety of foundation systems. The Projects' proposed Alternative 4A Twin Tunnels would intersect the Mokelumne Aqueducts in the middle of Woodward Island. Within that crossing location, all three aqueducts are elevated and on piles, with pile tips ranging from approximately 30 to 50 feet deep, corresponding to elevations of -40 to -60 feet msl.

(b) EBMUD Delta Tunnel

EBMUD has been evaluating risks to the existing Mokelumne Aqueducts and potential structural alternatives through both short-term and long-term measures. EBMUD concluded that

a deep tunnel across the Delta would be the most cost-effective solution to mitigate the hazards and risks to the Mokelumne Aqueducts associated with seismic, scour, flooding, liquefaction and lateral spreading. The EBMUD Delta Tunnel would replace the existing Mokelumne Aqueducts across the Delta and further protect the vital supply line for EBMUD's drinking water distribution system. EBMUD has developed the Delta Tunnel to the conceptual design level and identified the proposed horizontal alignment and vertical profile for the tunnel. Most recently, EBMUD is undertaking additional subsurface explorations to support preliminary design of the proposed EBMUD Delta Tunnel. Based on work to date, the Delta Tunnel is envisioned to follow the alignment of the Mokelumne Aqueducts beginning near Interstate 5 in Stockton at the east, to Bixler at the west, a distance of 16.6 miles. Seven shafts, at approximate three mile intervals, are planned for the Delta Tunnel construction and future access to the carrier pipes. Based on the conceptual design, the Delta Tunnel is expected to have an excavated diameter of approximately 21 feet and will be supported with precast concrete segments. The tunnel would house twin 87 inch (inside diameter) pressurized steel carrier pipes secured with cellular concrete backfill. At the crossing location of the Projects' proposed Twin Tunnels, the EBMUD Delta Tunnel would be constructed within an elevation band between elevation -89 feet msl at the tunnel crown to -141 feet msl at the tunnel invert.

(c) Water Rights

EBMUD's water supply that serves the Mokelumne Aqueducts and that would serve the Delta Tunnel comes from the Mokelumne River and is based on State Water Board-issued License 11109 and Permit 10478, which have the following key parameters and attributes:

i. License 11109

- Priority Date: September 22, 1924
- Direct Diversion: year-round up to 310 cubic feet per second (cfs)
- Point of Diversion: Pardee Dam
- Collection to Storage: 209,950 acre-feet (af) a year diverted to storage October 1 – July 15
- Total Combined Direct Diversion and Withdrawal From Storage: 310 cfs/200 million gallons per day (MGD)
- Total Taken From the Source (Direct Diversion Plus Collection to Storage): 316,250 af

- Total Placed to Beneficial Use (Direct Diversion Plus Withdrawal From Storage): 224,037 af
 - Purpose of Use: Municipal and recreational
- ii. Permit 10478*
- Priority Date: June 16, 1949
 - Direct Diversion: December 1 – July 1 up to 194 cfs
 - Point of Diversion: Pardee Dam and/or Camanche Dam
 - Collection to Storage: 353,000 af a year diverted to storage December 1 – July 1 at Pardee and Camanche
 - Purpose of Use: Municipal

(d) Impacts to the Mokelumne Aqueducts and Delta Tunnel

The construction and operation of the Projects’ Twin Tunnels as part of the WaterFix Project will adversely impact the Mokelumne Aqueducts (and associated infrastructure) and Delta Tunnel as follows:

i. Impacts to the Existing Mokelumne Aqueducts

- Directly interfering with the aqueducts’ deep foundations;
- Undermining the aqueducts’ deep foundations by reducing ground support for piles and/or causing settlement of piles;
- Soil settlement due to lost ground associated with tunneling activities;
- Soil settlement due to lower groundwater levels;
- Seepage and associated piping resulting in lost ground and soil settlement;
- Tunnel lining failure in the Projects’ Twin Tunnels resulting in soil settlement or sinkholes, and related damage associated with leaks in the Projects’ Twin Tunnels in the vicinity of the intersection of the Twin Tunnels and EBMUD’s Mokelumne Aqueducts / Delta Tunnel;
- Lateral earth movement and associated stress caused by shaft construction;
- Damage associated with construction roads crossing or parallel to the aqueducts;
- Damage associated with utilities crossing or parallel to the aqueducts; and
- Damage associated with stray electrical currents.

Impacts from the Projects' proposed Twin Tunnels would not be limited to the tunnels themselves, but would extend through the entire zone of influence of the tunnels, both during and after construction. The size of the zone will vary according to the construction methods and soil conditions, and may be substantial. The zone of influence greatly increases the Twin Tunnels' potential adverse effects on other facilities and objects.

ii. Impacts to EBMUD Delta Tunnel

Additionally, construction and operation of the Projects' Twin Tunnels will adversely impact the future EBMUD Delta Tunnel. The impacts will be similar to the impacts to the Mokelumne Aqueducts detailed above but in most instances will be more severe given the EBMUD Delta Tunnel's close proximity to the Projects' Twin Tunnels, the sensitivity of the pipelines within the Delta Tunnel, and the difficulty accessing the pipelines within the EBMUD Delta Tunnel for repair.

(e) Conditions for Withdrawal of Protest

EBMUD will withdraw its protest based on injury to the Mokelumne Aqueducts and Delta Tunnel if DWR and USBR agree, either as part of agreements with EBMUD or through the acceptance of conditions in their water rights permits and licenses, to construction and operating conditions that mitigate the impacts set forth herein.

2. Injury to EBMUD from Increased Frequency of Reverse Flow Events at Freeport Project Intake

The Delta tunnels project will adversely affect the quality and quantity of water available to EBMUD under its CVP contract by increasing the frequency of reverse flow events at the intake of the Freeport Regional Water Project ("Freeport Project"). EBMUD uses the Freeport Project, which is located upstream from a wastewater treatment plant, to divert CVP water. Reverse flow events cause treated wastewater to flow upstream and degrade the quality of EBMUD's CVP supply. As an affected CVP contractor, EBMUD is a legal user of the water involved in this Change Petition, and files this Protest on that basis. (*State Water Resources Control Bd. Cases (2006) 136 Cal.App.4th 674, 798-804.*)

(a) The Freeport Regional Water Project

The Freeport Project is a critical element in EBMUD's water supply. It took nearly 40 years to come to fruition and represents a long-term, significant investment by EBMUD. In 1970 EBMUD executed a water service contract with USBR for up to 150,000 af per year of CVP water from the American River delivered via the Folsom South Canal. A lawsuit filed in 1972 delayed construction of necessary facilities. The litigation continued for almost two decades and concluded in 1990 when Judge Hodge of the Alameda County Superior Court affirmed EBMUD's right to receive American River water through the Folsom South Canal while limiting diversions during dry conditions to protect fishery resources. EBMUD, USBR, and Sacramento County Water Agency ("SCWA") eventually agreed to move the diversion point downstream to a point on the Sacramento River near Freeport. EBMUD amended its CVP contract with USBR in 2001 authorizing delivery of CVP water at Freeport. After another round of litigation was eventually settled, EBMUD executed its current long-term renewal contract with USBR in 2006. That contract provides EBMUD with CVP water in dry years only, with an annual maximum delivery of up to 133,000 af in any single year, and no more than 165,000 af in three consecutive years. To ensure adequate water quality at the Freeport Project's intake, EBMUD entered into coordinated operations agreements with the Sacramento Regional County Sanitation District ("Regional San") and the City of Sacramento.

EBMUD and SCWA formed a joint powers authority, the Freeport Regional Water Authority ("Freeport Authority"), to build and operate the Freeport Project. The Freeport Project cost \$922 million to plan, design and build, with \$483 million funded by EBMUD and \$439 million by SCWA. The Freeport Project was built from 2006 to 2011. It diverts Sacramento River water and conveys it to the EBMUD and SCWA service areas using the following facilities: (1) an intake and pump station near Freeport, (2) a pipeline extending from the intake to SCWA's treatment plant and to the Folsom South Canal, (3) a pipeline extending from the Folsom South Canal terminus to EBMUD's Mokelumne River Aqueducts, and (4) related pumping plants, terminal facilities and water treatment facilities. The Freeport intake can divert 185 MGD, of which 100 MGD is allocated to EBMUD and 85 MGD to SCWA.

Freeport Project supplies are indispensable to EBMUD. EBMUD has implemented substantial conservation and water recycling programs. Rationing is required when storage and projected Mokelumne River runoff are low. But EBMUD's water supply planning confirms that, despite aggressive demand management, it will not always meet all customer demand during droughts. The Freeport Project fills the gap by improving reliability and operational flexibility during water shortages, catastrophic events, and maintenance-related downtime events. In the current extended drought, EBMUD is using the Freeport Project to divert allocated CVP supply and to access water transfers from CVP and non-CVP sources. In 2015, EBMUD diverted 58,000 af from Freeport and delivered it to the East Bay. This quantity is about one-third of EBMUD customers' total water use in 2015. If the drought continues into 2016, EBMUD expects to use the Freeport Project again to receive CVP and transfer water to meet customer demands. EBMUD expects to use the Freeport Project, on average, about three out of every ten years, increasing over time as demand increases and climate conditions change. EBMUD's partner in the Freeport Authority, SCWA, also relies heavily on the Freeport Project. It uses the Freeport Project to supplement and conjunctively use its groundwater supplies. SCWA further describes its use of the Freeport Project in its protest documents.

(b) Reverse Flows Require the Freeport Project to Shut Down

The Freeport Project's location was chosen for its deep water, available land, and desirable location downstream from the confluence with the American River. Importantly, the chosen site is located *upstream* of Regional San's discharge facility. However, "reverse flows" predictably occur during periods of high tides and low river flows. Significant reverse flow events cause discharged wastewater to flow 1.3 miles upstream to the Freeport Project intake. To avoid water quality impacts to the Freeport Project, the project temporarily shuts down during reverse flow events exceeding a certain threshold. The shutdowns are required by the domestic water supply permits issued by the State Water Resources Control Board ("SWRCB") Division of Drinking Water to EBMUD and SCWA. Diversions are halted when Regional San's wastewater effluent has traveled 0.9 miles upstream from its discharge point. Freeport resumes operation only after the river resumes flowing in the downstream direction and the effluent zone has moved back downstream to a location not more than 0.7 miles upstream from Regional San's discharge point. Since EBMUD began diverting water from the Freeport Project in April 2014, about four

shutdowns have occurred due to reverse flow events. Each shutdown lasts about three hours on average.

(c) The Delta Tunnels Will Lead to More Frequent Reverse Flows

DWR modeled certain impacts of the Delta tunnels as described in the project's draft environmental documentation. However, DWR's modeling does not accurately or adequately describe the Delta tunnels' impact on Sacramento River flows, nor its reverse flow impacts at the Freeport Project's point of diversion. DWR used a CALSIM II version that was deficient in several respects:

- It contained a number of erroneous or outdated assumptions, including incorrect assumptions regarding EBMUD's CVP contract and EBMUD's future service area demand. The EBMUD-specific errors led the model to understate the expected volume of EBMUD's diversions from the Freeport Project.
- It incorporated climate change and sea-level rise into each alternative. This made it impossible to isolate the extent to which Delta tunnel operations – distinguished from sea-level rise – may contribute to reverse flow events.
- It assumed construction of roughly 65,000 acres of new tidal marsh habitat. This assumption was appropriate when the BDCP modeling was performed, but it rendered it difficult to measure the impacts of Alternative 4A, which does not include habitat restoration, unlike BDCP Alternative 4.

DWR also used the DSM2 model to model certain Delta impacts, but its DSM2 work compounded the errors present in its CALSIM II work because DWR relied on its faulty version of the CALSIM II model to generate the data inputted into DSM2. Further, DWR did not use DSM2 to model project impacts on Sacramento River flows near Freeport.

A consortium of stakeholders including EBMUD retained MBK Engineers and Daniel B. Steiner to correct and update the CALSIM II model's assumptions and isolate the impacts of the new diversion facilities. MBK and Steiner removed the climate change and sea-level rise assumptions from the model and corrected the errors regarding EBMUD's contract rights and future demand. They also corrected and updated the model in several other respects that will be

described in testimony presented at the protest hearing. MBK and Steiner’s work resulted in more accurate model results and therefore a more realistic portrayal of the project’s impacts. CALSIM II output data has a one-month resolution, but reverse flow events last a few hours. To model specific reverse flow events, independent DSM2 modeling was performed using data provided by the corrected CALSIM II model.² The independent modeling covered 1922–2003 and excluded sea-level rise to isolate the impacts caused by the Delta tunnels. The results showed the Delta tunnels will cause a **16%** increase in the frequency of reverse flow events large enough to shut down Freeport Project diversions. The DSM2 results also showed that the BDCP’s habitat restoration, if included, will fully mitigate the issue by more than offsetting this reverse flow increase. Because Alternative 4A includes no habitat restoration, the project now under consideration has an adverse and unmitigated impact on reverse flows in the Sacramento River.

(d) More Frequent Reverse Flows May Limit the Freeport Project’s Yield

Freeport Project facilities are shut down every time a reverse flow event meets the shutdown criteria. Brief events may be weathered with a partial shutdown, but only if sufficient operational flexibility is available. When the intake is down for three hours or longer, the entire Freeport Project supply chain usually must be shut down. The Freeport intake is the first link in a chain of pipelines, pump stations, canals, aqueducts, and treatment facilities. The water EBMUD diverts from the Freeport Project passes through these facilities on its way to the East Bay. Water flows through a pipeline that discharges to USBR’s Folsom South Canal. The water travels down the Canal, is pumped into a second pipeline, and flows until reaching the Mokelumne Aqueducts, where it is pumped into the aqueducts that carry it to the East Bay. The water is then sent to one of EBMUD’s local surface water reservoirs.

The impacts start at the intake. The Freeport Project is not yet used to its full capacity. Because the pumps are sometimes idle, EBMUD has, in the past, made up for “lost” water from reverse flow events by continuing to operate the Freeport Project intake when it otherwise would not be used. However, EBMUD and SCWA each plan to use the Freeport Project more over time. With less idle time, opportunities to make up the lost water will become scarce. And these

² The independent DSM2 modeling was performed by highly qualified staff of Contra Costa Water District.

impacts extend well beyond the diversion point. Once shut down, affected facilities are restarted only after the reverse flows subside. Restarting them can take time. For example, some Freeport Project water is stored in Upper San Leandro Reservoir. That reservoir is filled by the Moraga Pumping Plant, which was not designed to handle intermittent flows caused by reverse flow shutdowns. Moraga Pumping Plant cannot easily be turned on or off remotely and, once shut down, must be restarted between midnight and 6:00 a.m. and only after 48 hours' advance notice to PG&E. This delay is more than an inconvenience – it risks losing water that could have been diverted and stored during the downtime.

(e) Conditions for Withdrawal of Protest

EBMUD is willing to discuss with DWR and USBR appropriate measures to mitigate the reverse flow impacts identified above. It will consider withdrawing its protest if appropriate terms are included in an agreement or in the proper permits. EBMUD will consider offered mitigation that reduces the water supply, water quality, and operational impacts associated with reverse flows.

3. Injury to Lower Mokelumne River Anadromous Fishery From Changed Delta Cross Channel Operations (Part II Hearing Matter)

As a result of EBMUD's fishery partnership efforts in conjunction with the resource agencies, the lower Mokelumne River produces a substantial Chinook salmon return in most years and significantly contributes to the Central Valley Chinook salmon population and associated commercial and sport fisheries. It also supports a population of federally threatened Central Valley steelhead. The Mokelumne River is a distinct river system which enters the Central Delta, so the Mokelumne fish face conditions that are significantly different from those in the San Joaquin and Sacramento Rivers. Due to Mokelumne River geography, Delta Cross Channel (DCC) operations adversely impact Mokelumne River returning adult anadromous fish and out-migrating naturally produced juvenile anadromous fish. The Projects' requested Change Petition would potentially exacerbate these adverse fishery impacts. Such fishery and public trust impacts must be avoided and/or mitigated. These fishery issues are a Part II Hearing matter.

(a) The Lower Mokelumne River

The lower Mokelumne River begins downstream of Camanche Dam and runs southwesterly through Lodi and then northwesterly until it is joined by the Cosumnes River. It then enters the Delta, splitting into the North and South Fork channels near the Delta Cross Channel. The river is inhabited by a number of anadromous fish species, including populations of fall-run Chinook salmon and steelhead. In the context of the overall Delta, the Mokelumne is a small river, comprising about 1.5% of the Delta watershed, as compared to the Sacramento River and San Joaquin Rivers, which comprise about 62% and 35% respectively. Despite its small size, the river is vitally important to EBMUD's water supply and to the Mokelumne River anadromous fishery.

(b) EBMUD's Lower Mokelumne River Partnership

EBMUD manages a comprehensive program to protect and enhance the fisheries ecosystem of the lower Mokelumne River. This program began in 1990, and was codified in 1998, with the development of a partnership between EBMUD and the California Department of Fish & Wildlife (CDFW) and the U.S. Fish and Wildlife Service (FWS), in the Joint Settlement Agreement (JSA), a multi-pronged settlement between EBMUD and the resource agencies designed to enhance protection of lower Mokelumne River fishery resources.³ One component of the program includes a schedule of flows that EBMUD must release to the lower Mokelumne River. The schedule varies releases by water year type and time of year, tailored to the life stages of the anadromous fisheries. The JSA also requires riparian corridor habitat enhancement work that EBMUD has completed and continues to expand upon, including annual gravel enhancement projects in the Mokelumne River to successfully promote natural spawning; riparian restoration; the Murphy Creek dam removal and habitat improvement project; and construction of juvenile rearing side channels and floodplain habitat. EBMUD also conducts a detailed study and monitoring program of the anadromous fisheries and the riparian ecosystem. Monitoring activities include in-migration, redds (salmon and steelhead nests) census, out-migration, and fish community surveys.

³ The Federal Energy Regulatory Commission (FERC) approved the JSA in November 1998, while the State Water Board incorporated the flow provisions of the JSA into EBMUD's Mokelumne River water rights (License 11109 and Permit 10478) in Decision 1641.

The JSA Partnership has been a success. For example, the annual average adult Chinook salmon escapement on the lower Mokelumne River has more than doubled since the implementation of JSA flow and non-flow measures, from a pre-JSA average of 3,636 to a post-JSA average of 8,774 as of 2014. In addition, the Partnership's steering committee (CDFW, USFWS, and EBMUD) conducted a 10-year review of the JSA in 2008, finding that several JSA objectives had already been successfully completed, while other measures such as flow releases, gravel enhancement, and improved hatchery practices and adaptive management actions, continue to be implemented each year. And, as noted by USBR, the lower Mokelumne River produces a substantial Chinook salmon return in most years and significantly contributes to the Central Valley Chinook salmon population and associated commercial and sport fisheries, and also supports a population of federally threatened Central Valley steelhead. (USBR Finding Of No Significant Impacts Number 12-10-MP (2012), p.2.)

In short, EBMUD has invested heavily in protecting and enhancing the lower Mokelumne River ecosystem, in the form of its releases of enhanced fishery flows and its implementation of habitat restoration projects and fisheries monitoring and research.

(c) Impacts of DCC Operations on the Mokelumne River Anadromous Fishery

The DCC is located on the Sacramento River near Walnut Grove, California. The primary purpose of the DCC is to reroute large quantities of Sacramento River water out of its natural channel and into the Central and Eastern Delta for conveyance southward to the Projects' Delta export facilities. The DCC does this by connecting to Snodgrass Slough, which, along with Dead Horse Cut, connects to the North and South forks of the Mokelumne River; the rerouted Sacramento River water flows through the DCC to these natural channels toward the state and federal export facilities in the South Delta.

The North and South Forks of the Mokelumne River are also the key migratory pathway for adult and juvenile fall-run Chinook salmon and steelhead migrating to and from the lower Mokelumne River. DCC operations generally result in the Cross Channel gates being open during anadromous fish migration periods. This leads to two types of impacts to the lower Mokelumne River anadromous fishery: (a) increased straying of returning adult Mokelumne River fall-run Chinook salmon and steelhead because, in the fall, high volumes of Sacramento

River water funneled through the DCC attract migrating adult Chinook salmon into the Sacramento River instead of the Mokelumne River;⁴ and (b) rerouting of out-migrating naturally produced juvenile anadromous fish from the Mokelumne River toward the South Delta and the Projects' export facilities, leading to increased mortality caused by migration delays which increase the exposure of the juvenile anadromous fish to predation and other diversions. Studies have demonstrated that juvenile salmonids entrained into the interior Delta via the DCC or Georgiana Slough have lower survival than along other migratory routes (Perry, et al. 2010, Newman and Brandes 2010).

The operation of the DCC has long been identified as having a potential adverse impact on salmonid migration. For example, in 1989 the Mokelumne River Technical Advisory Committee identified the DCC as a significant factor contributing to straying of Mokelumne River salmonids. In addition, the Lower Mokelumne River Partnership, which includes representatives from CDFW, USFWS, and National Marine Fisheries Service (NMFS), worked with USBR to develop a low-risk study plan looking at the effects of DCC closures on migrating salmon. USBR issued a Finding of No Significant Impacts (FONSI) on the study plan in 2012. Under the plan, USBR proposed closing the DCC for up to 10 days during the first half of October over a five year study period to evaluate the effects of the closures on reducing Mokelumne River fall-run Chinook salmon straying. The proposal was “anticipated to have a beneficial effect on LMR adult fall-run Chinook salmon by reducing straying....” (USBR FONSI Number 12-10-MP (2012), p. 3.) This proposal was not a comprehensive solution to the fishery impacts caused by DCC operations, but it was a reasonable first step. Due to limitations related to Delta water quality standards, however, the planned study closures did not occur.

However, preliminary data indicates that when the DCC has periodically been closed in the fall, the stray rates for Mokelumne River salmonids are significantly reduced. In addition, as part of the SWRCB Bay Delta Plan Update Notice of Preparation in 2012, USFWS, USBR, and CDFW

⁴ Bureau, et al. (2007) estimated that when the DCC gates are open, approximately 45% of the Sacramento River flow at Freeport is redirected into the Central Delta through the DCC and Georgiana Slough. With the gates open, there is a clear pathway for salmon attempting to migrate upstream into the Lower Mokelumne River to instead “stray” into the Sacramento River system. Excess straying rates impact the anadromous fishery population structure as it relates to river specific stocks and sustaining natural production.

submitted comments supporting continued evaluation of DCC closures to improve salmon returns to both the Sacramento and Mokelumne river systems.

(d) Impacts From Changed Project Operations Resulting From the Requested Petition

It is well settled that DCC operations adversely impact Mokelumne River fisheries. It is difficult to ascertain the additional impacts from DCC operations resulting from the Change Petition because no operations plan has been prepared by Petitioners. It is clear that with new points of diversion in the North Delta, Delta operations will fundamentally and significantly change. These changed operations could result in the DCC being open more than it has been historically, leading to increased impacts on the lower Mokelumne River anadromous fishery. These impacts have not been evaluated by the Petitioners.

For example, the RDEIR/SDEIS lumps the Mokelumne River together with the San Joaquin River, and contains no analysis addressing the project's impacts specifically on the Mokelumne River fishery. The RDEIR/SDEIS must assess impacts specifically on the Mokelumne fishery, as the Mokelumne River contributes a very high percentage of non-Sacramento-origin salmonid return in the Central Valley and to the commercial and recreational ocean fishery. While the RDEIR/SDEIS recognizes the hazards and low survival of migratory fish passing through the central Delta, the document makes no attempt to assess the potentially significant environmental impacts of the revised DCC operations likely as a result of Alternative 4A.

There must be a full consideration by the State Water Board of (a) of how the SWP and CVP will operate if the requested Change Petition is approved; at this time that critical information is missing, as Petitioners have not provided an operations plan describing how the requested new North Delta points of diversion will be operated in conjunction with the existing South Delta points of diversions; (b) how Alternative 4A will change the operations of the DCC; and (c) how those changed operations will cause potentially significant environmental effects to the Mokelumne fisheries resources. This must be done in an adequate RDEIR/SDEIS to meet legal requirements under CEQA, and it must be conducted by the State Water Board in carrying out its public trust obligations in this proceeding. Finally, conditions must be included in any approval of the Change Petition to ensure full mitigation of impacts resulting from the proposed

change, such as requiring DCC gate closures during critical anadromous fishery migration periods related to Mokelumne River populations.

(e) Conditions for Withdrawal of Protest

EBMUD will withdraw its protest based on injury to the Mokelumne River anadromous fishery if DWR and USBR agree, either as part of agreements with EBMUD or through the acceptance of conditions in their water rights permits and licenses, to conditions that mitigate the fisheries impacts set forth herein.

4. Flow Responsibilities

According to the October 30, 2015 Notice of Petition, the State Water Board intends to include “interim” Delta flow criteria in the water rights of DWR and USBR as part of any Board approval of the Change Petition in order to comply with the Delta Reform Act (i.e., Water Code section 85086(c)(2)), and DWR and USBR alone would be responsible for meeting the interim flow criteria. (See, Notice of Petition, p. 8.) However, as the Notice of Petition also explains, the SWRCB is concurrently in the process of updating the Bay-Delta Water Quality Control Plan. As part of that update process, the Board will develop, among other things, new Delta flow criteria that will replace the interim DWR/USBR flow criteria. (*Id.*) Given the importance of flow in the Delta, the interim flow standards are of critical importance to EBMUD, both in its role as a legal user and as a party interested in protection of public trust resources within the Delta. Pursuant to footnote 15 of the Notice of Petition, EBMUD does not intend to present direct evidence and testimony on its protest ground Number 4 concerning flows, but hereby reserves its rights to participate on this issue through opening statements, cross-examination, rebuttal, and closing statements or briefs.