

# WATER QUALITY IN THE SACRAMENTO-SAN JOAQUIN DELTA

**California WaterFix would protect and maintain water quality in the Sacramento-San Joaquin Delta (Delta) and guard against potential threats such as saltwater intrusion and sea level rise.**

Water quality in the Sacramento-San Joaquin Delta is influenced by many factors including:

- Tidal fluctuations and natural flows
- Controlled flows and releases from the State Water Project (SWP) and Central Valley Project (CVP)
- Discharge and diversions from urban and agricultural users
- Seasonal variability
- Land use patterns in the upstream watersheds and in the Delta
- In-Delta/upstream activities and sources of pollutants

With or without the California WaterFix, water quality conditions upstream of the Delta, in the Delta, and in the SWP/CVP export service areas are expected to change as a result of past, present, and future projects, population growth, climate change, and changes in water quality regulations.

Particularly in the west Delta, salt water intrusion caused by sea level rise or decreased Delta outflow could increase the concentration of salts (bromide, chloride) and levels of electrical conductivity (EC).

The construction, operation and maintenance of the proposed conveyance facilities would not result in any significant impacts on Delta water quality for any beneficial uses. Mitigation for California WaterFix includes some tidal restoration that could result in minimal increases in methylmercury levels at locations nearest to the restoration areas.

## EVALUATING IMPACTS ON DELTA WATER QUALITY

The environmental analysis for California WaterFix evaluates water quality impacts based on the following criteria.

### WOULD THE CALIFORNIA WATER FIX CONVEYANCE FACILITIES...

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Exceed applicable state and federal water quality objectives/criteria that would result in adverse effects to one or more beneficial uses within affected water bodies?	Increase rates of accumulating pollutants that would substantially increase the health risks to wildlife (including fish) or humans consuming those organisms?	Cause long-term degradation of water quality, resulting in substantially increased risks for adverse effects to one or more beneficial uses?	Cause measurable degradation of water quality in water bodies that are already listed as impaired?
<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>



## WATER QUALITY STANDARDS AND CRITERIA

California WaterFix must adhere to the water quality objectives and criteria set by federal and state agencies. California drinking water standards are incorporated by reference in regional plans established by the State Water Resources Control Board (SWRCB).

The state and federal water projects have been in compliance with SWRCB water quality standards in the Delta 98.6% of the time over the past 21 years. Over the past 37 years, the compliance rate is 98.9%.

### EXISTING WATER QUALITY STANDARDS IN THE DELTA

SOURCE	EXPLANATION / MAJOR CRITERIA
<b>CALIFORNIA TOXICS RULE</b>	<ul style="list-style-type: none"> <li>U.S. Environmental Protection Agency's (EPA) priority toxic pollutants.</li> <li>Applicable to all surface waters in California.</li> </ul>
<b>CALIFORNIA MAXIMUM CONTAMINANT LEVELS (MCL)</b>	<ul style="list-style-type: none"> <li>Primary drinking water MCLs and secondary MCLs specified in Title 22 of the California Code of Regulations.</li> </ul>
<b>SWRCB SAN FRANCISCO BAY / SACRAMENTO-SAN JOAQUIN DELTA ESTUARY WATER QUALITY CONTROL PLAN (2006)</b>	<ul style="list-style-type: none"> <li>Objectives applicable to the Delta only.</li> <li>Regulated through water rights conditions by the SWRCB.</li> <li>Applies to all beneficial uses, including municipal, industrial, and agricultural, and includes salinity objectives at various Delta locations.</li> </ul> <p>The SWRCB has the job of balancing all beneficial uses of Delta water – fish and wildlife, agriculture, cities, etc. – and sets water quality standards to make sure one water user does not harm another water user. The SWRCB is in the process of updating its Bay-Delta Water Quality Control Plan, which includes salinity standards. California WaterFix would meet the standards set by the SWRCB.</p>
<b>SAN FRANCISCO BAY WATER BOARD BASIN PLAN / SAN FRANCISCO BAY WATER QUALITY CONTROL PLAN</b>	<ul style="list-style-type: none"> <li>Applicable to the far west Delta, Suisun Bay and Marsh, and other surface waters in the study area.</li> <li>Defines beneficial uses, water quality objectives, and implementation, surveillance and monitoring programs.</li> <li>Regulated through point and nonpoint source controls.</li> <li>Freshwater, marine water, and agriculture based objectives.</li> </ul>
<b>CENTRAL VALLEY WATER BOARD BASIN PLAN/ SACRAMENTO AND SAN JOAQUIN RIVER BASINS WATER QUALITY CONTROL PLAN</b>	<ul style="list-style-type: none"> <li>Applicable to the majority of the Delta and other surface waters in the study area, including most of the Sacramento and San Joaquin River watersheds.</li> <li>Defines beneficial uses, water quality objectives, and implementation, surveillance and monitoring programs.</li> <li>Regulated through point and nonpoint source controls.</li> <li>Freshwater, marine water, and agriculture based objectives.</li> </ul>
<b>SUISUN MARSH WATER QUALITY CONTROL PLANS</b>	<ul style="list-style-type: none"> <li>Suisun Marsh Protection Plan (Bay Conservation and Development Commission)</li> <li>Plan of Protection for Suisun Marsh (DWR); meet the SWRCB water rights decision (D-1485) regarding salinity standards</li> <li>Suisun Marsh Preservation Agreement (various state and federal agencies); mitigate salinity impacts from the SWP and CVP.</li> <li>Suisun Marsh Plan; address use of resources within wetland and upland habitats in the marsh, tidal wetland restoration, and enhancement of managed wetlands.</li> <li>Miscellaneous items containing standards/criteria specific to Suisun Marsh: <ul style="list-style-type: none"> <li>Bay Delta Water Quality Control Plans</li> <li>SWRCB water rights decision (D-1641)</li> </ul> </li> </ul>
<b>STATE WATER PROJECT SOUTH-OF-DELTA SERVICE AREA BASIN PLANS / WATER QUALITY CONTROL PLANS</b>	<ul style="list-style-type: none"> <li>Applicable to surface waters in the south-of-Delta areas served by SWP exports: <ul style="list-style-type: none"> <li>Central Coast</li> <li>Los Angeles</li> <li>Santa Ana</li> <li>San Diego</li> </ul> </li> </ul>
<b>USEPA'S BACTERIOLOGICAL CRITERIA INCORPORATED IN THE SAN FRANCISCO BAY BASIN PLAN FOR WATER CONTACT RECREATION</b>	<ul style="list-style-type: none"> <li>Provides for a level of production based on the frequency of usage of a given water contact recreation area.</li> </ul>
<b>OTHER WATER QUALITY PLANS</b>	<ul style="list-style-type: none"> <li>SWRCB: Statewide mercury regulatory program (in development)</li> <li>SWRCB: Mercury Exposure Reduction Program (MERP) – addresses impacts of mercury in fish</li> <li>Central Valley Water Board: Delta Regional Monitoring Program - monitor water quality, flows, and ecological conditions in the Delta.</li> </ul>



## COMPARISON OF BDCP AND CALIFORNIA WATER FIX WATER QUALITY IMPACTS

POTENTIAL WATER QUALITY IMPACTS EVALUATED	ANALYZED IN DRAFT EIR/EIS	ANALYZED IN RDEIR/SDEIS	
	ALTERNATIVE 4 (BDCP)	NEW/REVISED ASSUMPTIONS, METHODS AND CRITERIA FOR ALTERNATIVE 4A	ALTERNATIVE 4A (CALIFORNIA WATERFIX)
Salinity (EC and Chloride) Chloride: inorganic ion that causes undesirable taste in drinking water. Electrical Conductivity: a measure of salinity (concentration of dissolved salts) in water	Significant and unavoidable/ Adverse	New modeling and sensitivity analysis conducted for EC as a result of updates to the Project Description (e.g., changed compliance point to Emmaton from Threemile Slough to be consistent with EPA regulations); modeling results updated for chloride; new calculations for exceedances based on water year type at modeled time step rather than water year type	Less than significant/Not adverse for EC and chloride; meets water quality objectives
Selenium: trace metal that is essential at low levels but toxic at high levels	Less than significant/Not adverse	Modeling updated to improve accuracy of modeled water concentration data; expanded bioaccumulation analysis; updated thresholds to draft EPA criteria	Less than significant/Not adverse
Bromide: inorganic ion that is a precursor to disinfection byproduct formation	Significant impact. The modeled increases in bromide at Barker Slough are due to the assumptions regarding tidal habitat restoration, not due to conveyance facility operations.	New modeling for sensitivity analysis	Less than significant/Not adverse
Algal blooms, or microcystis bloom formations	Significant and unavoidable/ Adverse	New assessment added	Less than significant/Not adverse
San Francisco Bay - Downstream Effects	Less than significant/Not adverse	New assessment added	Less than significant/Not adverse
Methylmercury (MeHg): toxic trace metal that accumulates in aquatic plant and wildlife	Significant and unavoidable/ Adverse	N/A	Significant and unavoidable/ Adverse

### TIDAL RESTORATION IMPACTS ON MERCURY LEVELS

Except for potential effects on MeHg levels due to tidal restoration proposed as mitigation, modeling and analyses for California WaterFix demonstrate that construction, operation and maintenance of the proposed conveyance facilities would not result in any significant impacts on Delta water quality for any beneficial uses. As requested by the fishery resource agencies, California WaterFix includes tidal restoration to offset the effects of construction and operation of the proposed conveyance facilities. Habitat restoration areas have the potential to increase organic sediment known to enhance MeHg accumulation. For California WaterFix, these increases are not expected to harm downstream water users because effects would remain localized at the restoration sites.



## WATER QUALITY IMPACTS

California WaterFix will meet state and federal water quality objectives.  
 Detailed list of constituents of concern and impact conclusions for Alternative 4A:

CONSTITUENT	IMPACT CONCLUSION	
	LESS THAN SIGNIFICANT/NOT ADVERSE	SIGNIFICANT AND UNAVOIDABLE/ADVERSE
AMMONIA	✓	
BORON	✓	
BROMIDE	✓	
CHLORIDE	✓	
DISSOLVED ORGANIC CARBON (DOC)	✓	
ELECTRICAL CONDUCTIVITY: A MEASURE OF SALINITY (CONCENTRATION OF DISSOLVED SALTS) IN WATER	✓ (after mitigation <sup>†</sup> )	
MERCURY		✓ (restoration-related activities to mitigate for project impacts)
NITRATE	✓	
ORGANIC CARBON	✓	
MICROCYSTIS BLOOMS	✓	
PATHOGENS	✓	
PESTICIDES	✓	
PHOSPHORUS	✓	
SELENIUM	✓	
TRACE METALS (E.G., IRON, ARSENIC, MANGANESE, ETC.)	✓	
TOTAL SUSPENDED SOLIDS (TSS) AND TURBIDITY	✓	
SAN FRANCISCO BAY - DOWNSTREAM EFFECTS	✓	

<sup>†</sup> Mitigation measures for electrical conductivity include: "Adaptively manage diversions at the north and south Delta intakes to reduce or eliminate water quality degradation in the western Delta," and "Adaptively manage head of Old River barrier and diversions at the north and south Delta intakes to reduce or eliminate exceedances of the Bay-Delta Water Quality Control Plan objective at Prisoners Point."