



December 16, 2022

Department of Water Resources  
Attention: Delta Conveyance Office  
P.O. Box 942836  
Sacramento, CA 94236-0001

*Sent via email to: [deltaconveyancecomments@water.ca.gov](mailto:deltaconveyancecomments@water.ca.gov)*

**RE: Comments on Delta Conveyance Draft Environmental Impact Report**

To Whom It May Concern:

On behalf of the Natural Resources Defense Council, the Bay Institute, California Sportfishing Protection Alliance, Defenders of Wildlife, Pacific Coast Federation of Fishermen's Associations, Institute for Fisheries Resources, Save the Bay, Restore the Delta, San Francisco Baykeeper, Golden State Salmon Association, Save California Salmon, California Indian Environmental Alliance, Friends of the River, and the Planning and Conservation League, we are writing to provide public comments on the Delta Conveyance Draft Environmental Impact Report ("DEIR"). The DEIR fails to comply with CEQA and must be substantially revised and recirculated in order to provide the public and decisionmakers with accurate information regarding the potential environmental impacts of the proposed project and alternatives.

As discussed in more detail below, the DEIR:

- Fails to consider a reasonable range of operational alternatives, including one or more alternatives that do not propose continued implementation of the Trump Administration's biological opinions, which the California Natural Resources Agency has challenged in federal court as unlawful and inadequately protective of listed species and which has been remanded by the court, as well as a range of operational criteria for the proposed North Delta intakes;

- Uses an Improper Project Purpose and Objectives to Exclude Alternatives;
- Uses an Unlawful Environmental Baseline that Misleads the Public and Decisionmakers, including the exclusion of the effects of climate change;
- Fails to Consider the Whole of the Action, including the use of Temporary Urgency Change Petitions to Violate Water Quality Standards;
- Fails to accurately assess environmental impacts to salmon and other native fish species;
- Fails to accurately assess environmental impacts to water quality.

**I. The DEIR Fails to Consider a Reasonable Range of Alternatives, Violating CEQA:**

CEQA requires that the DEIR consider a reasonable range of alternatives. Cal. Pub. Res. Code §§ 21002, 21061, 21100; tit. 14, Cal. Code Regs. (“CEQA Guidelines”) § 15126.6. The DEIR violates this basic obligation to consider a reasonable range of alternatives because it only considers a single operational alternative, whereas other operational alternatives could reduce or avoid adverse environmental impacts. The failure to include any operational alternatives that could reduce or avoid adverse environmental impacts violates CEQA. *See, e.g., Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal.3d 553, 566 (1990) (EIR must consider a reasonable range of alternatives that offer substantial environmental benefits and may feasibly be accomplished).

First, because this DEIR includes only a single operational alternative, *see* DEIR at section 3.16.1, all of the alternatives result in increased water diversions from the Delta and reduced Delta outflows, *see* DEIR at ES-51, Appendix 5A at B-327 to B-334, and the DEIR reaches identical CEQA conclusions regarding impacts to fish species from operations and maintenance for all of the alternatives, *see id.* at Table ES-2. The DEIR does not include any alternatives that do not increase water diversions from the Delta and improve conditions for native fish and wildlife. In contrast, although DWR’s CEQA analysis for the prior Delta conveyance project (the Bay Delta Conservation Plan / California WaterFix project) was deeply flawed, it at least considered more than one operational alternative and included an operational alternative that resulted in increased Delta outflow and reduced water diversions (Alternative 8 in the Bay Delta Conservation Plan DEIR/DEIS). Not only does the current DEIR fail to consider any operational alternatives, but the proposed operational criteria for the North Delta intakes used in the DEIR are substantially less environmentally protective than the operating criteria that were required in permits for the California WaterFix project. *See* Letter from NRDC *et al* to DWR dated October 18, 2021, attached hereto as exhibit A. Particularly in light of the significant environmental impacts that result from the proposed project and alternatives, which will also violate the requirements of the ESA and CESA, the DEIR’s failure to consider a range of operational criteria for the North Delta intakes, including operational criteria like those required in WaterFix, violates CEQA.

Equally important, the DEIR fails to consider any alternatives to the continuation of the Trump Administration’s biological opinions for the operations of the Central Valley Project (“CVP”) and State Water Project (“SWP”), which are included as part of the proposed project. DEIR at 3-

151 (describing South Delta operations of proposed project as “Same as D-1641, 2019 BiOps and 2020 SWP ITP requirements”); *see id.* at 3-144 (“The OMR criteria defined in the regulatory baseline (currently 2019 BiOps and 2020 SWP ITP) are applicable.”); *id.* at 3-145 (“The Delta Conveyance Project would not change operational criteria associated with upstream reservoirs.”).<sup>1</sup> The proposed project includes continuation of these biological opinions even though the State of California has publicly claimed those biological opinions are unlawful and filed litigation to overturn those biological opinions. *See* Exhibit B. As a result of litigation by conservation and fishing groups and litigation by the State of California, those biological opinions have been remanded and the federal government is in the process of developing new biological opinions, including evaluating a range of operational criteria under NEPA. *See* Bureau of Reclamation, Notice of Intent to Prepare and Environmental Impact Statement and Hold Scoping Meetings on the 2021 Endangered Species Act Section 7 Consultation on the Long Term Operations of the Central Valley Project and State Water Project, 87 Fed. Reg. 11093, 11094-95 (Feb. 28, 2022); *see* Exhibit C.

Moreover, operations of the CVP and SWP have exceeded the incidental take levels in those biological opinions in recent years and fail to prevent operations from jeopardizing listed species. *See, e.g.,* Declaration of Dr. Jonathan A Rosenfield in support of Plaintiffs Motion for Preliminary Injunction For 2022 and Plaintiffs’ Opposition to Federal Defendants Motion for Voluntary Remand Without Vacatur, Doc. 325 (Dec. 16, 2021), attached hereto as Exhibit D. And the U.S. Fish and Wildlife Service has issued a proposed rule to list Longfin Smelt as an endangered species under the Endangered Species Act, concluding that existing regulatory

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<sup>1</sup> The State’s incidental take permit for operations of the State Water Project (“Incidental Take Permit”) only addresses operations in the Delta, and it does not authorize incidental take of salmon or other species listed under the California Endangered Species Act (“CESA”) caused by operations of the Central Valley Project, nor cause by coordinated operations of the State Water Project and Central Valley Project upstream of the Delta. In response to a Public Records Act request by NRDC, DWR did not provide any documentation of authorization for incidental take resulting from State Water Project operations at Oroville Dam or the coordinated operations of the Central Valley Project pursuant to the Coordinated Operating Agreement. As a result, the State Water Project and Central Valley Project lack legal authorization under CESA for incidental take of listed species caused by upstream operations. In order to comply with CESA and the federal ESA, permitting of the Delta Conveyance Project will need to address the full scope of the coordinated operations of the SWP and CVP, including upstream operations.

In addition, the proposed project and alternatives do not include a requirement for the CVP to comply with the San Joaquin River inflow: export ratio of the 2009 NMFS biological opinion or the related spring outflow provision of the State’s Incidental Take Permit, thereby resulting in greater CVP diversions in April and May than were authorized or modeled under the State’s Incidental Take Permit. *See* DEIR at 3-151 and n. 10 (“Spring outflow requirement is an existing regulatory requirement for the SWP. In complying with this existing requirement, total SWP exports including the north Delta diversions and the existing south Delta exports will be curtailed as needed.”).

mechanisms – including these biological opinions, the State’s Incidental Take Permit, and existing water quality standards – are inadequate to prevent the extinction of Longfin Smelt. U.S. Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants: Endangered Status for the San Francisco Bay-Delta Distinct Population Segment of the Longfin Smelt, 87 Fed. Reg. 60957, 60970 (Oct. 7, 2022).

As a result, it plainly violates CEQA not to consider any operational alternatives to continuation of the Trump Administration’s biological opinions as part of the proposed project and all of the alternatives.

The operational criteria used in the DEIR appear to be premised on the assumption that the project can divert water in excess of existing regulatory requirements without causing environmental harm. However, state and federal agencies have repeatedly rejected this premise for more than a decade, including the State Water Board’s 2010 Public Trust flows report, which explicitly concluded that “The best available science suggests that current flows are insufficient to protect public trust resources” and recommended significant increases in Delta outflow and measures to strengthen protections for fish and wildlife in the Bay-Delta. State Water Resources Control Board, Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem.<sup>2</sup>

State and federal agencies have repeatedly recognized that existing regulatory requirements are inadequate to protect the environment, further demonstrating the need for the DEIR to consider alternatives that would increase Delta inflows and outflows in order to improve environmental protections for salmon and other fish and wildlife. *See, e.g.*, letter from United States Environmental Protection Agency to State Water Resources Control Board regarding Comprehensive Review of Bay-Delta Water Quality Control Plan, dated December 11, 2012;<sup>3</sup> letter from United States Environmental Protection Agency to State Water Resources Control Board regarding Bay-Delta Water Quality Control Plan; Phase 2, dated February 23, 2017.<sup>4</sup> More recently, in 2018 the State Water Resources Control Board concluded that,

Though various state and federal agencies have adopted requirements to protect the Bay-Delta ecosystem, the best available science indicates that the existing requirements are insufficient.

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<sup>2</sup> This agency record is available online at: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/deltaflow/docs/financial\\_rpt080310.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/financial_rpt080310.pdf). This document, and all other references to a specific website, are hereby incorporated by reference.

<sup>3</sup> This agency record is available online at: <https://www.epa.gov/sites/default/files/documents/sfdelta-decpost-workshopltr-dec2012.pdf>.

<sup>4</sup> This agency record is available online at: <https://www.epa.gov/sites/default/files/2017-10/documents/sfbay-water-quality-control-plan-comments-on-scientific-basis-report-2017-02-23.pdf>.

Existing regulatory minimum Delta outflows are too low to protect the ecosystem, and without additional regulatory protections, existing flows will likely be reduced in the future as new storage and diversion facilities are constructed, and as population growth continues.

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Given these potential future demands and limited existing flow requirements in the Bay-Delta watershed, it is imperative that updated flow requirements be established in order to protect fish and wildlife beneficial uses in the Bay-Delta watershed.

State Water Resources Control Board, July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan, at 5-7; *see id.* at 15 (“As discussed above, current outflow volumes are inadequate to protect the ecosystem, and current outflow requirements are even lower and less protective.”).<sup>5</sup> Indeed, State law requires that the State Water Resources Control Board’s consideration of any change in point of diversion for Delta conveyance to include appropriate Delta flow criteria that is informed by the Board’s 2010 Public Trust report, which concluded that existing flows are inadequate and recommended significant increases in Delta outflows. Cal. Water Code § 85086(c)(2).

The State Water Resources Control Board (“SWRCB”) began the regulatory process to update the Bay-Delta Water Quality Control Plan in 2008 and issued its July 2018 Framework for completing the update of the Water Quality Control Plan. The DEIR fails to provide a reasoned explanation why it does not consider alternative operational criteria that would be consistent with the 2018 Framework for completing the update of the Bay-Delta Water Quality Control Plan, particularly since the final CEQA/NEPA document is intended to be used by the SWRCB in consideration of water rights permits.<sup>6</sup>

And in fact, the State Water Board’s CEQA scoping comments explicitly identified the need to consider a range of operational alternatives, including alternative operations that increase Delta outflows and a specific alternative that is consistent with the State Water Board’s 2018 Framework to complete the update of the Bay-Delta Water Quality Control Plan:

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<sup>5</sup> This agency record is available online at:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/bay\\_delta/docs/sed/sac\\_delta\\_framework\\_070618%20.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/sed/sac_delta_framework_070618%20.pdf).

<sup>6</sup> The State Water Board recently required the proponents of the Sites Reservoir project to provide modeling of their proposed operations of Sites Reservoir that is consistent with the 2018 Framework, in order to process the water rights application for Sites Reservoir. Letter from State Water Resources Control Board to Sites Project Authority dated August 26, 2022, attached hereto as Exhibit E. Like the Sites Reservoir Project, this DEIR is intended to provide CEQA coverage for the State Water Board’s consideration of a water rights petition for the Delta Tunnel project, further demonstrating the need for evaluation of alternative operational criteria, including alternatives consistent with the State Water Board’s 2018 Framework, in this DEIR.

The EIR should include a reasonable range of conveyance and operational alternatives.... Operating scenarios should be considered that improve conditions for native fish species that are currently in poor condition by improving Delta outflows, reducing entrainment and impingement related effects of SWP (and possibly CVP) diversions, improving cold water management, and other measures without redirected impacts to native fish species. Specifically, the EIR should evaluate a scenario that is consistent with the State Water Board's efforts to update the Bay-Delta Plan to improve protections for native fish species. In 2018, the State Water Board updated the Lower San Joaquin River Flow objectives in the Bay-Delta Plan and released a Framework for potential updates to Sacramento River and Delta inflow and outflow, interior Delta flow, and cold water habitat objectives included in the plan based on science summarized in the State Water Board's Scientific Basis Report.

SWRCB 2020 at 4-5.

Moreover, as discussed *infra*, the proposed project and all of the alternatives result in significant environmental impacts and the proposed mitigation measures are wholly inadequate to reduce those impacts to a less than significant level. Considering a range of operational alternatives is necessary to identify ways to reduce or avoid these significant environmental impacts.

In light of the extensive scientific record regarding the inadequacy of existing regulatory standards and the need to significantly increase instream flows, Delta outflows, and other measures to avoid significant impacts to the environment, DWR's failure to analyze a reasonable range of operational alternatives in the DEIR, including any alternatives that result in increased Delta outflows and reduced water diversions, is inexplicable – and violates CEQA.<sup>7</sup> Therefore, the DEIR must be revised to consider a range of operational alternatives, including one or more operational alternatives that significantly increase Delta outflow and that is consistent with the State Water Board's 2018 Framework, and the revised DEIR must be recirculated for public review and comment.

**II. The DEIR's Project Purposes and Objectives are Inconsistent with State Law, and to the Extent they Exclude Alternatives that Reduce Water Diversions, Violates CEQA:**

The DEIR's project purposes and objectives are inconsistent with state law, and to the extent that these project purposes exclude consideration of alternatives that reduce State Water Project

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<sup>7</sup> The record developed over the past 14 years, including numerous agency reports and findings, court orders, biological opinions, and independent scientific reviews have provided ample practical experience demonstrating the need to consider one or more alternatives that reduce water diversions from the Bay-Delta, in contrast to the factual situation that the California Supreme Court confronted in 2008. *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal.4th 1143, 1168 (2008).

diversions from the Delta, the project purposes and objectives violate CEQA. *See* DEIR, Appendix 3A, at 3A-34 (screening out the 2013 Portfolio-Based Proposal, which included a 3,000 cfs tunnel, from consideration in this DEIR specifically because that proposal reduces SWP exports from the Delta).

Most notably, State law establishes co-equal goals for the Delta that include restoring the health of the Bay-Delta ecosystem and its native fisheries, Cal. Water Code §§ 85001, 85020,<sup>8</sup> and establishes state policy to reduce reliance on the Delta, *id.* § 85021. In addition, under state law, the California Department of Water Resources has an affirmative obligation to protect and conserve endangered fish species, Cal. Fish and Game Code § 2052, and is subject to the Public Trust.

However, these legal obligations are not reflected in the project's purpose and objectives. None of the project objectives include restoring the Bay-Delta ecosystem and its native fish species, including both species listed under the California Endangered Species Act as well as other important species like fall-run Chinook salmon, as required by state law. *See* DEIR at ES-7, 2-2 to 2-3. Although the DEIR references the Delta Reform Act's co-equal goals, it does not include them in the project purposes and objectives, and ignores the obligation to reduce reliance on the Delta. *Id.* at 2-2. Instead, the project objectives focus exclusively on increasing water diversions from the Delta, *see id.* at 3-69, even though increasing water diversions demonstrably harms native fish and wildlife and fails to reduce reliance on the Delta.

The DEIR's project purposes and objectives must be revised to be consistent with state law, including restoring the health of the Delta and restoring populations of native fish species protected by CESA and the Public Trust. In addition, to the extent the DEIR's project purpose and objectives are interpreted to exclude consideration of alternatives that reduce diversions from the Delta, it is inconsistent with State law and the requirements of CEQA. *See also supra* Section I and footnote 4.

### **III. The DEIR's Environmental Baseline Misleads Decisionmakers and the Public As to the Effects of Operating the Proposed Project, Violating CEQA:**

The DEIR uses an improper environmental baseline that misleads decisionmakers and public regarding the likely effects of operating the project, violating CEQA.

#### ***A. The DEIR Fails to Provide Substantial Evidence Justifying the Inclusion of the Trump Administration's Biological Opinions and State Water Project's Incidental Take Permit in the Environmental Baseline, and Inclusion of the OMR Storm Flex Provisions of these Permits in the Environmental Baseline Violates CEQA***

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<sup>8</sup> Similarly, to the extent that the federal Central Valley Project participates in the project, as proposed in several alternatives, the federal Central Valley Project Improvement Act requires that the Central Valley Project be operated for co-equal project purposes that include protecting salmon and other fish and wildlife, as well as complying with state law. P.L. 102-575, §§ 3406(a),(b).



First, the DEIR states that the environmental baseline includes the conditions and regulatory requirements that were in effect when the Notice of Preparation (“NOP”) was issued, but in fact the environmental baseline includes weaker regulatory requirements in the Delta that were adopted after the NOP was issued. The DEIR inaccurately states that the regulatory requirements and other conditions in effect when the NOP was issued includes the 2019 biological opinions and 2020 Incidental Take Permit for the State Water Project. *See* DEIR at ES-26, 4-1, 4-4, 5-16; *id.*, Appendix 3C, at 3C-2 to -3; *id.*, Appendix 5A at B-18, B-44. The environmental baseline under CEQA generally includes regulatory requirements that are in effect when the NOP was issued. Cal. Code Regs., tit. 14, § 15125(a). However, when the NOP was issued on January 15, 2020, the operations of the SWP and CVP were governed by biological opinions issued in 2008 and 2009, and it was only after the NOP was issued that the agencies adopted the incidental take permit for the State Water Project (on March 27, 2020), and adopted the Record of Decision to implement the 2019 biological opinions (on February 18, 2020). Thus, the environmental baseline should include the 2008 and 2009 biological opinions and other regulations affecting the operations of the SWP and CVP at the time the NOP was issued, absent substantial evidence demonstrating a different baseline is necessary to accurately assess the impacts of the proposed project. Cal. Code Regs., tit. 14, § 15125(a). Moreover, CEQA allows an agency to define the environmental baseline to include “conditions expected when the project becomes operational” in order to provide a more accurate picture of a project’s environmental impacts. Cal. Code Regs., tit. 14, § 15125(a)(1).

The DEIR does not provide substantial evidence to justify including these subsequent regulatory decisions in the environmental baseline. Indeed, as the result of litigation, the 2019 biological opinions and 2020 Record of Decision were remanded to the agencies on March 14, 2022, and are due to be replaced with scientifically credible biological opinions in 2024. This remand of these biological opinions occurred before issuance of the DEIR. According to the State of California, the Trump Administration’s 2019 biological opinions were unlawful. *See, e.g.*, Office of the Attorney General, press release, Attorney General Becerra Files Lawsuit Against Trump Administration for Failing to Protect Endangered Species in the Sacramento and San Joaquin Rivers, February 20, 2020, available online at: <https://oag.ca.gov/news/press-releases/attorney-general-becerra-files-lawsuit-against-trump-administration-failing>. Rather than using the Trump Administration’s biological opinions as the environmental baseline, the DEIR should have used the 2008/2009 biological opinions that were in effect when the NOP was issued. Indeed, the State Water Resources Control Board’s scoping comments stated that the DEIR should include the 2008/09 biological opinions as an environmental baseline for analysis.

Using the Trump Administrations’ 2019 biological opinions as the environmental baseline misleads the public and decisionmakers as to the effects of the proposed project, because this environmental baseline violates state and federal environmental laws. For instance, as the State’s lawsuit and other evidence demonstrates, these biological opinions significantly weakened or eliminated key environmental protections for salmon and other endangered species, and their implementation is leading to extinction of fish species including winter-run Chinook salmon, Delta Smelt, and Longfin Smelt. More recently, the U.S. Fish and Wildlife Service



recently concluded that existing regulatory requirements, including the 2019 biological opinions, Incidental Take Permit for the State Water Project, and existing Bay Delta Water Quality Control Plan are inadequate to prevent the continuing decline and extinction of Longfin Smelt. *See* U.S. Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants; Endangered Species Status for the San Francisco Bay-Delta Distinct Population Segment of the Longfin Smelt, 87 Fed. Reg. 60957, 60970 (Oct. 7, 2022).

Similarly, the DEIR fails to provide substantial evidence why the environmental baseline includes the State’s Incidental Take Permit despite this permit post-dating the NOP. As noted above, the U.S. Fish and Wildlife Service has determined the State’s Incidental Take Permit is not adequate to prevent the extinction of Longfin Smelt. In addition, DWR has publicly announced that it plans to begin the process to replace this permit (which is also the subject of ongoing litigation).

The DEIR also fails to provide any explanation why the environmental baseline fails to include the update to the Bay Delta Water Quality Control Plan adopted in 2018 by the State Water Resources Control Board (which requires increased instream flows in the months of February to June in the Stanislaus, Tuolumne, Merced, and Lower San Joaquin Rivers). These regulatory requirements were adopted years before the NOP was issued. Nor does the DEIR provide any explanation why the No Action Alternative excludes the 2018 amendments to the Bay-Delta Water Quality Control Plan and the State Water Board’s “reasonably foreseeable” regulatory update to that Plan, including the 2018 Framework. *See also* Letter from State Water Resources Control Board to Sites Project Authority, attached hereto as Exhibit E (explaining that the State Water Board’s 2018 Framework, which identified a Delta outflow requirement of 55% of unimpaired flow in the winter and spring, is a “reasonably foreseeable” regulatory requirement).<sup>9</sup>

Even assuming *arguendo* use of the 2019 biological opinions and 2020 Incidental Take Permit as part of the baseline, the DEIR’s existing conditions baseline also unlawfully includes operational criteria that allow for more water export pumping but have never been used before, in violation

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<sup>9</sup> The DEIR makes several other assumptions regarding the baseline that are inconsistent with Reclamation’s water rights and existing conditions, including: (1) The existing conditions baseline includes full SJRRP Restoration Flows without regard to channel capacity, *see* DEIR, Appendix 5A-B, Attachment 2, and B-3, even though Restoration Flows are currently severely restricted to avoid seepage and channel capacity constraints, with a maximum of 300 cfs below Sack Dam (compared to approximately 4,000 cfs without such limitations); (2) the environmental baseline excludes Reclamation’s obligations to release water under section 3406(b)(2) of the CVPIA b(2), *see* Appendix 5A-B, Attachment 2, at B-6 ( “No (b)(2) actions modeled”); and, (3) the environmental baseline excludes Reclamation’s obligations to meet Vernalis base and pulse flows under water rights decision 1641, *see id.* at B-3. All of these assumptions distort the modeling of the proposed project and alternatives, misleading the public and decisionmakers as to the likely environmental impacts.

of CEQA. The CEQA guidelines require that, “An existing conditions baseline shall not include hypothetical conditions, such as those that might be allowed, but have never actually occurred, under existing permits or plans, as the baseline.” Cal. Code Regs., tit. 14, § 15125(a)(3). The DEIR violates this provision of CEQA in several ways. First, the existing conditions baseline includes the so called “OMR storm flex” provisions of the State’s Incidental Take Permit and the 2019 biological opinions in the environmental baseline. However, while these permits allow for more negative flows in Old and Middle River (“OMR”) during certain poorly defined conditions, implementation of these permit provisions has never actually occurred. Second, the existing conditions baseline does not require the CVP to meet the I:E ratio from the 2009 NMFS biological opinion or the spring outflow requirements of the State’s Incidental Take Permit. *See* DEIR, Appendix 5A, Table 5A-B2.1 (“Met through San Joaquin River Inflow to Export Ratio (SJR IE). Applied to SWP only, under ITP.”). However, as a result of the preliminary injunction in federal court litigation and subsequent Interim Operations Plan(s), the CVP has been required to meet these requirements, and CVP pumping has not reached the levels identified in the DEIR’s existing conditions baseline since the biological opinions went into effect in 2020. The inclusion of these regulatory provisions in the baseline, that hypothetically could result in increased pumping from the Delta, violates CEQA. Cal. Code Regs., tit. 14, § 15125(a)(3). The DEIR’s environmental baseline must be revised to be consistent with CEQA.

The DEIR’s modeling of OMR flows, which affects entrainment of fish species by the CVP and SWP, demonstrates how including the Trump Administration’s biological opinions and the State’s Incidental Take Permit in the baseline misleads the public and decisionmakers as to the effects of the proposed project and alternatives. As the table below shows, January to June OMR under the existing conditions baseline in the 2022 Delta Conveyance DEIR is substantially more negative in dry and critically dry years than was OMR under the existing conditions baseline in the 2015 WaterFix RDEIR/SDEIS:

**Comparison of Old and Middle River Flows under Existing Condition Baseline between Delta Conveyance DEIR (2022) and WaterFix DEIR (2015)**

|  | Jan    | Feb    | Mar    | Apr    | May    | June   |
|--|--------|--------|--------|--------|--------|--------|
| <b>Delta Conveyance DEIR, Existing Conditions Baseline (Appendix 5A, Table 5A-B3.3.6.1-B)</b>        |        |        |        |        |        |        |
| <b>Dry Water Years</b>   | -4,812 | -4,516 | -3,292 | -1,813 | -2,028 | -4,750 |
| <b>Critical Water Years</b>  | -4,303 | -4,350 | -3,001 | -1,181 | -1,710 | -2,084 |
| <b>WaterFix DEIR, Existing Conditions Baseline (Appendix B, Supplemental Modeling, Table B.7-25)</b> |        |        |        |        |        |        |
| <b>Dry Water Years</b>   | -4,664 | -3,986 | -2,852 | -268   | -647   | -3,301 |
| <b>Critical Water Years</b>  | -4,130 | -3,191 | -2,010 | -950   | -1,019 | -2,250 |

These more negative OMR values under the 2019 biological opinions and 2020 Incidental Take Permit also occur in other water year types, particularly in the months of April and May, where

the existing conditions baseline in the 2015 WaterFix RDEIR/SDEIS shows positive OMR in April and May in Wet, Above Normal, and Below Normal years. WaterFix RDEIR/SDEIS, Appendix B, Supplemental Modeling, Table B.7-25; *see also* DWR, Final Environmental Impact Report for Long-Term Operation of the State Water Project, at 5-12 (showing OMR under proposed project and alternatives significantly more negative in April and May than under existing conditions baseline).

The DEIR uses OMR modeling under the existing conditions baseline to assert that the proposed project and alternatives generally would result in slightly lower entrainment than the existing conditions for most species. *See, e.g.*, DEIR at 12-93 to 12-94. Yet compared to the existing conditions baseline in the WaterFix RDEIR/SDEIS from 2015 – the baseline conditions that existed until adoption of the State’s Incidental Take Permit and the unlawful Trump Administration biological opinions after issuance of the NOP – the proposed project and alternatives appear to cause substantial increases in negative OMR and entrainment of fish species, particularly in the months of April and May.

Similarly, the increases in export pumping and other changes in operations authorized by the biological opinions and Incidental Take Permit result in far less Delta outflow in the winter and spring months under the existing conditions baseline in this DEIR, even though the California Department of Fish and Wildlife determined those changes in permit conditions between 2015 and 2022 would reduce the abundance of Longfin Smelt:

Both models predict declines in abundance for LFS under Alt 2B, from 0-4% assuming different survival levels in the RN 2016 model or 1-12% using the updated Kimmerer model. Regardless of the issues with either model, the inherent signal to noise ratios (simulated variability), all model simulations demonstrated a reduction in the FMWT index for LFS under the PP and Alternative 2b as compared to existing conditions. Although, that reduction in the FMWT index was lesser in the Alternative 2b scenario as compared to the PP scenario.

California Department of Fish and Wildlife, Findings of Fact of the California Department of Fish and Wildlife Under the California Endangered Species Act, Attachment 7 (Effects Analysis, State Water Project Effects on Longfin Smelt and Delta Smelt, March 2020), at 75, attached hereto as Exhibit G.

Compared to the existing conditions baseline in the 2015 WaterFix RDEIR/SDEIS, the proposed project and alternatives in this DEIR result in even more substantial reductions in the modeled abundance of Longfin Smelt, because Delta outflow was reduced as a result of adoption of the biological opinions and Incidental Take Permit. That is even more true because the modeling in the State’s Incidental Take Permit assumed that the CVP would provide the proportional share of spring outflow required by the SWP under condition 8.17 of the Incidental Take Permit, yet here the DEIR assumes that the CVP will not contribute to spring outflow, resulting in even more severe impacts to Longfin Smelt than those identified in the modeling of the Incidental Take

Permit and related at 2020 Final EIR, due to the greater reductions in Delta outflow and further reductions in the abundance of Longfin Smelt.

The inclusion of the Trump Administration’s biological opinions and State’s Incidental Take Permit in the environmental baseline, including operational criteria that allow for more pumping but have not been utilized, violates CEQA. The DEIR must be revised to include a lawful environmental baseline.

***B. The DEIR’s Environmental Baseline Violates CEQA Because it Excludes the Effects of Climate Change, Misleading Decisionmakers and the Public of the Likely Effects of Operating the Proposed Project***

Second, the DEIR’s environmental baseline violates CEQA because it excludes the effects of climate change<sup>10</sup> that will have occurred by the time that the proposed project is operational. The DEIR analyzes the environmental effects of the proposed project and alternatives compared to the “existing condition” baseline. DEIR at 4-4; *see, e.g., id.* at Table 5-11. But “existing conditions” does not include the effects of sea level rise and climate change, and instead simply repeats the hydrologic conditions of 1922 to 2015 – without accounting for the observed effects of climate change since 1922. DEIR at Appendix 3C-5, 3C-8, 3C-10; DEIR, Appendix 5A, Attachment 1, at B-18; *see id.*, Appendix 5A, Attachment 4, at B-6 to B-7.

There is no question that climate change has and will affect baseline ecological conditions in the Delta. The DEIR admits that “the effects of climate change and sea level rise will foreseeably have a sizeable effect on the Delta environment by 2040.” DEIR at Appendix 3C-8. Similarly, the DEIR states that, “By 2050, extreme Delta drought conditions are projected to occur five to seven times more frequently,” and “[o]ver the next several decades, dry years will become drier.” DEIR at 30-18 to 30-19. Even though the DEIR identifies these likely effects of climate change, the DEIR fails to analyze the effects of operations of the project with extreme drought conditions that occur five to seven times more frequently or much drier dry years as a result of climate change.

Moreover, modeling of the effects of climate change is available: the DEIR incorporates some of the effects of climate change in the No Action Alternative, DEIR at Appendix 3C-3, and it includes several appendices that compare the No Action alternative in 2040 with the effects of the proposed project and alternatives, *see* DEIR at 4-5 to 4-6.<sup>11</sup> However, as the DEIR explains, those appendices that consider the effects of climate change are excluded from the CEQA analysis:

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<sup>10</sup> References to climate change in these comments include the effects of sea level rise.

<sup>11</sup> As discussed *infra*, the DEIR’s modeling of the effects of climate change are wholly inconsistent with the DEIR’s descriptions of the effects of climate change and the best available science.

These longer-term analyses were performed outside of CEQA requirements to provide information about possible future environmental conditions once conveyance facilities are operational. Because these analyses are provided for informational purposes, no CEQA significance conclusions are presented for potential impacts, and no mitigation measures are recommended to reduce potential impacts.

*Id.* As a result, the DEIR's analysis of the proposed Delta tunnel and alternatives excludes the effects of climate change in assessing environmental impacts. This violates CEQA and DWR's own guidance regarding the effects of climate change. As DWR's director wrote in 2018,

Climate change is not a far-off future risk. The extreme hydro-climatic conditions of the last six years —both dry and wet — are exactly the types of conditions scientists have been identifying as the hallmark of what climate change will look like. Today's planning, management, and investment efforts must factor in resiliency and adaptability to climate conditions outside the scope of our historical experience.

DWR, Climate Action Plan, Phase 2: Climate Change Analysis, Guidance September 2018, at V, available online at: <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAP2-Climate-Change-Analysis-Guidance.pdf>. DWR's 2018 guidance further states that with respect to analyzing environmental effects on resources,

For impact evaluations, DWR projects should consider how expected changes in climate could exacerbate the environmental consequences of the project or generate new consequences that would not have otherwise occurred. This is typically done by comparing estimates of potential project impacts between a project alternative under existing climate conditions to the estimates of potential project impacts for a project alternative under expected future conditions 20–50 years into the future.

*Id.* at 21. The DEIR fails to follow DWR's own guidance: the DEIR's modeling ignores the observed effects of climate change to date, and ignores the longer term effects of the project and alternatives with the effects of climate change. Instead, the DEIR analyzes effects based on the hydrological conditions that the State has historically experienced – even though those are not the effects that the State is experiencing today.

The failure to analyze effects of operating the project in light of the effects of climate change violates CEQA in several ways. Climate change has already caused significant changes to temperatures and hydrological conditions compared to conditions decades or a century ago, including earlier runoff, increased air and water temperatures, and more frequent drought conditions. For instance, average and median Sacramento River unimpaired runoff from 2000 to

2021 is substantially lower than the average and median Sacramento River unimpaired runoff from 1906 to 2021, as the table below shows:

**Sacramento Valley Unimpaired Runoff**

|                         | WY Sum | Percent of 1906-2021 Median |                          | WY Sum | Percent of 1906-2021 average |
|-------------------------|--------|-----------------------------|--------------------------|--------|------------------------------|
| <b>1906-2021 Median</b> | 16.00  |                             | <b>1906-2021 Average</b> | 17.758 |                              |
| <b>2000-2021 Median</b> | 13.81  | 86%                         | <b>2000-2021 Average</b> | 16.083 | 91%                          |

In addition, the DEIR warns that, “Between 1906 and 1960, one third of the water years in California were considered by the California Department of Water Resources (DWR) to have been “dry or critical”; that percentage increased to 46% from 1961 to 2017 (Bureau of Reclamation 2019:H-2).” DEIR at 5-4.

Similarly, DWR’s Delivery Reliability Report finds that the actual average SWP Allocation from 2011 to 2020 was significantly lower than their models predict the average allocation would be based on observed hydrology from 1922-2015 (and just adding the years 2004-2015 to their model reduced the long term average allocation, as the table below shows):

|   | Average Allocation |
|---|--------------------|
| 2019 Delivery Capability Report modeled long term average Table A allocation (modeled based on 1922-2003 hydrology) | 2,414 TAF          |
| 2021 Delivery Capability Report modeled long term average Table A allocation (modeled based on 1922-2015 hydrology) | 2,321 TAF          |
| Actual Table A average allocation 2011-2020   | 1,880 TAF          |

And consistent with the predictions regarding the effects of climate change, in October 2022 DWR announced that, “The current drought from 2020 to 2022 is now the driest three-year period on record, breaking the old record set by the previous drought from 2013 to 2015,” and the Director warned of the need to plan for hotter, drier future “where we see less precipitation.” See DWR, New Water Year Begins Amid Preparations for Continued Drought, October 3, 2022, online at: <https://water.ca.gov/News/News-Releases/2022/Oct-22/New-Water-Year-Begins-Amid-Preparations-for-Continued-Drought>. In other words, over the past 10 years, California has twice set new records for the driest consecutive three year period in the State’s historical record (record low runoff in 2013-2015, broken again in 2020-2022), punctuated by very wet years in 2017 and 2019.

Moreover, because the proposed project will not be operational until around the year 2040, *see id.*, Appendix 3C, at 3C-3, using the existing condition baseline fails to accurately assess the

environmental impacts of operating the project. The CEQA guidelines allow an agency to define the environmental baseline to include “conditions expected when the project becomes operational” in order to provide a more accurate picture of a project’s environmental impacts. Cal. Code Regs., tit. 14, § 15125(a)(1). The DEIR admits that the effects of climate change will be “sizeable” by the time the project is operational. *See* DEIR at Appendix 3C-8.

Modeling results in the DEIR – which are not considered for purposes of CEQA -- demonstrate the significant effects of climate change between the 2020 existing conditions baseline and 2040 No Action Alternative, including:

- (1) Significant reduction in upstream reservoir storage. *See* DEIR at 5-17 to 5-18. For instance, end of September Shasta Reservoir storage in critically dry years declines from an average of 1.543 million acre feet (2020) to an average of 1.432 million acre feet (2040), and end of September storage in Oroville Reservoir declines from an average of 1.068 million acre in critically dry years (2020) to 0.834 million acre feet (2040);
- (2) Significant increases in water temperatures below Shasta Dam. *Compare id.*, Appendix 5A, Table 5A-D1.13.1-B (existing conditions baseline (2020) Sacramento River at Clear Creek (CCR) average temperatures in critically dry years of 58.2 degrees Fahrenheit in September) *with id.*, Appendix 5A, Table 5A-D2.13.1-B (No action alternative (2040) Sacramento River at Clear Creek (CCR) average temperatures in critically dry years of 56.1 degrees Fahrenheit in August, 60.4 degrees Fahrenheit in September, and 59.8 degrees Fahrenheit in October);
- (3) Substantial increases in temperature dependent mortality of winter-run Chinook salmon below Shasta dam, *compare id.*, Appendix 5A, Table 5A-E2.1-B (existing conditions (2020) average temperature dependent mortality using the Martin Model of 42% in critically dry years and 8% overall) *with id.*, Appendix 5A, Table 5A-E4.1-B (No action alternative (2040) average temperature dependent mortality using the Martin Model of 66% in critically dry years, 18% in dry years, and 14% overall).

Even though the project will not be operational until 2040, the DEIR wholly ignores its own projections of these significant effects of climate change for the purposes of CEQA. The Delta Conveyance Project is clearly a case where using the existing conditions baseline, which excludes the effects of climate change, grossly misleads the public and decisionmakers of the likely environmental impacts of operating the proposed project starting in the year 2040.

By failing to adequately account for the hydrological changes that have already occurred, and those that are anticipated to occur as a result of climate change before the proposed project would be operational, the DEIR’s use of “current conditions” as the environmental baseline – hydrological and temperature conditions from 1922 to 2015– does not reflect reality and underestimates the environmental impacts of operating the proposed project. And as discussed at more length *infra*, the use of existing conditions as the environmental baseline violates CEQA because the DEIR fails to adequately evaluate the whole of the action, which includes environmental effects over the life of the project, which necessarily includes evaluating the



effects in 2040 and thereafter, given the very long anticipated life of the proposed project. Cal. Code Regs., § 15126.2(a).

***C. The DEIR's Modeling of the Effects of Climate Change in the Appendices Mislead the Public of the Likely Effects of the Proposed Project in Light of Climate Change***

The DEIR's assumptions regarding climate change and sea level rise, including in the No Action Alternative<sup>12</sup> and 2040 modeling, fail to provide adequate and accurate information to decisionmakers and the public regarding the risks and likely environmental effects of operations of the proposed project. While the DEIR claims that it uses "a conservative climate change and sea level rise assumption," DEIR at 4-5, in fact the DEIR uses what it admits are an "extreme" assumption regarding sea level rise, *id.*, Appendix 3C, at 3C-10. Moreover, the DEIR's modeling assumptions predict that climate change will increase runoff compared to the historical record – **a hotter, wetter future** – even though the text of the DEIR and other state documents predict climate change will result in reduced precipitation and runoff, more frequent and severe droughts, and **a hotter, drier future**. As a result, the DEIR's modeling and quantitative analysis fails to adequately account for the likely effects of climate change, and dramatically underestimate those effects, resulting in inaccurate and misleading quantitative analysis of the effects of the project in light of the likely effects of climate change in the appendices and No Action Alternative.

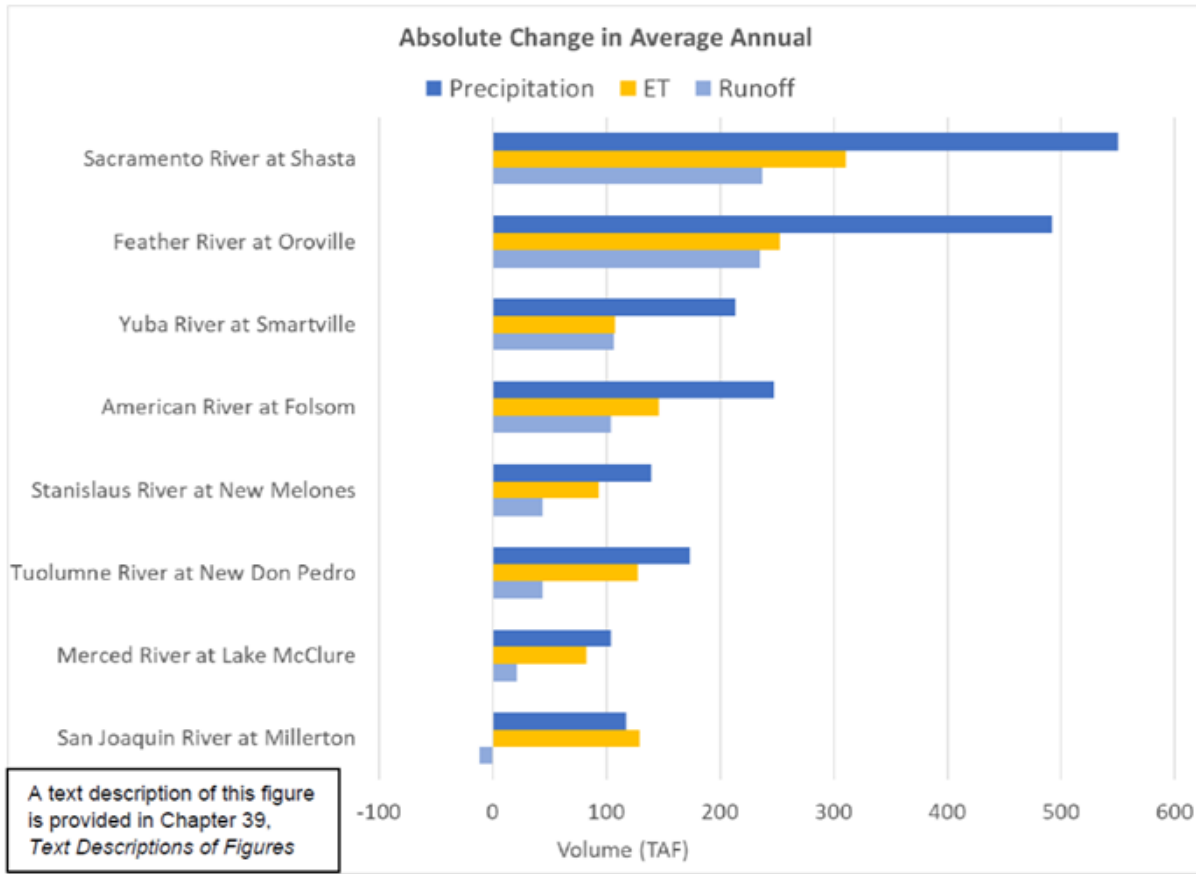
First, instead of using the most probable estimate of sea level rise, the DEIR's No Action Alternative instead uses an "extreme assumption" of 1.8 feet of sea level rise by 2040, which the State admits has a less than a 0.5% chance of occurring by 2040. DEIR, Appendix 3C at 3C-10; Ocean Protection Council, State of California Sea-Level Rise Guidance, 2018. As a result, the model assumes more flow through the Delta is necessary to maintain the hydraulic salinity barrier, resulting in higher flows into the Delta and lower reservoir storage. *See* DEIR at 30-25. In contrast, the State's median projection of sea level rise is 0.6 feet by 2040. Ocean Protection Council 2018.

Second, the DEIR fails to provide a reasoned explanation why the No Action Alternative and other modeling of climate change effects use the Central Tendency of the climate models, which predicts precipitation and annual runoff will **increase** compared to today. *See* DEIR at 30-20 (concluding that by 2040 climate change will increase precipitation compared to 1981-2010

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<sup>12</sup> The No Action Alternative also continues the Trump Administration's unlawful biological opinions and the State's 2020 Incidental Take Permit for operations of the State Water Project, while also failing to incorporate the State Water Resources Control Board's 2018 amendments to the Bay-Delta Water Quality Control Plan. Nor does the No Action Alternative incorporate "reasonably foreseeable updates to instream flow and Delta outflow objectives in the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta." *See* Letter from State Water Resources Control Board to Sites Project Authority dated August 26, 2022, attached hereto as Exhibit E. The No Action Alternative should be revised to include these reasonably foreseeable requirements.

conditions: “all major watersheds are projected to be wetter, with average precipitation increases from 2.7% to 4.8%.”); *id.*, Appendix 30A, at Figure 30A-2. DWR’s modelling of the Central Tendency shows increased runoff in the state’s rivers, as the graphic below shows, which means there is more water than today to be captured and exported by the tunnel – not less water than today:



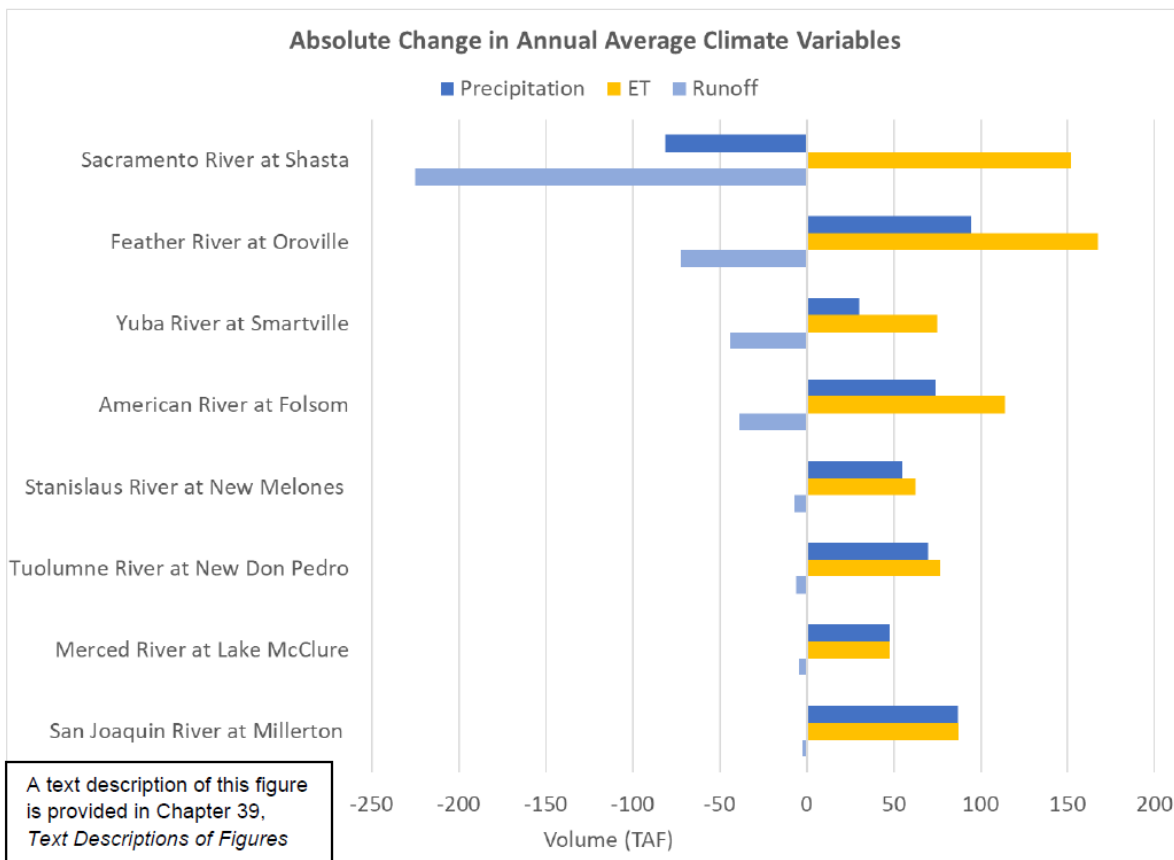
ET= evapotranspiration  
 TAF=thousand acre-feet

**Figure 30A-2. Projected Absolute Changes in Precipitation, Evapotranspiration, and Runoff for Major Watersheds in the Sacramento and San Joaquin River Basins for 2040 CT, Compared to Historical Reference Period (1995)**

However, State and Federal agencies have repeatedly found that climate change is likely to decrease runoff. For instance, the State of California’s 2022 Water Supply Strategy: Adapting to a Hotter, Drier Future explains that “DWR estimates a 10% reduction in water supply by 2040 ... consider[ing] increased temperatures and **decreased runoff** due to a thirstier atmosphere, plants, and soil.” See Office of the Governor, Natural Resources Agency, Department of Water Resources, California Water Boards, California Environmental Protection Agency, and California Department of Food and Agriculture, Water Supply Strategy: Adapting to a Hotter, Drier Future, August 2022, at 1, available online at: <https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Water-Resilience/CA-Water-Supply-Strategy.pdf> (emphasis added). Similarly, the Bureau of Reclamation has released updated modeling of the effects of climate change, which estimates that climate change is likely to reduce annual runoff by 1% by 2040.

See Exhibit C. The DEIR does not provide information about the effects of climate change on the frequency of water year types or on runoff in drier water year types (only providing annual averages), but Reclamation’s modeling predicts more frequent critically dry years and indicates that DWR’s modeling does not result in more frequent critically dry years. *Id.* And in contrast to the DEIR’s predictions of increased runoff compared to the 1981-2010 period as a result of climate change, Sacramento Valley unimpaired runoff has declined substantially over the past two decades. *See supra.*

In contrast to the Central Tendency, the DEIR also presents results of the Median climate models, which predicts decreased runoff compared to the historical record:



ET= evapotranspiration  
 TAF=thousand acre-feet

**Figure 30A-3. Projected Changes in Precipitation, ET, and Runoff for Major Watersheds in the Sacramento and San Joaquin River Basins for 2040 Median, Compared to Historical Reference Period (1995)**

However, the DEIR does not use the 2040 Median climate change modeling, despite the fact that the median is a better reflection of the “typical” year and is not overly influenced by extremely wet years, as the “mean” (or central tendency) metric is. This median prediction appears more consistent with hydrology over the past two decades. As the DEIR admits, “[i]n the context of climate change, projections of future precipitation are even more uncertain than projections for

temperature. Uncertainty regarding precipitation projections is greatest in the northern part of the state, and a stronger tendency toward drying is indicated in the southern part of the state.” DEIR at 5-4. Given this uncertainty, it is irresponsible for the DEIR to assume increased precipitation as a result of climate change (Central Tendency) without equally considering reduced precipitation and runoff as a result of climate change (2040 Median).

Third, the DEIR’s modeling of climate change does not account for the effects of increased frequency and duration of droughts as a result of climate change compared to the historical record – as explained in the DEIR. For instance, the text of the DEIR explains that “By 2050, extreme Delta drought conditions are projected to occur five to seven times more frequently,” and “[o]ver the next several decades, dry years will become drier.” DEIR at 30-18 to 30-19. Similarly, the DEIR warns that, “Between 1906 and 1960, one third of the water years in California were considered by the California Department of Water Resources (DWR) to have been “dry or critical”; that percentage increased to 46% from 1961 to 2017 (Bureau of Reclamation 2019:H-2).” DEIR at 5-4. These results are consistent with expectation of the typical year (the median years) being drier in the future than it was in the past.

However, the DEIR’s climate change modeling does not result in extreme drought conditions occurring five to seven times more frequently, or dry years become drier. Instead, the DEIR’s climate modeling assumes wetter conditions with increased runoff, including increased runoff in dry and critically dry years.<sup>13</sup> As a result, the DEIR’s modeling and analysis underestimate the likely effects of climate change on hydrology, resulting in the DEIR overestimating flows into and through the Delta, and thus underestimating the proposed project’s likely adverse environmental impacts and overestimating the volume of water diverted by the proposed project and alternatives.

The modeling of wetter conditions with greater river runoff in the winter and spring months as a result of climate change leads to biased analysis of the effects of climate change on fish and wildlife populations. For example, because the best available science shows that the survival of juvenile salmon down the Sacramento River and into and through the Delta is a function of the amount of flow (Perry et al 2018), the DEIR shows that climate change will increase survival of juvenile salmon migrating through the Delta in the winter and spring months. *Compare* DEIR Table 12-30 (2020 no project alternative) *with id.* Table 12C-9 (2040 No Action Alternative). Similarly, modeling of juvenile salmon survival in the DEIR using the Delta Passage Model<sup>14</sup> shows increased survival through the Delta as a result of the modeled increase in flows through the Delta from climate change:

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<sup>13</sup> The DEIR states that by 2040, climate change effects result in more frequent critically dry years and decreased numbers of wet, AN, BN, and dry years, but it does not quantify these effects. DEIR at 5-15. However, the DEIS’ modeling frequently shows increased river flows in critically dry years in 2040 (with climate change) compared to critically dry years in 2020 (without climate change).

<sup>14</sup> As discussed *infra*, the DEIR modified the Delta Passage Model in a manner that fails to use the best available science.

| <b>Through Delta survival of winter-run (Delta Passage Model)</b> | <b>Existing Conditions (2020) Table 12-32</b> | <b>No Project Alternative (2040) Table 12C-10</b> |
|---|---|---|
| Wet   | 0.31  | 0.33  |
| Above Normal  | 0.25  | 0.27  |
| Below Normal  | 0.19  | 0.20  |
| Dry   | 0.16  | 0.18  |
| Critically Dry  | 0.14  | 0.15  |

In addition, the DEIR’s IOS<sup>15</sup> life cycle model predicts that the abundance of endangered winter run Chinook salmon will decline less under climate change compared to existing conditions, notwithstanding the numerous scientific publications that conclude climate change threatens the viability of winter-run Chinook salmon:

| <b>Mean Adult Female winter-run escapement (IOS model)</b> | <b>Existing Conditions (2020) Table 12-38</b> | <b>No Project Alternative (2040) Table 12C-16</b> |
|--|---|---|
| Wet  | 3,769   | 4,315   |
| Above Normal   | 3,498   | 4,880   |
| Below Normal   | 3,319   | 4,223   |
| Dry  | 3,468   | 3,557   |
| Critically Dry   | 2,128   | 2,630   |
| All  | 3,301   | 3,997   |

The same is true for modeling of the proposed project and alternatives in the appendices, where the increased flows modeled to result of climate change leads to similarly unrealistic outcomes. As these examples show, the DEIR fails to provide the public and decisionmakers with accurate information about the likely effects of climate change. As a result, at a minimum the DEIR must be revised to include modeling of the proposed project with Median climate change effects, including modeling and analyses regarding project operations during more frequent and severe droughts.

**IV. The DEIR Fails to Consider the Whole of the Action, Violating CEQA:**

The DEIR violates CEQA because it fails to consider the whole of the action, including: (1) long term effects of the proposed project; (2) changes in upstream reservoir operations of the CVP

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<sup>15</sup> As discussed *infra*, the IOS model assumes that temperature mortality of winter run Chinook salmon does not begin until 56 degrees Fahrenheit, despite the fact that this fails to use the best available science, as the State of California has argued in federal court.

and SWP necessary to adapt to climate change; (3) DWR's operations during droughts, including installation of salinity barriers and submission of Temporary Urgency Change Petitions to allow DWR and Reclamation to violate minimum Delta Water Quality Objectives; and, (4) water transfers. Each of these flaws results in a DEIR that misleads the public and decision-makers as to the likely environmental impacts of the proposed project and alternatives, as discussed in detail below.

***A. The DEIR Violates CEQA Because it Fails to Consider Long-Term Effects of the Project***

CEQA requires the DEIR to consider the whole of the action, "giving due consideration to both the short-term and long-term effects." Cal. Code Regs., tit. 14, § 15026.2 (a). There is no question that the proposed project and alternatives would be operational for many decades into the future. *See also* DEIR at 4-6. Nor is there any question that the effects of climate change significantly alter the effects of the proposed project and alternatives – resulting in changes in water supply, water quality in the Delta, river flows, water temperatures, and resulting effects on native fish populations. Indeed, even the flawed modeling of the effects of climate change included in the appendices to the DEIR demonstrate these significant adverse effects. Yet the DEIR excludes consideration of long-term effects of the project under CEQA, such as effects in 2040 or 2070 that include the effects of climate change, and only considers the effects of the proposed project compared with the existing condition baseline. *See* DEIR at 4-5 ("These longer-term analyses were performed outside of CEQA requirements to provide information about possible future environmental conditions once conveyance facilities are operational."); *id.* at 4-6 (explaining that the DEIR's approach excludes consideration of the effects of climate change from the analysis). This plainly violates CEQA's mandate to consider long-term effects.

***B. The DEIR Violates CEQA Because it Fails to Consider Necessary Changes to Upstream Operations of the CVP and SWP as part of the Long-Term Effects of the Project***

CEQA broadly defines a "project" as the whole of the action, even where separate governmental approvals are required. Cal. Code Regs., tit. 14, § 15378; Cal. Pub. Res. Code § 21065. This broad definition of project is intended to protect the environment by prohibiting the segmentation or piecemealing of environmental review by dividing a project into several pieces and evaluating the environmental impacts of each piece separately, where each of the individual pieces may have no significant impact on the environment. *See, e.g., Tuolumne County Citizens for Responsible Growth v. City of Sonora*, 155 Cal.App.4th 1214, 1222-23 (2007); *Association for a Cleaner Environment v. Yosemite Community College Dist.*, 116 Cal.App.4th 629, 637-639 (2004). The DEIR violates this basic tenet of CEQA by excluding consideration of necessary changes in upstream operations of the SWP and CVP that are related, foreseeable, and integral parts of the whole of the action.

While DWR proposes to operate the Delta tunnel “in conjunction” with the coordinated operations of the existing facilities of the State Water Project and federal Central Valley Project, *see* DEIR at ES-13, the DEIR fails to adequately consider the changes necessary in upstream operations to adapt to climate change and protect fish and wildlife as part of the whole of the project.<sup>16</sup> The DEIR admits that the proposed project and alternatives could affect upstream reservoir storage and flows. DEIR at ES-47 (“However, because of the effect that integration of the proposed north Delta intakes has on the overall system, their operation could lead to changes in river flows and upstream storages.”). However, DWR does not propose any measures to ensure that upstream operations adequately protect fish and wildlife and comply with state and federal environmental laws, particularly in light of the effects of climate change. Instead, DWR’s modeling relies on unrealistic upstream operations, misleading the public and decisionmakers as to the likely environmental effects of realistic operations of the proposed project and alternatives.

The DEIR’s modeling assumes unrealistic upstream reservoir operations under the existing conditions baseline and all of the alternatives. As a result, the DEIR overestimates water diversions and water supply allocations and underestimates potential environmental impacts of the proposed project and alternatives, including the use of Temporary Urgency Change Petitions to allow the SWP and CVP to violate minimum water quality objectives in the Delta. For instance, the DEIR assumes that under existing conditions, end of September Oroville Reservoir storage will average 1.068 MAF in critically dry years. DEIR, Appendix 5, Table 5A-B3.1.3.1-B. Similarly, the DEIR estimates that the proposed project (Alternative 5) will result in reduced Oroville Reservoir end of September storage, to an average of 1.061 MAF. *Id.*, Appendix 5, Table 5A-B3.1.3.4-B. In contrast, DWR has publicly explained that it targets a minimum

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<sup>16</sup> In addition, we note that Reclamation would have to comply with NEPA in order to participate in Delta Conveyance, as considered in several alternatives in the DEIR. Indeed, the DEIR shows that even without Reclamation’s participation in the project, the proposed project and alternatives affect CVP operations, including reservoir storage, as a result of the Coordinated Operating Agreement. We do not understand how Reclamation could change its operations of CVP facilities without first complying with NEPA. While we understand that the Army Corps of Engineers is preparing a draft EIS that considers the effects of constructing the proposed project and alternatives, no federal agency is preparing an EIS under NEPA that considers the environmental impacts of operating the project. Federal agencies must analyze the effects of constructing and operating this project before implementation of any biological opinion by NMFS or USFWS that authorizes construction and operation of the project under the federal Endangered Species Act. *See San Luis & Delta Mendota Water Authority v. Salazar*, 747 F.3d 581, 645-655 (9th Cir. 2014). Nor could FWS and NMFS solely consider the construction of the project – and exclude the environmental impacts of operations of the project – in a lawful biological opinion under the Endangered Species Act. Moreover, DWR (and Reclamation) currently lack authorization for incidental take of listed species resulting from upstream operations of the State Water Project and Central Valley Project under the California Endangered Species Act, despite such operations causing incidental take under CESA. *See also supra* footnote 1. Obtaining incidental take authorization for the operations of the Delta tunnel “in conjunction” with the coordinated operation so the SWP and CVP requires considering the whole of the action.



Oroville Reservoir end of September storage of 1.6 million acre feet, because this is the minimum necessary to meet water contracts and downstream obligations. In its 2019 State Water Project Delivery Capability Report, DWR explains that,

The Oroville carryover target (September storage target) was updated in the model to be consistent with current State Water Project operational guidelines of 1.6 MAF from 1.0 MAF. The Water Operations Office, within the State Water Project, Operations and Maintenance, routinely evaluates the projected demands on Oroville for meeting contractual and regulatory requirements. Recent evaluations have indicated a need to keep storage levels higher what than the previous water supply guidelines methodology was providing.

DWR, Technical Addendum to The State Water Project Final Delivery Capability Report 2019 (Aug. 26, 2020), at 4, available online at: [https://data.cnra.ca.gov/dataset/1f404a72-b583-418a-81b9-6fe5d5595cd7/resource/9cab8a24-778f-486b-abf5-bae6c8ee1666/download/dcr2019\\_technical-addendum.pdf](https://data.cnra.ca.gov/dataset/1f404a72-b583-418a-81b9-6fe5d5595cd7/resource/9cab8a24-778f-486b-abf5-bae6c8ee1666/download/dcr2019_technical-addendum.pdf); *see id.* at 11 (explaining that increasing the Oroville carryover storage target from 1.0 to 1.6 will require more conservative operations during the summer, will decrease Dry and Critical year water deliveries, water supply allocations, and exports).

The DEIR likewise assumes Shasta reservoir storage during critical dry years that average 1.586 MAF under the existing condition baseline, *see* DEIR, Appendix 5A, Table 5A-B3.1.2.1-B, and only 1.570 MAF under the proposed project, *id.*, Table 5A-B3.1.2.4-B. In contrast, NMFS has previously concluded that a minimum end of September storage of 1.9 MAF is necessary to protect endangered winter-run Chinook salmon under the ESA. NMFS 2017, Proposed Amendment to the Reasonable and Prudent Alternative in the 2009 Opinion, available online at: [https://media.fisheries.noaa.gov/dam-migration/nmfs\\_s\\_draft\\_proposed\\_2017\\_rpa\\_amendment\\_-\\_january\\_19\\_2017.pdf](https://media.fisheries.noaa.gov/dam-migration/nmfs_s_draft_proposed_2017_rpa_amendment_-_january_19_2017.pdf). Modeling more realistic and protective Shasta reservoir operations will require reduced releases from Shasta Dam than those identified in the DEIR, which is likely to result in reduced water deliveries and environmental impacts that are not considered in the DEIR.

Even without considering the effects of climate change, the DEIR admits that upstream reservoir operations would drop to dead pool under certain conditions with the proposed project:

“With inadequate runoff and pattern changes of snowmelt runoff resulting from climate change, CalSim 3 model results show (although infrequently) simulated occurrences of extremely low storage conditions at SWP and CVP reservoirs during critical drought periods when storage is at dead pool levels (i.e., when the water level is so low that it cannot drain by gravity through the dam’s outlets). Instances may also occur in the simulation results in which flow conditions fall short of minimum flow criteria, salinity conditions may exceed salinity standards, diversion conditions fall short of allocated diversion amounts, and operating

agreements are not met (as described in Chapter 6). High temperatures and lower precipitation levels would result in a rapid drop of carryover storage and performance levels for Folsom, Oroville, and Trinity Reservoirs; however, Shasta Reservoir could be slightly more resilient due to its greater inflow of rain, rather than snowmelt (California Department of Water Resources 2018b:21–22). As noted in Appendix 5A, Modeling Technical Appendix, modeling results are limited and include an inherent degree of uncertainty, likely within 5%. During real-life operations, operators would use real-time adjustments in operation to satisfy regulatory, legal, and contractual requirements given the current conditions and hydrologic constraints.

DEIR at page 30-17; *see id.* at 6-35. Remarkably, the DEIR fails to analyze the environmental impacts from real-life operations that are necessary to avoid such effects, which as discussed *supra*, have caused and will cause significant environmental impacts that are not disclosed in the DEIR.

Furthermore, the DEIR shows that the effects of climate change result in even lower upstream reservoir storage and thereby result in more severe impacts on fish and wildlife from upstream operations of the CVP and SWP. For instance, as noted earlier, end of September Shasta Reservoir storage in critically dry years declines from an average of 1.543 million acre feet (2020) to an average of 1.432 million acre feet (2040), and end of September storage in Oroville Reservoir declining from an average of 1.068 million acre in critically dry years (2020) to 0.834 million acre feet (2040). *See* DEIR at 5-17 to 5-18. This results in significant increases in temperature-dependent mortality of winter-run Chinook salmon in the Sacramento River. *See* DEIR, Appendix 5A, Table 5A-E4.1-B (No action alternative (2040) average temperature dependent mortality using the Martin Model of 66% in critically dry years, 18% in dry years, and 14% overall). Yet the DEIR does not include any changes to upstream operations of the SWP and CVP to adapt to climate change and protect fish and wildlife as required by state and federal environmental laws, including the ongoing process to revise the Trump Administration’s unlawful biological opinions. *See also* DEIR at 3-145 (“The Delta Conveyance Project would not change operational criteria associated with upstream reservoirs.”).

As discussed below, realistic upstream reservoir operations during critically dry years and droughts are likely to result in significant environmental impacts that are not disclosed or discussed in the DEIR. Because upstream operations of the CVP and SWP are integrated with operations in the Delta, changes in upstream operations of the SWP and CVP to comply with state and federal environmental laws and water rights conditions will ripple throughout the watershed, resulting in effects that are not considered in the DEIR such as lower instream flows that reduce survival of migrating salmon, reduced Delta outflow that harms native fish and wildlife and violates water quality objectives, and lower water diversions. The DEIR’s failure to include operational changes at upstream reservoirs to comply with state and federal environmental laws results in a DEIR that misleads the public and decisionmakers as to the likely environmental effects of the proposed project and alternatives.

**C. The DEIR Violates CEQA Because it Fails to Consider Likely Operations during Droughts, Including Temporary Urgency Change Petitions**

The DEIR fails to disclose the significant adverse effects that are reasonably foreseeable to occur from operations of the proposed project and alternatives during drought conditions, particularly the use of Temporary Urgency Change Petitions (“TUCPs”) to allow DWR to violate minimum Delta water quality objectives. Analyses by state and federal agencies have demonstrated that previous TUCPs – which reduced flows into and through the Delta below the minimums required by the 2006 Water Quality Control Plan and Water Rights Decision 1641 – have caused significant harm to fish species, further reducing the survival and abundance of species including Delta Smelt, Longfin Smelt, winter-run Chinook salmon, spring-run Chinook salmon, and fall-run Chinook salmon, depending upon the time of year when such TUCPs were granted. *See, e.g.*, State Water Resources Control Board, Water Rights Order 2015-0043 (Corrected January 19, 2016); *id.*, Water Rights Order 2022-0095 (Feb. 15, 2022); *id.*, Order Approving Temporary Urgency Changes to Water Right License and Permit Terms Relating to Delta Water Quality Objectives (April 4, 2022), available online at:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/tucp/docs/2022/202404\\_TUCOb\\_swrcb.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/2022/202404_TUCOb_swrcb.pdf); *id.*, Water Rights Order 2014-0029 (September 24, 2014), available online at:

[http://www.waterboards.ca.gov/waterrights/board\\_decisions/adopted\\_orders/orders/2014/wro2014\\_0029.pdf](http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/2014/wro2014_0029.pdf); U.S. Bureau of Reclamation and DWR, Temporary Urgency Change Petition Regarding Delta Water Quality, December 1, 2021, available online at:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/tucp/docs/2022/2021.12\\_2022\\_TUCP.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/2022/2021.12_2022_TUCP.pdf); Declaration of Dr. Jonathan A Rosenfield in support of Plaintiffs Motion for Preliminary Injunction For 2022 and Plaintiffs’ Opposition to Federal Defendants Motion for Voluntary Remand Without Vacatur, Doc. 325 (Dec. 16, 2021), attached hereto as Exhibit D; *see also* Exhibit F. Implementation of TUCPs has also contributed to and exacerbated Harmful Algal Blooms in the Delta, and peer reviewed research has concluded that reduced Delta outflow (shifting X2 upstream) significantly contributes to the abundance of toxic cyanobacteria in the genus *Microcystis*. *Id.*; Lehman et al 2020; Lehman et al 2022.

Moreover, TUCPs are reasonably foreseeable in future droughts, and are likely to have similar adverse environmental impacts in the future. DWR and Reclamation have previously admitted that TUCPs like those implemented in 2014-2015 are reasonably foreseeable in future droughts. *See* Exhibit F. More recently, in July 2022 DWR released a Draft EIR for its proposal to install a Delta Salinity Barrier at West False River for up to 40 of the next 120 months, and in that DEIR DWR assumed TUCPs would be implemented whenever the salinity barrier was installed:

Before installation of the 2015 and 2021–2022 EDBs, the State Water Board issued temporary urgency change orders for D-1641 to establish temporary emergency water quality standards for the CVP’s and SWP’s water rights. This

permit process would also occur for the proposed project before installation of the barrier (under all three installation scenarios).

DWR, West False River Drought Salinity Barrier DEIR at 3.5-16, available online at: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Water-Basics/Drought/Files/Publications-And-Reports/WFRDSB\\_DEIR\\_July2022\\_ADA.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Water-Basics/Drought/Files/Publications-And-Reports/WFRDSB_DEIR_July2022_ADA.pdf); *see id.* (explaining that it is “reasonable to assume” that TUCPs that allowed for violation of salinity standards would occur with implementation of the proposed project).

However, the DEIR never analyzes or considers the adverse environmental impacts on fish and water quality from the use of TUCPs that are reasonably certain to occur as part of the proposed project.<sup>17</sup> Violation of water quality standards constitutes a significant impact under CEQA, and the further reductions in the abundance and survival of fish and wildlife listed under CESA that would result from implementation of TUCPs are also a significant impact under CEQA. *See* Cal. Code Regs., tit. 14, § 15065(a)(1). As a result, the DEIR misleads the public and decisionmakers as to the likely environmental consequences of the proposed project and alternatives, violating CEQA.

***D. The DEIR Fails to Accurately Analyze South Delta Pumping Allowed under the Proposed Project and Alternatives, Underestimating the Severity of Impacts to Fish Species***

Finally, the DEIR’s modeling of CVP/SWP operations significantly underestimates South Delta pumping that is allowed under the State’s Incidental Take Permit and the Trump Administration’s unlawful biological opinions, which are part of the proposed project and alternatives. For instance, the DEIR assumes an OMR limit of -6,250 cfs for both the CVP and

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<sup>17</sup> In addition, modeling by the U.S. Bureau of Reclamation shows that TUCPs generally do not increase reservoir storage at Shasta Reservoir, as the minimum 3,250 cfs release from Keswick reservoir is sufficient to meet its share of obligations under D-1641. *See* Exhibit C. Similarly, DWR found that the 2022 TUCP did not improve Shasta storage, instead concluding that the TUCP conserved storage in Oroville and Folsom, but did not improve storage and water temperatures for salmon below Shasta Dam. *See* DWR, Electronic Transmittal: Conserved Water Accounting for Condition 4 of the April 2022 under TUCP Order, online at: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/tucp/docs/2022/2020513\\_Condition4\\_DWR.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/2022/2020513_Condition4_DWR.pdf); DWR, Electronic Transmittal: Conserved Water Accounting for Condition 4 of the April 2022 under TUCP Order for May 2022, online at: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/tucp/docs/2022/2020613-cond4-dwr.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/2022/2020613-cond4-dwr.pdf); DWR, Electronic Transmittal: Conserved Water Accounting for Condition 4 of the April 2022 under TUCP Order for June 2022, online at: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/drought/tucp/docs/2022/2020714-cond4-dwr.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/tucp/docs/2022/2020714-cond4-dwr.pdf). TUCPs cause significant environmental impacts in the Delta and do not provide benefits to salmon or other fish and wildlife in the Sacramento River, as Reclamation and DWR have previously claimed.

SWP, even though the biological opinion imposes no maximum OMR limit, and the California Natural Resources Agency has failed to pursue its claim that the Bureau of Reclamation must comply with CESA. See DEIR, Appendix 5A, Attachment B, at Table 5A-B2.1.<sup>18</sup> Similarly, the DEIR assumes OMR Storm Flex is only used for 6 days at -6,250 cfs, see *id.*, even though both the biological opinion and Incidental Take Permit allow OMR storm flex whenever the Delta is in balanced conditions and no other requirements have been triggered, as discussed in the attached letter from NRDC et al to DWR commenting on the State's DEIR for Long Term Operations of the State Water Project. Exhibit H. And the DEIR's modeling and analysis assumes more restrictive OMR in March, April and May of drier years than what is actually required by the biological opinions and Incidental Take Permit. See DEIR, Appendix 5A, Attachment B, at Table 5A-B2.1 (modeling -3,500 cfs in March, April and May of non-critical years). These modeling assumptions underestimate the CVP/SWP pumping that is permitted under the proposed project, thereby underestimating negative OMR and the reduction in Delta outflow from the proposed project, and thus underestimating the severity of impacts to fish species that are likely to result.

***E. The DEIR Violates CEQA because it Fails to Consider the Effects of Water Transfers***

The DEIR excludes the effects of water transfers, claiming that it would not result in increased water transfers. DEIR at 3-147. However, the DEIR also acknowledges that water transfers through the new Delta tunnel could result in reduced carriage water, which is the water loss that occurs when moving transfer water across the Delta to the South Delta pumps. *Id.* Even if there is not an increase in water transfers, reducing carriage water losses, which are typically 20-30% of water transfers, would result in reduced Delta outflow. See also *id.*, Appendix 3H, at 3H-5 (Estimating carriage water losses of 20% of maximum authorized water transfers would be approximately 180,000 acre feet of water per year). Reduced Delta outflow that results from water transfers that reduce carriage water, particularly in the summer and fall months, likely would result in significant adverse impacts including reduced survival of Delta Smelt, increased salinity, and increased harmful algal blooms that threaten human health and safety. The DEIR's failure to consider the effects of water transfers, including reduced Delta outflow, as part of the proposed project violates CEQA.

**V. The DEIR's Analysis of Cumulative Impacts Violates CEQA:**

The DEIR also violates CEQA because it fails to adequately analyze cumulative impacts of the proposed project in conjunction with other relevant projects, including the proposed Sites Reservoir Project. Adequate cumulative impacts analysis is essential under CEQA because,

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<sup>18</sup> The DEIR does not appear to include CalSim callouts for the proposed project, only for the existing condition and no action baselines, but the DEIR makes clear the proposed project includes the same requirements.

the full environmental impact of a proposed project cannot be gauged in a vacuum. One of the most important environmental lessons that has been learned is that environmental damage often occurs incrementally from a variety of small sources. These sources appear insignificant when considered individually, but assume threatening dimensions when considered collectively with other sources with which they interact.

*See Bakersfield Citizens for Local Control v. City of Bakersfield*, 124 Cal.App.4th 1184, 1213-1215 (2004) (citations omitted). As in that case, other projects that propose to increase diversions from the Bay-Delta, including the Sites Reservoir project, clearly are relevant projects, and their meaningful exclusion from the cumulative impacts analysis in the DEIR prevents the severity and significance of cumulative impacts from being adequately considered.

CEQA requires that the DEIR consider the cumulative effects of the proposed project in combination with other projects that will divert water from the watershed, such as Sites Reservoir, even if the DEIR considers the impacts from each project to be individually minor. Cal. Code Regs., tit. 14, § 15355. CEQA also requires that the discussion of cumulative impacts in the DEIR “reflect the severity of the impacts and their likelihood of occurrence,” and must include a “reasonable analysis of the cumulative impacts of the relevant projects.” *Id.*, § 15130. While the DEIR includes Sites Reservoir on its list of projects considered for cumulative impacts, *see* DEIR, Appendix 3C at 3C-90, the DEIR devotes only three pages to consider cumulative impacts of construction and operation of the proposed project and all other cumulative projects on fish species, *see id.* at 12-245 to 12-248. These three pages in the DEIR grossly understates the severity and significance of the cumulative impacts of implementing both the proposed project and Sites Reservoir, as well as other projects that will increase water diversions from the Bay-Delta. In addition, as discussed *infra*, the DEIR’s very brief discussion of cumulative impacts is premised upon mitigation measures that fail to mitigate the adverse impacts to fish species that will result from the cumulative increase in water diversions under the proposed project and other relevant projects.

The amount of water flowing down the Sacramento River and into and through the Delta significantly affects the survival and abundance of numerous fish species, with lower flows generally resulting in lower survival and abundance. Several of the analyses in the DEIR are based on these flow: survival and/or flow: abundance relationships, including for Longfin Smelt, Delta Smelt, all four runs of Chinook salmon, and both Green Sturgeon and White Sturgeon. The DEIR acknowledges that,

projects diverting water from the Sacramento River could affect fish and aquatic species in an analogous manner to that analyzed for the project alternatives, e.g., by reducing river flow, thereby potentially affecting migration survival for juvenile salmonids (Perry et al. 2018) or abundance of longfin smelt through Delta outflow-abundance relationships (see Impact AQUA-7).

DEIR at 12-247. However, as this discussion shows, the DEIR does not analyze or discuss the severity of the cumulative impacts from the proposed project and other projects (like Sites Reservoir) that propose to divert water from the Sacramento River.

Moreover, none of the modeling in the DEIR includes the cumulative effects of water diversions by the proposed project in combination with the Sites Reservoir project, even though state agencies have reviewed and commented on two CEQA documents for the Sites Reservoir project, and the State Water Resources Control Board has conditionally accepted a water rights application for the project. *See* DEIR at 12-247 (stating that effects from some projects that are considered in the analysis of cumulative impacts are included in the modeling, but that the modeling excludes the effects of Sites Reservoir). Neither project is included in the environmental baseline for the others' DEIR, and neither of the CEQA documents includes modeling of the cumulative effects of the project—even though CalSim modeling of each project is publicly available, which would enable quantitative analysis of the cumulative impacts of these two projects.

The cumulative effects of both projects would result in greater reductions in flows into and through the Delta, with substantially more severe and significant cumulative adverse impacts on fish species, than is observed when each project is viewed in isolation. In addition, the proposed project and the proposed Sites Reservoir are also likely to compete to divert flows, with the two projects proposing to divert at least some of the same molecules of water, and the analyses for both of these projects in isolation – rather than quantitative modeling the effects of both of these projects – simultaneously overestimates likely water supply from these projects while also underestimating the cumulative reduction in Delta inflows and Delta outflows and resulting adverse impacts to fish species.<sup>19</sup>

Yet the DEIR simply states that the cumulative impacts would be “potentially significant for some species,” as discussed in the DEIR for the impacts of the proposed project, without any discussion or analysis – let alone modeling – of the severity of the cumulative impacts on fish species. DEIR at 12-147. The DEIR then restates the discussion of mitigation measures in the DEIR (which as discussed *infra* are wholly inadequate to reduce impacts to a less than significant level) and includes a sentence that assumes that similarly inadequate mitigation measures (primarily tidal marsh habitat restoration) would be imposed on these other projects, like Sites Reservoir, and claims that the cumulative impacts would be less than significant with mitigation. *Id.* Like the DEIR's conclusions regarding habitat restoration and other mitigation measures, these conclusions are likewise arbitrary and are not supported by the evidence.

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<sup>19</sup> Stated another way, all of the analysis in the DEIR is based on modeling of flows that are projected to occur, rather than considering the effect of the project compared to the minimum instream flows that are required. Because instream flows today are greater than existing requirements in many years, *see also supra* page 4-6, additional storage and diversion projects that reduce instream flows, and/or reduced runoff from drought and climate change, will reduce flows compared to those analyzed in the DEIR, leading to more severe environmental impacts by the proposed project and alternatives. The DEIR does not analyze these cumulative impacts.



CEQA requires more, particularly where the cumulative impact is significant. Cal. Code Regs., tit. 14, § 15130. Indeed, DWR has acknowledged in other CEQA documents that the cumulative impacts of foreseeable projects have significant environmental impacts to fish species. For instance, in its FEIR document for Long Term Operations of the California State Water Project, DWR admitted that,

The impacts of past projects, including past operation of the SWP, have been included in the description of the baseline environmental conditions provided in Section 3.4. The cumulative impact of these past projects has resulted in a baseline consisting of a trending decline of listed-species population within the Delta and other waterways used by anadromous fish populations in northern California. As noted, multiple factors have contributed to this trending decline, and it is difficult to quantify the proportion of the decline attributable to a specific project, action, or event

...

Despite these protections, the cumulative impact of past Delta modifications and other past and present projects has contributed to the continuing decline in Delta fish populations and habitat of protected species. **This overall cumulative impact is significant.**

...

The majority of past, present, and reasonably foreseeable projects that are shown in Table 4.6-1 may have impacts on the same aquatic species and/or habitats as the Proposed Project. **Specific quantifiable details regarding the biological impacts of every one of these projects were not available, and therefore this analysis is conducted qualitatively.**

DWR, FEIR for Long Term Operations of the California State Water Project, at 4-317 to 4-318 (emphasis added). While that FEIR erroneously concluded that the cumulative impacts of the proposed project would be less than significant / not cumulatively considerable, it included substantial discussion of the cumulative impacts to fish species from various categories of projects. Moreover, hydrologic modeling of the Sites Reservoir project is available today and this hydrologic modeling could and should be utilized in the DEIR to quantitatively assess cumulative impacts of Sites Reservoir and Delta Conveyance; the failure to use the existing modeling to quantitatively analyze cumulative impacts, given the likely severity of cumulative impacts to listed fish species, is not reasonable.

**VI. The DEIR's Analysis and Conclusions Regarding Environmental Impacts to Native Fish Fails to Use the Best Available Science and Misleads the Public and Decisionmakers as to the Likely Effects of the Project:**

As discussed below, the DEIR's analysis of environmental impacts from operations of the proposed project fails to use the best available science, is not supported by the evidence, and

underestimates the significant impacts that are likely to result from the proposed project and alternatives. Equally important, the DEIR's conclusions regarding mitigation measures for the impacts that are identified as significant likewise fail to use the best available science, are not supported by the evidence, and are arbitrary and capricious.

#### ***A. Winter-Run Chinook Salmon***

The DEIR's conclusion that the operations of the proposed project results in less than significant impacts with mitigation to winter-run Chinook salmon, *see* DEIR at ES-33, is contrary to the evidence before the agency. The DEIR also fails to consider important aspects of the problem such as the effects of climate change and the use of TUCPs that reduce survival of winter-run Chinook salmon migrating down the Sacramento River and through the Delta. The DEIR relies on methods to evaluate impacts that fail to use the best available science and that substantially underestimate the likely environmental impacts to the species, yet even these flawed methods still show significant impacts to this highly endangered species, including reduced survival through the Delta and reduced abundance and escapement (in two of the life cycle models). DEIR at Table 12-0. The DEIR's assumption that tidal marsh and channel habitat restoration will mitigate these impacts, *id.* at ES-33, is inconsistent with the best available science and not supported by the evidence. Contrary to the DEIR's conclusion, the proposed project and alternatives will cause significant impacts to the species, and operational changes (including increased bypass flows with unlimited pulse protection at the proposed North Delta Diversion ("NDD")) are necessary to mitigate these impacts.

##### ***1. The DEIR's Analyses Demonstrate that the Proposed Project and Alternatives are Likely to Result in Significant Environmental Impacts to Winter-Run Chinook Salmon***

The analyses in the DEIR show that the proposed project and alternatives are likely to reduce the survival of juvenile winter-run Chinook salmon migrating through the Delta and reduce the abundance of this critically endangered species. DEIR at Table 12-0. With respect to juvenile survival through the Delta, both the Delta Passage Model and the Perry et al 2018 model (STARS Model) show that all of the alternatives, including the proposed project (Alternative 5), are likely to reduce survival through the Delta compared to the unsustainable status quo, as a result of diversions from the new North Delta intakes that reduce flows into and through the Delta. *Id.*; DEIR at 12-100 to 12-105 (explaining that the Perry et al 2018 model finds that for the key months of December to April, "mean through Delta survival under the Project alternatives was 0-4% lower than existing conditions," and was reduced further in the fall months and in June; Delta Passage Model concludes that the proposed project and most of the project alternatives reduce through-Delta survival by 1-3%). It is important to acknowledge that the status quo for winter-run Chinook salmon is declining abundance; thus, even seemingly small reductions in survival of this critically endangered species increase the risk that the population will be extinguished, constituting a significant impact that warrants changes in operations to avoid these impacts.

In addition to reduced survival through the Delta, two of the three life cycles that are utilized in the DEIR conclude that the proposed project would further reduce the abundance of winter-run Chinook salmon compared to the degraded status quo. The DEIR shows that the proposed project and the alternatives would further reduce abundance of winter-run Chinook salmon by 7-13%, primarily as a result of reduced survival through the Delta. DEIR at 12-121. The OBAN model estimates that the proposed project and alternatives (all except for Alternatives 2a/4a) would reduce the abundance of winter-run Chinook salmon. *Id.* at 12-123. In addition, the OBAN model was also run assuming a 5-10% increase in near field mortality (e.g., as a result of increased predation at the North Delta Diversion facilities), which resulted in even lower overall abundance of the species (and declining abundance under Alternative 2a/4a). *Id.* at 12-123. Moreover, the OBAN model predicts that quasi-extinction of winter-run Chinook salmon (abundance less than 100 spawners) is extremely likely under all the alternatives, with Alternative 2a/4a slightly reducing the risk of extinction due to slightly cooler water temperatures for spawning eggs. *Id.* at 12-123; *id.*, Appendix 12B, Attachment 12B.1, at 7-8.

The DEIR recognizes that, “The available information generally indicates that diversion at the NDD would negatively affect winter-run Chinook salmon through flow-survival and habitat impacts.” DEIR at 12-126. The DEIR admits that the proposed project and alternatives will cause a significant impact to winter-run Chinook salmon, but it erroneously claims that tidal marsh and channel margin habitat restoration will mitigate these impacts to a less than significant level. *Id.* at ES-33.

Winter-run Chinook salmon are at significant risk of extinction under the degraded status quo, yet the proposed project and alternatives would further reduce survival of the species through the Delta and are likely to result in even lower abundance than today, based on the modeling and analyses in the DEIR.

2. *The DEIR’s Analytical Methods Fail to Use the Best Available Science and Significantly Underestimate Impacts to the Species from the Proposed Project and Alternatives*

The methods utilized in the DEIR fail to accurately assess impacts to winter-run Chinook salmon. Most notably, the DEIR ignores the effects of climate change, as discussed *infra*. Even the DEIR’s flawed modeling regarding the effects of climate change, which are not considered under CEQA, shows significant increases in temperature dependent mortality of eggs that will require mitigation, and adequate mitigation measures such as increased carryover storage requirements will substantially change water project operations from those presented in the DEIR. As a result, the DEIR fails to provide the public and decisionmakers with accurate information regarding the likely environmental impacts from operating the proposed project starting in 2040.

In addition, several of the specific models used in the DEIR to assess impacts fail to use the best available science and significantly underestimate the adverse impacts of the proposed project as a result.

*a. The IOS Life Cycle Model Fails to Use the Best Available Science*

The IOS life cycle model relies on a 1999 study by the U.S. Fish and Wildlife Service to estimate temperature mortality, and it estimates 0.001 daily mortality at 55 degrees Fahrenheit and daily mortality of 0.018 at 60 degrees Fahrenheit. DEIR, Appendix 12B, at 12B-116. However, state and federal agencies have rejected use of this study in favor of more recent peer reviewed scientific studies that conclude temperature dependent mortality of winter-run Chinook salmon begins at temperatures equal to 53.5 degrees Fahrenheit (Martin et al 2017, Martin et al 2020), including in recent biological opinions by NMFS. Martin et al 2017 and 2020 demonstrated that lab studies of temperature mortality, like USFWS 1999, significantly underestimated temperature mortality in the real world. Most recently, the State of California argued in court that this USFWS 1999 study fails to use the best available science, and that the Martin et al studies constitute the best available science. *See Exhibit B.* Because the IOS model fails to use the best available science to estimate temperature dependent mortality of winter-run Chinook salmon, it overestimates survival and abundance in light of the effects of climate change and the proposed project.<sup>20</sup>

In addition, the IOS model's evaluation of how Sacramento River flow affects survival, *see* DEIR, Appendix 12B, at 12B-119 to -120, appears to inaccurately model the effects of flow on survival compared with peer reviewed research, such as Hassrick et al 2022. Compared with the results of Hassrick et al 2022, the IOS model appears to significantly overestimate survival of juvenile winter-run Chinook salmon under lower flow conditions, underestimate survival under flows around 24,000 cfs, and overestimate survival at higher flows.

Finally, as discussed below, the IOS model relies on the modified Delta Passage Model to estimate survival of juvenile salmon through the Delta, *see* DEIR at 12B-120, which likewise fails to use the best available science and overestimates survival through the Delta.

*b. The Revisions to the Delta Passage Model Fail to Use the Best Available Science*

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<sup>20</sup> For example, the IOS model predicts there would be no temperature dependent mortality of winter-run Chinook salmon under below normal and dry conditions, and only 14% temperature dependent mortality in critically dry years. DEIR at 12-122 (Table 12-40). According to the National Marine Fisheries Service, from 1996 to 2016 temperature dependent mortality has averaged approximately 68% in critically dry years, 9% in dry years, and 10% in below normal years. *See* National Marine Fisheries Service, January 19, 2017, Proposed Amendment to the Reasonable and Prudent Alternative of the 2009 Opinion, available online at: [https://media.fisheries.noaa.gov/dam-migration/nmfs\\_s\\_draft\\_proposed\\_2017\\_rpa\\_amendment\\_-\\_january\\_19\\_2017.pdf](https://media.fisheries.noaa.gov/dam-migration/nmfs_s_draft_proposed_2017_rpa_amendment_-_january_19_2017.pdf).

While DWR's Delta Passage Model historically found that increased South Delta exports have a weakly negative effect on survival through the Delta, based on studies of salmon with coded wire tags when exports and flows were not strongly correlated as a result of OMR limits, *see* DEIR, Appendix 12B at 12B-102, DWR's revised Delta Passage Model finds that increased South Delta exports by the SWP and CVP **increase** the survival of salmon migrating through the Delta, *Id.* at 12B-102 to -103. In the revised model, DWR has eliminated all of the data and analyses of survival that predate the adoption of OMR limits, which limits the data set to a period in which flows and exports are highly correlated as a result of OMR limits. *Id.* Even though exports and flow are highly correlated in this recent data set, and even though the DEIR admits that the effect of exports "was not well supported" in the model that included the effects of flow and claims the data suggests "the absence of a negative effect of exports on survival of Sacramento River-origin" salmon, *see* DEIR at 12B-102, the DEIR's Delta Passage Model concludes that exports have a positive effect on salmon survival, even in situations where flow and exports are not highly correlated. This approach fails to use the best available science.

*c. The DEIR Fails to Provide Substantial Evidence to Support its Conclusions Regarding the Winter Run Life Cycle Model Results*

The DEIR fails to provide evidence to support its conclusory statements regarding NMFS' Winter Run Life Cycle Model, as neither the main document nor the appendices provided a description of the model, the model inputs, or detailed model results. Moreover, the DEIR does not include any results from the Winter Run Life Cycle Model that incorporate the effects of climate change that have been observed to date, let alone the effects anticipated when the project would be operational in 2040. As a result, the DEIR's conclusory statements regarding the results of the Winter Run Life Cycle Model are not supported by substantial evidence.

*d. The DEIR's Assumption that There Will Not be Increased Predation or Mortality at the North Delta Intakes Fails to Use the Best Available Science*

The DEIR also concludes that the new fish screens and diversion facilities in the North Delta will not result in increased predation, impingement, or otherwise reduce survival from near field effects. *See* DEIR at 12-90 to 12-92. However, the proposed project and alternatives would construct new large fish screens in the Delta, creating potential hot spots for predation, and many existing structures in the Delta have been identified as predation hot spots, including the Head of Old River Barrier, Delta Cross Channel Gates, and Clifton Court Forebay. Grossman et al 2013. Similarly, NMFS concluded that the WaterFix project would create habitat and opportunity for large predators, resulting in adverse effects to winter-run Chinook salmon, and modeling of effects using the Winter Run Life Cycle Model evaluated a range of near field mortality from 0 to 5 percent. NMFS 2017. While the design of the fish screens has changed from those evaluated in the WaterFix biological opinion, life cycle modeling in the DEIR indicates that if there is additional 5% near field mortality at the North Delta intakes, the proposed project and alternatives would result in far greater negative impacts to the abundance of the species and

would increase the risk of quasi-extinction. DEIR at 12-123 (mean escapement reduction of 12% for the proposed project assuming no near field mortality, rising to a 25% reduction in escapement assuming 5% mortality at the North Delta Intakes); *id.*, Appendix 12B, Attachment 12B.1, at 15-24 (increased risk of quasi-extinction for all alternatives).

3. *The DEIR's Conclusion that Operational Criteria and Habitat Restoration will Fully Mitigate Impacts is Arbitrary and Capricious*

Finally, the DEIR's conclusion that proposed operations criteria and habitat restoration would fully mitigate these adverse impacts is contrary to the peer reviewed research and is not supported by substantial evidence. Specifically, the DEIR claims that the tidal marsh restoration would "reduce negative hydrodynamic effects such as flow reversals in the Sacramento River at Georgiana Slough (CMP-25) and reduced effects from reduced inundation of riparian/wetland benches as a result of NDD operations (CMP-26)." DEIR at 12-126. These statements in the DEIR are inconsistent with the best available science, and the DEIR fails to provide a reasoned explanation to support its conclusions that these mitigation measures will fully mitigate these adverse effects.

First, as the DEIR explains, the Perry et al 2018 analysis reflects the effects of reduced flows on survival of "salmon *migrating* through the Delta," not salmon that are rearing in the Delta. *Id.* at 12-100. The DEIR presents no scientific evidence – and we are not aware of any such evidence – showing that restoring channel margin habitat will mitigate the effects of reduced flow to *migrating* salmon and improve their survival;<sup>21</sup> instead, the DEIR claims that "DWR will undertake channel margin habitat restoration to mitigate for potential flow-related impacts on riparian and wetland bench habitat used by juvenile Chinook salmon for *rearing*." *Id.*, Appendix 3F, at 3F.1-13.

The DEIR also cites Hellmair et al 2018 to claim that channel margin habitat restoration has been demonstrated to be effective. *Id.* at 3F.1-14. However, while Hellmair et al found that salmon were more likely to be found occupying natural or restored channel habitats (particularly sites with instream cover from terrestrial vegetation or woody material) compared to shorelines that consist of rock revetments, this study does not analyze, let alone demonstrate, that channel margin habitat restoration increased survival of migrating or rearing salmon. In addition, studies in the Sacramento River upstream of the Delta have found that while flow significantly affects survival of migrating salmon, neither the percentage of off channel habitat within 50 feet of the river nor adjacent cover (defined as "the percent of non-armored river bank with adjacent natural woody vegetation") were statistically significant covariates affecting survival. Henderson et al

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<sup>21</sup> Even with respect to floodplain habitat, for which there is a much larger body of scientific evidence, while there are numerous studies finding that salmon reared on floodplains generally result in increased size and faster growth rates, there appears to be no scientific evidence finding that salmon reared on the floodplain have higher survival and subsequent abundance than salmon reared in the main channel Sacramento River. *See* Takata et al 2017; *see also* Pope et al 2018.

2017. Thus, the Hellmair study does not support the DEIR's conclusion that channel margin habitat restoration will mitigate the reduction in survival caused by increased diversions from the North Delta intakes, and Henderson et al 2017 likewise does not support the DEIR's conclusion that channel margin habitat restoration is likely to increase survival of migrating salmon sufficient to mitigate the adverse impacts of reduced flows caused by the proposed project and alternatives.

In addition, as the DEIR admits, approximately 47,000 linear feet (8.9 miles) of channel margin habitat has been restored in recent decades as part of levee improvement projects, DEIR at 12-106, yet the DEIR presents no evidence that these channel habitat restoration projects have improved the survival of winter-run Chinook salmon through the Delta. Here, the DEIR appears to propose to restore "up to 4,900" linear feet of channel margin habitat. *Id.* at 3F-18, 3F-56.

Equally important, peer-reviewed studies have found that given existing low abundance of salmon and existing flows into and through the Delta, there is adequate rearing habitat in the Delta for salmon. Munsch et al 2020. That study did not indicate that rearing habitat in the Delta is a limiting factor for salmon at current population levels, and instead suggests that without higher abundance and increased flows, habitat restoration in the Delta is unlikely to improve productivity or provide substantial population level benefits. Similarly, in its 2017 biological opinion regarding WaterFix, NMFS found that for winter-run Chinook salmon, "The proposed Delta habitat restoration did not improve the cohort replacement rate under this scenario because the current low abundance of the winter-run population is not limited by Delta rearing habitat." NMFS 2017 at 810. Furthermore, the effects of tidal marsh habitat restoration do not substitute for flows, but instead depend on adequate flows and temperatures to provide benefits; recent studies have found that the Delta provides rearing habitat that supports higher growth of salmon than salmon that rear in the American River in years with adequate flows, but not in drought years. Coleman et al 2022 (concluding that "variation in water flow and temperature (Figure 1) were likely the primary abiotic factors that generated differences in growth opportunities in each habitat within and among years.").

Second, while tidal marsh habitat can change hydrodynamics to reduce the frequency of reverse flows at Georgiana Slough caused by reductions in flows under the proposed project and alternatives, there is no evidence that tidal marsh habitat restoration would improve survival of migrating salmon in reaches downstream from Georgiana Slough. Perry et al 2018 demonstrates that the effects of flow on juvenile salmon survival through the Delta are not only a result of reverse flows at Georgiana Slough, but instead include flow: survival relationships in many reaches in the Delta, including reaches downstream from Georgiana Slough. *See also* DEIR at 12-17 ("In addition to influencing migratory pathways, Sacramento River flow is positively correlated with juvenile Chinook salmon survival in river reaches transitioning from bidirectional (tidal) flow to unidirectional (downstream) flow with increased river flow (i.e., Sacramento River from Georgiana Slough to Rio Vista; Sutter and Steamboat Slough; and Georgiana Slough) (Perry et al. 2018)."). The published paper concludes that,



First, survival decreases sharply and routing into the interior Delta (where survival is low) increases sharply as Delta inflows decline below approximately  $1,000 \text{ m}^3 \cdot \text{s}^{-1}$ , the point at which transitional reaches shift from bidirectional to unidirectional flow (Figs 7 and 8). In contrast, at inflows greater than  $1,000 \text{ m}^3 \cdot \text{s}^{-1}$ , survival is maximized and changes relatively little with flow while routing into the interior Delta via Georgiana Slough is minimized and insensitive to inflow. These findings indicate that water management actions that reduce inflows to the Delta will have relatively little effect on survival at high flows, but potentially considerable negative effects at low flows.

Perry et al 2018. The paper concludes that flows affect reach-specific survival in reaches identified in Perry et al 2018 as reaches 3, 4, 5, and 6, with higher flows resulting in higher survival in those reaches, and lower flows resulting in lower survival. More recently, Hance et al 2021 also found that flow had a positive effect on survival of migrating juvenile winter-run Chinook salmon through most reaches of the Delta, including a positive effect of flow on survival from the interior Delta to Chipps Island. Hance et al 2021. The DEIR fails to consider this study, particularly the conclusion that there is a strong flow: survival relationship between the interior Delta and Chipps Island for migrating juvenile winter-run Chinook salmon. Thus, diverting water through the proposed North Delta intakes (when flows in the Sacramento River at Freeport are less than approximately 35,000 cfs, the equivalent of 1,000 cubic meters per second) affects route selection and reach specific survival in these portions of the Delta, and both of these functions of flow (route selection and reach specific survival rates) affect overall migratory survival.

While habitat restoration is proposed to “reduce negative hydrodynamic effects such as flow reversals in the Sacramento River at Georgiana Slough,” the DEIR does not propose that this habitat restoration would eliminate the increase in flow reversals at Georgina Slough caused by the proposed project, nor is there any credible scientific evidence that this habitat restoration would mitigate the effects of reduced flow on reach specific survival of migrating salmon in reaches 3, 4, 5 and 6 identified in Perry et al 2018. In other words, although tidal marsh habitat may partially mitigate the effects on route selection, it would not mitigate the effects on reach specific survival. For the same reasons, there is no basis to conclude that tidal marsh or channel margin habitat restoration would offset or mitigate the adverse effects to juvenile migratory survival caused by reduced flow and identified by the Delta Passage Model. *See also* DEIR at 12B-99 (explaining the reach specific flow: survival relationships in reaches Sac1, Sac2, Sac3, and Sac4 in the Delta Passage Model).

Third, the proposed operational measures are not adequate to minimize and mitigate these impacts. The proposed bypass flows at the North Delta intakes are significantly weaker than what was required in 2017, as they do not include unlimited pulse protection and allow for higher diversions at lower flow levels than previously required. *See* Exhibit A. Even though Perry et al 2018 demonstrates that diverting water from the North Delta Diversion when flows at Freeport are less than 35,000 cfs reduces the survival of salmon migrating through the Delta, the

proposed bypass flow criteria allow the NDD to divert 70 percent of the flows greater than 20,000 cfs. *See* DEIR at 3-153. As a result, when flows at Freeport are 35,000 cfs, the minimum bypass flow is only 22,900 cfs, and the North Delta intakes could pump at full capacity under all of the alternatives, even though this would reduce salmon survival. In addition to reducing survival and subsequent abundance, these inadequate bypass rules will also adversely affect life history diversity,<sup>22</sup> as late migrating salmon are likely to face reduced bypass flows and even lower survival under Level 2 and Level 3 bypass flows. *See* DEIR at 3-153. Moreover, unlike the requirements for WaterFix, the DEIR does not propose unlimited pulse protection or otherwise propose to limit North Delta pumping based on real time monitoring of salmon migration. DEIR at 3-150. As a result, the DEIR does not propose real time operations at the North Delta intakes that could mitigate these impacts.

Therefore, even with the proposed mitigation measures, the proposed project and alternatives are likely to reduce survival of migrating juvenile winter-run Chinook salmon below the degraded baseline conditions under which the species' existence is jeopardized. As a result, the proposed project and alternatives results in significant impacts under CEQA, and mitigation measures – specifically higher bypass flow requirements in the North Delta – are necessary.

### ***B. Spring-Run Chinook Salmon***

The DEIR's conclusion in the Executive Summary that the operations of the proposed project results in less than significant impacts to spring-run Chinook salmon, *see* DEIR at ES-33, is contrary to the evidence before the agency – and is inconsistent with the DEIR's own finding in the body of the report. *Compare* DEIR at ES-33 (AQUA-3 conclusion that the impact of operations of and maintenance of all of the alternatives would be less than significant) *with id.* at 12-134 (“it is concluded that the operations and maintenance impact of the project alternatives would be significant for spring-run Chinook salmon.”). As with winter-run Chinook salmon, the DEIR also fails to consider important aspects of the problem such as the effects of climate change and the use of TUCPs that worsen survival of spring-run Chinook salmon migrating down the Sacramento River and through the Delta compared to what is presented in the DEIR. And like its analysis of impacts to winter-run Chinook salmon, the DEIR relies on methods to evaluate impacts that fail to use the best available science and substantially underestimate the likely environmental impacts to the species, yet even these flawed methods still show significant impacts to this threatened species, particularly reduced survival through the Delta. DEIR at Table 12-0. And as with winter-run Chinook salmon, the DEIR erroneously claims that tidal marsh and channel habitat restoration will fully mitigate these impacts. Contrary to the DEIR's conclusion, the proposed project and alternatives will cause significant impacts to the species,

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<sup>22</sup> Maintaining historic levels of life-history diversity within Central Valley Chinook salmon runs is critical to maintaining population viability as it allows these populations to “distribute the risks that disturbances from droughts, fires, disease, food availability, and other natural and manmade stressors present to populations.” SWRCB 2017 at 1-18, McElhany et al 2000; Lindley et al 2007; Satterthwaite et al 2014; Sturrock et al 2015; 2019 SEP Group 2019.

and operational changes (including increased bypass flows with unlimited pulse protection at the proposed North Delta intakes) are necessary to mitigate these impacts.

1. *The DEIR's Analyses Demonstrate that the Proposed Project and Alternatives are Likely to Result in Significant Environmental Impacts to Spring-Run Chinook Salmon*

Similar to winter-run Chinook salmon, the DEIR finds that the proposed project and alternatives will reduce the survival of juvenile spring-run Chinook salmon migrating down the Sacramento River. *See* DEIR at 12-132. Based on analyses using the Delta Passage Model and Perry et al 2018 analysis, the DEIR concludes that the reductions in Sacramento River flows as a result of North Delta diversions will reduce survival of spring-run Chinook salmon migrating through the Delta by 3-4 percent compared to the existing conditions baseline. *Id.* The impacts likely would be even greater for yearling spring run that migrate earlier during the fall months. *Id.* While the DEIR does not include a life cycle model for spring run Chinook salmon, the life cycle modeling for winter-run Chinook salmon demonstrates that even small reductions in survival through the Delta can result in significant adverse population level effects.

For spring-run salmon migrating from the San Joaquin basin, the DEIR finds that survival would be reduced in dry years under the proposed project and most alternatives, and in critically dry years under several alternatives. *Id.* at 12-134.

2. *The DEIR's Analytical Methods Fail to Use the Best Available Science and Significantly Underestimate Impacts to Spring-Run Chinook Salmon From the Proposed Project and Alternatives*

As discussed with respect to winter-run Chinook salmon, the DEIR's failure to consider the effects of climate change, the modifications to the Delta Passage Model, and the assumption of zero near field mortality at the North Delta intakes result in the DEIR significantly underestimating the adverse effects of the proposed project and alternatives on spring-run Chinook salmon. *See supra* sections VI(A)(2), VI(A)(2)(b), VI(A)(2)(d).

Relatedly, the DEIR's modeling of the effects of South Delta exports is inconsistent with the text of the DEIR regarding the effects of South Delta exports. The text of the DEIR references studies that concluded that increased South Delta exports reduce survival of migrating spring-run and fall-run Chinook salmon. DEIR at 12-21 (citing Cunningham et al 2015). Yet the modeling in the DEIR using the Delta Passage Model estimates that increased South Delta exports increase the survival of salmon, including fall-run and spring-run Chinook salmon, as discussed *supra*. The DEIR is internally inconsistent, and it fails to provide a reasoned explanation to support the Delta Passage Model's estimate that increased pumping in the South Delta will increase survival of migrating salmon from the Sacramento River.

In addition, the proposed bypass flows for the North Delta under all alternatives are significantly weaker for the months when spring-run Chinook salmon are migrating through the Delta. The

proposed pulse protection requirements require lower bypass flows under Level 2 and Level 3 than Level 1, and the DEIR indicates that Level 2 and Level 3 pulse protection criteria can apply as early as February. *See* DEIR, Appendix 5A-B, at 5B-58. This results in greater diversions from the North Delta and further reduces flows below the intakes; for instance, between December and April under Level 3 pulse protection, if flows are only 15,000 cfs, the North Delta could divert 3,000 cfs (50% of the flows over 9,000 cfs), reducing flows to 12,000 cfs, whereas under Level 1 pulse protection, if flows are only 15,000 cfs, the bypass flow requirement would be 15,000 cfs – allowing no pumping from the north Delta. *Id.* These weaker protections under Level 2 and Level 3, which would occur more frequently when spring-run Chinook salmon are migrating, would result in significantly lower survival of migrating spring-run Chinook salmon. In addition, the proposed bypass flows are significantly weaker in the months of May, despite the fact that May is a significant month for young of the year spring run Chinook salmon migration through the Delta. *See* DEIR at 12-132. For instance, when flows are only 20,000 cfs at Freeport in May, the pulse protection rules under Level 1 would allow diversion of 2,100 cfs, while Level 2 would allow diversion of 5,250 cfs and Level 3 would allow diversion of 7,600 cfs. DEIR at 3-153. While the DEIR assumes flows in the Sacramento River that are greater than regulatory minimums in the winter and spring months, such flows are not reasonably certain to occur, given the effects of climate change, droughts, and additional water diversion and storage projects. These inadequate bypass flow criteria for the proposed project and alternatives would result in far more severe environmental impacts on spring-run Chinook salmon that are not adequately considered in the DEIR.

Taken together, these operational provisions will not only reduce survival and subsequent abundance of spring run Chinook salmon in general, but will adversely affect life history diversity by further reducing survival of late migrating salmon. *See supra* note 22. The DEIR does not consider these adverse effects to life history diversity from the proposed project and alternatives, which threaten the viability of this species.

*3. The DEIR’s Conclusion that Operational Criteria and Habitat Restoration will Fully Mitigate Impacts is Arbitrary and Capricious*

As discussed with respect to winter-run Chinook salmon, the DEIR’s conclusory statements that habitat restoration and operational criteria will fully mitigate significant impacts to spring-run Chinook salmon fails to use the best available science and is unsupported by the evidence. The proposed project and alternatives result in significant adverse impacts that require operational changes to reduce these impacts to a less than significant level.

***C. Fall-Run Chinook Salmon***

Even though the DEIR explains that the “operations of the north Delta intakes would have negative effects on fall- and late fall-run Chinook in a generally similar manner to what was discussed for winter- and spring-run Chinook salmon,” DEIR at 12-143, the DEIR concludes that the impacts to fall-run Chinook salmon would be less than significant before mitigation, *id; see*

DEIR at ES-34. As with the flawed analysis of impacts to winter-run and spring-run Chinook salmon, the DEIR relies on flawed analytical methods that underestimate impacts to fall-run Chinook salmon, and the DEIR erroneously concludes that habitat restoration measures proposed for impacts to other species will benefit fall-run Chinook salmon as well. *See supra* section VI(a)(3). In addition, the DEIR also fails to consider important aspects of the problem such as the effects of climate change and the use of TUCPs that worsen survival of fall-run Chinook salmon migrating down the Sacramento River and through the Delta. In contrast to the findings in the DEIR, the proposed project and alternatives are likely to have substantial adverse impacts on fall-run Chinook salmon, particularly in light of the inadequate bypass flows proposed for North Delta diversions under all alternatives.

The proposed North Delta bypass flows would have unreasonable and severe impacts on migrating fall run Chinook salmon that are not adequately considered in the DEIR. As the DEIR admits, fall-run Chinook salmon can migrate through the Delta throughout the winter and spring months, including through June. DEIR at 12-137. However, the North Delta bypass flows generally allow more diversions, and require lower bypass flows, later in the spring. For instance, the proposed bypass flows are only 5,000 cfs in the month of June, which would result in far greater reductions in river flow and salmon survival through the Delta in that month. DEIR at 12-137; *id.* at 12-102 (estimating that juvenile salmon survival through the Delta under the proposed project is reduced in the month of June by 4% in wet years and 10% in above normal years). As noted *supra* with respect to spring-run Chinook salmon, the bypass criteria are also weaker for the month of May, and Level 2 and Level 3 pulse protection likewise provide less protection for fall-run Chinook salmon that migrate later in the spring. Moreover, while the DEIR appears to assume there will be no diversions from the North Delta in May or June of Below Normal, Dry, and Critically Dry years, *see* DEIR at 12-102, the proposed project and alternatives do not prohibit use of the North Delta diversions in those months and years.<sup>23</sup>

#### ***D. Central Valley Steelhead***

Like winter-run Chinook salmon, the DEIR admits that the proposed project is likely to result in significant impacts to Central Valley steelhead as a result of reduced flow through the Delta. DEIR at 12-152. The DEIR also fails to consider important aspects of the problem such as the effects of climate change and the use of Temporary Urgency Change Petitions that worsen

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<sup>23</sup> The DEIR also erroneously assumes that South Delta entrainment of fall-run Chinook salmon would be limited because of protections for spring-run and winter-run Chinook salmon. DEIR at 12-138. However, existing OMR regulatory requirements explicitly do not apply to fall run Chinook salmon, and existing OMR requirements also fail to specifically protect young of the year spring-run Chinook salmon from entrainment and losses in the South Delta. *See also* Exhibit D. Moreover, under the proposed project, South Delta exports would increase in May (Wet, Above Normal, and Below Normal water year types) and would increase in April (Dry and Critically Dry water year types). DEIR at 12-141. This would likely cause additional adverse effects on fall-run Chinook salmon that are not adequately considered in the DEIR. *See* Cunningham et al 2015.

survival of steelhead down the Sacramento River and through the Delta. The DEIR also misstates the conclusions of Buchanan et al 2021 regarding the effects of exports on survival of steelhead, concluding that increased South Delta pumping during April and May by the CVP under continuation of the Trump Administration’s biological opinions would have “no difference in juvenile through-Delta survival.” See DEIR at 12-150. The State of California rejected this position in its filings with the federal court in 2021. See Exhibit B. Buchanan et al 2021 found that the San Joaquin River inflow: export ratio is strongly correlated with through-Delta steelhead survival, and the paper specifically warned that its conclusions should not be used to justify changes in management. See also Exhibit D.

As with respect winter-run Chinook salmon, the DEIR erroneously concludes tidal marsh and channel margin habitat restoration would reduce these impacts to a less than significant level, assertions that fail to use the best available science and are not supported by substantial evidence. The DEIR cites studies that do not demonstrate that habitat restoration would improve survival of migrating salmon, let alone provide survival benefits to migrating steelhead sufficient to offset the adverse impacts of reduced flow. See *supra* section VI(a)(3); see also DEIR at 12-152 (citing Brown 2003 to conclude that tidal habitat restoration “would have the potential” to provide foraging habitat for steelhead). Any comparison of Chinook Salmon shallow water habitat usage to that of Steelhead would be size-specific. Migrating juvenile Steelhead are the size of very large juvenile Chinook Salmon; the scientific literature provides no evidence that large Chinook Salmon smolts benefit from shallow-water rearing habitats (see, e.g., Iglesias et al. 2017; Henderson et al. 2018; Pope et al. 2018), and because the DEIR infers the behavior of migrating Steelhead from Chinook salmon smolt behavior, then steelhead would not be expected to benefit significantly from restored sub-tidal wetland rearing habitat. Moreover, the DEIR admits that “juvenile steelhead’s association with habitat variables is weaker than juvenile Chinook salmon,” *id.*, further demonstrating that the DEIR’s conclusion that habitat restoration would reduce these impacts to a less than significant level is arbitrary and capricious.

### ***E. Delta Smelt***

The DEIR erroneously claims that the proposed project and alternatives would result in a less than significant impact to Delta Smelt. DEIR at ES-72. This conclusion is contrary to the evidence, particularly given the extremely dire status of the species. As with other species, the DEIR also fails to consider important aspects of the problem including the effects of climate change and the use of TUCPs that worsen the survival of Delta Smelt.

The DEIR identifies a number of adverse effects on Delta Smelt from the proposed project and alternatives, including reduced abundance of important prey species like *E. affinis* and *P. forbesi*, increased water clarity that results from sediment entrainment in the North Delta intakes, and reduced summer/fall habitat for Delta Smelt. DEIR at 12-5. However, the DEIR fails to adequately consider the severity and implications of these impacts. Since the population is declining towards extinction under existing conditions, the DEIR fails to provide a reasoned

explanation why any further adverse impacts to Delta Smelt would not constitute a significant adverse impact under CEQA. Cal. Code Regs., tit. 14, § 15065(a)(1).

For instance, the DEIR fails to explain why it does not use existing life cycle models (e.g., Rose et al 2013, Polansky et al 2021) to assess the impacts of the proposed project and alternatives. These life cycle models have identified important variables that affect Delta Smelt, including the positive effect of spring outflow on Delta Smelt recruitment, that the DEIR wholly fails to consider. *See* Polansky et al 2021. With respect to summer and fall outflow, the DEIR fails to explain why the reductions in summer and fall outflow under the proposed project and alternatives, which the best available science shows would reduce survival and recruitment of Delta Smelt, do not constitute a significant impact. *Id.*; *see also* DEIR at 12-175 to 12-176.

With respect to effects of the proposed project on entrainment of sediment and turbidity in the Delta, the DEIR also fails to explain why it does not use existing models to quantitatively analyze the effects of North Delta diversions on turbidity in the Delta. *See* Achete et al 2015; Martyr-Koller et al., 2017. Instead, the DEIR speculates that these effects on turbidity “**may be limited** by future increases in sediment entering the Delta,” DEIR at 12-176, as a result of more severe storms “over the next century” as a result of climate change, *id.* at 165 (emphasis added). Here, the DEIR selectively and improperly relies on potential effects from climate change in the future (potential for increased sediment by 2040) compared with existing conditions today. Moreover, the DEIR’s analysis focuses on sediment, rather than suspended sediment (turbidity), despite the availability of existing models to analyze effects on suspended sediment (turbidity), and it does not account for the limitations and uncertainty of the conclusions in Stern et al 2020.<sup>24</sup>

In addition, the DEIR repeatedly asserts that food availability is a limiting factor for Delta Smelt, *see* DEIR at 12-13, yet the DEIR fails to consider the effects of CVP/SWP pumping in the South Delta on primary and secondary productivity. The DEIR includes modeling of effects of North Delta pumping on phytoplankton, concluding that the proposed project and alternatives would generally entrain zero to eight percent of the phytoplankton carbon. DEIR at 12-171 to 12-174; *id.*, Appendix 12B, at 12B-164 to -165. However, while the DEIR mentions Hammock et al 2019 and qualitatively discusses the effects of SWP/CVP pumping in the South Delta on phytoplankton, the DEIR does not disclose the conclusion of Hammock et al 2019 that SWP/CVP South Delta pumping reduces phytoplankton abundance by 74 percent, nor does the DEIR use the model to analyze the effects of SWP/CVP south Delta operations on phytoplankton abundance. The DEIR must be revised to consider these important aspects of the problem.

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<sup>24</sup> In addition, Stern et al 2020 concludes that the RCP 4.5 and 8.5 ensemble averages did not show a statistically significant increase in suspended sediment concentration (SSC), explaining that “the nonsignificant trends of a levelling off or decline of sediment are also plausible outcomes,” and identifying many sources of uncertainty and limitations in the study.

Finally, the DEIR asserts that the proposed project and alternatives may result in reduced entrainment of Delta Smelt, but these potential benefits are not reasonably certain to occur because the proposed project and alternatives do not require reduced pumping in the South Delta or less negative OMR values, and instead propose the continuation of the Trump Administration’s biological opinions for the South Delta. In addition, the DEIR fails to discuss how there is no safe level of entrainment for Delta Smelt, as any level of entrainment mortality reduces the existence of the species. *See* Exhibit D.

Taken together, the available evidence shows that the proposed project is likely to cause significant impacts to Delta Smelt.

### ***F. Longfin Smelt***

The DEIR’s analysis of impacts to Longfin Smelt fails to accurately assess and disclose the significant environmental impacts that would result from the proposed project and alternatives. The DEIR uses flawed methodology that fails to use the best available science and substantially underestimates the severity of adverse impacts to Longfin Smelt. In addition, the DEIR erroneously concludes that tidal marsh habitat restoration would mitigate these impacts to a less than significant level, which is inconsistent with the best available science and is not supported by substantial evidence.

The DEIR grudgingly admits that the reduction in Delta outflow caused by the proposed project and alternatives would reduce the population of Longfin Smelt by 4-10% under the proposed project, which would constitute a significant impact under CEQA. DEIR at 12-198. However, the text of the DEIR and the methodology used in the DEIR to assess these impacts – like that used by DWR and rejected by the California Department of Fish and Wildlife in 2020 – tends to “obscure” the effects of the proposed project and “have the consistent effect of downplaying the effect” of the proposed project, thereby failing CEQA’s mandate to accurately inform the public and decisionmakers of the likely environmental impacts of the proposed project and alternatives. *See* California Department of Fish and Wildlife, Findings of Fact of the California Department of Fish and Wildlife Under the California Endangered Species Act, Attachment 7 (Effects Analysis, State Water Project Effects on Longfin Smelt and Delta Smelt, March 2020), at 74, attached hereto as Exhibit G.

For instance, despite the California of Fish and Wildlife rejecting the use of very similar methodology in 2020 and requiring use of the “‘Kimmerer regression’ approach” instead, *id.* at 74-75, DWR in this DEIR fails to even present results using the Kimmerer regression approach. And despite the California Department of Fish and Wildlife’s reminder to DWR of “the scientific literature’s consistent conclusions about the effects of Delta outflow to LFS abundance,” *id.* at 75, the DEIR mischaracterizes the consistent scientific conclusions regarding the adverse effects of reducing Delta outflow on Longfin Smelt by describing the effects as “uncertain,” *see* DEIR at 12-198, by claiming that changes in abundance are “were very small relative to the variability in the predicted values, which spans several orders of magnitude,” *id.* at 12-194, or by erroneously



claiming that Napa River flows are more important than Delta outflow for Longfin Smelt population dynamics, *id.* at 12-195. Notwithstanding DWR’s attempts to obfuscate the scientific consensus, numerous peer reviewed scientific studies going back decades have consistently found that winter-spring Delta outflow is a driving factor in Longfin Smelt recruitment and population dynamics. *See, e.g.*, Nobriga and Rosenfield 2016; Thomson et al 2010; MacNally et al 2010; Kimmerer 2002; Kimmerer 2009; Jassby et al 1995. Most recently, in proposing to list Longfin Smelt as endangered under the federal Endangered Species Act, the U.S. Fish and Wildlife Service concluded that,

We consider reduced and altered freshwater flows resulting from human activities and impacts associated from current climate change conditions (increased magnitude and duration of drought and associated increased temperatures) as the main threat facing the Bay-Delta longfin smelt due to the importance of freshwater flows to maintaining the life-history functions and species needs of the DPS. However, because the Bay-Delta longfin smelt is an aquatic species and the needs of the species are closely tied to freshwater input into the estuary, the impact of many of the other threats identified above are influenced by the amount of freshwater inflow into the system (i.e., reduced freshwater inflows reduce food availability, increase water temperatures, and increase entrainment potential).

87 Fed. Reg. at 60963.<sup>25</sup>

The DEIR also attempts to downplay other adverse effects of the proposed project and alternatives on Longfin Smelt. For instance, the DEIR’s modeling shows reduced abundance of prey species important to Longfin Smelt, including *E. affinis* and mysid shrimp. DEIR at 12-193. However, using language that is nearly identical to the DEIR’s attempts to mislead the reader regarding the effects of Delta outflow on Longfin Smelt, the DEIR claims that the reduced abundance of *E. affinis* caused by the proposed project and alternatives “are much less than the range of the prediction intervals from this statistical model, which span several orders of magnitude,” and concludes that there is little potential for negative effects on Longfin Smelt with respect to food availability, *id.* Moreover, the DEIR does not actually model the effects of the proposed project on mysid abundance (the word “mysid” does not appear in Appendix 12B), and the DEIR’s conclusory statements lack any evidentiary support in the DEIR. And with respect to entrainment of Longfin Smelt, the DEIR shows that the proposed project and alternatives would

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<sup>25</sup> The DEIR fails to adequately consider that proposed projects to increase diversions from the Bay-Delta, like Sites Reservoir, would also produce negative effects to Longfin Smelt from reduced Delta Outflow, even though the NEPA documents for Sites Reservoir misapplies methods to compare project alternatives with the No Project Alternative, thus underestimating adverse impacts. *See* Sites RDEIR/SDEIS at 11-270 to 11-272. Similarly, with respect to the environmental baseline, the DEIR fails to adequately disclose the major increases in larval and juvenile entrainment resulting from the Incidental Take Permit, which also causes significant reductions in abundance to Longfin Smelt from reduced Delta Outflow. *See* ITP Final EIR at 4-177 to 4-186.

likely result in an increase in entrainment of larval Longfin Smelt. DEIR at 12-188 to 12-190. Given the endangered status of the species, each of these adverse effects are likely to cause significant effects individually and in combination.

The DEIR's conclusion that restoration of less than 150 acres of tidal marsh habitat would reduce these impacts to a less than significant level<sup>26</sup> is arbitrary and capricious. *See* DEIR at 12-198. The DEIR does not cite any scientific studies demonstrating that restoring tidal marsh habitat will increase the abundance of Longfin Smelt, nor is there any credible scientific basis to conclude that the scale of tidal marsh habitat proposed in the DEIR would lead to measurable increases in abundance. While Longfin Smelt may have been found near a restored tidal marsh, *see* DEIR at 12-198, the mere presence of larval Longfin Smelt at a restoration site does not provide scientific evidence demonstrating that restoration of more acres of tidal marsh habitat would increase abundance of Longfin Smelt. For example, results of a preliminary otolith chemistry "fingerprinting" study concluded that, "...of the adult fish that were classified with moderate confidence (e.g., 75%), nearly all appeared to have reared in the northern SFE ..." Lewis et al. 2019 at 9 and Figures 17 and 18. Furthermore, decades of shallow tidal habitat restoration in the San Francisco Bay-Delta estuary have produced no noticeable effect on Longfin Smelt abundance or productivity – in fact, declines have been observed repeatedly in both of these attributes of population viability. The U.S. Fish and Wildlife Service recently concluded that,

The loss of tidal marsh habitats may have hampered [Longfin Smelt] productivity, but to date, there are no indications that restoration has been sufficient to stem the decline. Therefore, we cannot conclude whether or not the species has lost resilience due to landscape changes that occurred in the 19th and 20th centuries.

U.S. Fish and Wildlife Service, Species Status Assessment for the San Francisco Bay-Delta Distinct Population Segment of the Longfin Smelt, available online at: <https://www.regulations.gov/document/FWS-R8-ES-2022-0082-0003/content.pdf>, at 56. The DEIR fails to provide a reasoned explanation for its assumption that less than 150 acres of tidal marsh habitat restoration would mitigate these impacts of reduced Delta outflow, particularly given the improvements in scientific understanding in the past decade (*see, e.g.*, Herbold et al. 2014, Nobriga and Rosenfield 2016) and the continued decline in abundance of Longfin Smelt over the past decade despite the habitat restoration required under the prior Longfin Smelt ITP and other actions.

Similarly, while the DEIR cites Lewis et al 2020 to suggest that restored tidal marsh habitat would benefit Longfin Smelt, Lewis et al 2019 and Lewis et al 2020 do not support the DEIR's conclusion. Most notably, Lewis et al 2019 states clearly that the value of restored shallow

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<sup>26</sup> Of course, the proposed project and alternatives would not only have to reduce impacts to a less than significant level, but has to ensure that these impacts are "fully mitigated under CESA. Cal. Fish & Game Code § 2081(b)(2). The DEIR claims that this tidal marsh restoration would "reduce the potential effects caused by reduced outflow," but does not claim that it would fully mitigate these impacts. As discussed herein, it would not.

subtidal habitats “remains unknown.” Lewis et al 2020 reports findings from “...previously undescribed aggregations of Longfin Smelt that were attempting to spawn in restored and underexplored tidal wetlands of South San Francisco Bay.” There is no evidence that restoration activities in these areas of South San Francisco Bay generated any positive effect for Longfin Smelt. In fact, Longfin Smelt occupancy of and recruitment in these restored shallow marsh habitat in South San Francisco Bay appears to be dependent on freshwater flow. Lewis et al 2019 observed successful recruitment of Longfin Smelt larvae to marshes in South San Francisco Bay only in years of locally high freshwater flow into the Bay; during other years, adult Longfin Smelt returning to and spawning in the vicinity of the South Bay Salt Ponds may have represented an ecological sink. And there is no evidence that Longfin Smelt benefited from the existence of the restored shallow sub-tidal habitat in years that were not wet. Regarding their detections of substantial numbers of Longfin Smelt west of Suisun Bay, which occurred primarily during the wet years 2017 and 2019 (and, for restored South Bay salt ponds, only during those two years), they state: “... it is valuable to consider whether, with high Delta outflows, it is feasible and probable that larval and juvenile Longfin Smelt found in high numbers in San Pablo Bay, and even Lower South San Francisco Bay, could have been transported from Delta and Suisun Bay spawning sites by currents, tides, and winds.” *Id.* Thus, these papers do not support the DEIR’s claim that tidal marsh habitat restoration would mitigate the effects of reduce Delta outflow.

Furthermore, there is little evidence for any mechanism connecting the extent of shallow sub-tidal marsh environments to viability of the estuary’s Longfin Smelt population. Contrary to the assumption that restoration of shallow tidal habitat will increase abundance and productivity of the SF Longfin Smelt population by increasing larval production, the local Longfin Smelt population does not appear to be limited by larval production, which is relatively consistent from year to year and shows no correlation with Delta outflow. *See, e.g.,* Dege and Brown 2004; Eakin 2021. Whereas Longfin Smelt larvae are observed in shallow marsh environments, it is not clear what percentage of the population makes use of these areas and the duration of residence in shallow marsh habitats appears to be very short (<1 month). Juvenile Longfin Smelt are rare in shallow, sub-tidal marsh and so would not be expected to benefit from restoration of such habitats. There is also little evidence for a substantial positive effect on SF Longfin Smelt of prey items exported from shallow sub-tidal habitats. For example, although Hammock et al. 2019 found potential support for the hypothesis that tidal marshes can improve Delta Smelt foraging success on the margins of marsh habitats, Hammock et al 2019 did not find evidence to support the hypothesis that tidal marshes export zooplankton to other parts of the estuary. This potential mechanism of providing foraging habitat would likely be less important for Longfin Smelt, given that they aggregate in habitats that are distant from shallow marshes.

Despite the lack of evidence that restored shallow tidal marsh habitat can mitigate for the negative effects of reduced Delta Outflow and increased entrainment of Longfin Smelt, the DEIR explains that it relies on an unpublished 2010 memorandum by Daniel Kratville (“Kratville 2010”) to calculate the acreage required to mitigate impacts from “flow-related impacts.” *Id.*, Appendix 3F, at 3F.1-14; *see id.*, Appendix 12B, at 12B-204 to 12B-205. However, Kratville

2010, which has never been peer-reviewed, only considered the effects of SWP “exports” on entrainment of Delta Smelt and Longfin Smelt, and it did not consider the effects of reduced Delta outflow on the abundance of Longfin Smelt. For instance, Kratville 2010 states that, “This analysis does not take into account the effect of the pumps on elements of delta smelt critical habitat in the estuary such as nutrients, primary production, and secondary production.” Kratville 2010 at 6.<sup>27</sup>

The Kratville 2010 methodology is based solely on entrainment of particles as a surrogate for entrainment of larval and juvenile Delta Smelt and Longfin Smelt. Kratville 2010 uses the same approach to calculating mitigation requirements for the effects of pumping on Delta Smelt and Longfin Smelt, even though the effect of winter-spring Delta outflow on Longfin Smelt population dynamics and geographic distribution are very different from, and much stronger than, the effects of Delta outflow on Delta Smelt. Indeed, the words “outflow” and “X2” do not appear in Kratville 2010, and there is nothing to suggest that this analysis accounts for the effects of reduced Delta outflow on Longfin Smelt abundance.<sup>28</sup> For all of these reasons, the DEIR’s

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<sup>27</sup> Similarly, the 2009 incidental take permit for operations of the State Water Project required 800 acres of tidal marsh habitat restoration that was explicitly intended to mitigate the effects of entrainment of larval and adult Longfin Smelt. Attachment B to the 2009 incidental take permit explains that,

The pumping restrictions and operational measures will not, however, fully minimize and mitigate the take of longfin smelt-some longfin smelt will still be lost at the pump. Therefore, the ITP requires further measures to mitigate for these losses. The habitat restoration measures of the ITP, which require DWR to restore 800 acres of longfin smelt habitat in specific locations, will provide mitigation that is roughly proportional to the portion of the longfin smelt population that will be taken after application of the other Conditions of Approval.

California Department of Fish and Wildlife, California Incidental Take Permit 2081-2009-001-03, Attachment B, at 8; see id. (“The Effects Analysis also helps to explain how the Conditions of Approval in the ITP **will minimize and fully mitigate this loss or entrainment in the case of larvae.**” (emphasis added). There is no evidence in that permit that the 800 acres of tidal marsh habitat restoration was intended to mitigate the effects of reduced abundance from decreased Delta outflow.

<sup>28</sup> The DEIR also claims that Longfin Smelt could benefit from tidal habitat restoration because the State Water Project’s Incidental Take Permit includes “tidal marsh habitat restoration required for outflow impacts to the species.” DEIR at 12-198. Yet the California Department of Fish and Wildlife’s 2020 Incidental Take Permit does not state that tidal marsh habitat is required to mitigate the effects of reduced outflow; in fact, the agency included Condition of Approval 8.17 to limit the reduction of Delta outflow, concluding that, “Because SWP exports have the effect of reducing outflow, including during the spring, Condition of Approval 8.17 is a key measure to minimize the Project’s impacts to LFS in the form of population abundance

reliance on the Kratville 2010 methodology to calculate mitigation for the effects of reduced Delta outflow on Longfin Smelt is plainly arbitrary and capricious.

### **G. Green and White Sturgeon**

The DEIR fails to adequately consider and disclose significant environmental impacts to Green and White Sturgeon, concluding that the impacts of the proposed project and all alternatives will be less than significant. DEIR at ES-34.

The southern distinct population segment of Green Sturgeon, which spawns in the Sacramento River and rears in the Delta, is a federally threatened species. White Sturgeon are a State species of special concern. Both populations experienced extreme rates of mortality in 2022 following an unprecedented bloom of the harmful algae, *Heterosigma akashiwo*; this has raised concerns over the viability of both populations in the San Francisco Bay estuary.

For instance, the DEIR acknowledges that Delta outflows are positively correlated with White Sturgeon recruitment and rearing success in this estuary, and are also likely correlated with recruitment of Green Sturgeon. DEIR at 12-202, 12-208; see Israel et al 2009 (citing Kolhorst et al 1991); USFWS 1995; AFRP 2001 Final Plan; NMFS 2010 Testimony to the SWRCB, Exhibit 9. The DEIR indicates that the reduction in Delta outflow from March to July caused by the proposed project and alternatives would likely reduce White Sturgeon year class strength substantially, reducing year class strength by 3% in Wet years, 13-17% in Above Normal years, 15-25% in Below Normal Years, and reducing year class strength from 1 to zero in dry years. DEIR at 12-208. Yet the DEIR erroneously claims these sizeable reductions in abundance are less than significant because of uncertainty. *Id.* at 12-209. Although the DEIR is correct that the mechanism behind these effects is uncertain, *id.* at 12-208, these relationships between Delta outflow and white sturgeon are the best available science, and given the population status of these species, even small reductions constitute a significant impact under CEQA.

Similarly, migration and dispersal of juvenile and larval White Sturgeon and Green Sturgeon will likely be significantly and adversely affected by reduced flows below the North Delta Diversion under the proposed project and alternatives. Israel and Klimley 2008 indicate that the volume of flow in the middle and lower Sacramento River is a stressor that can limit transport and dispersal of larval and juvenile Green Sturgeon; Israel et al 2009 identifies the same potential stressors for White Sturgeon, and rates “flow operations” as the stressors with the highest possible importance and understanding for this species. The proposed project and alternatives would substantially

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reductions.” See Exhibit G at 85; *id.* at 75 (admitting that Alternative 2b, which included Condition of Approval 8.17, would result in a lesser reduction in the Fall Midwater Trawl index of Longfin Smelt abundance than the proposed project, but still resulted in reduced abundance). In addition, NRDC and other plaintiffs are challenging the 2020 Incidental Take Permit in court, and the mere fact that this prior permit used similar calculations of mitigation measures does not provide any justification for its continued use in the DEIR, given the clearly arbitrary use of Kratville 2010.

reduce flows below the North Delta Diversions, including during the August to March period when Green Sturgeon juveniles would be in the lower Sacramento River.

In addition, the DEIR fails to consider the adverse effects of increased predation as a result of the proposed project. For instance, reduced turbidity – as a result of NDD entrainment of suspended sediment, as well as a result of reduced flows below the NDD – is likely to increase predation of Green Sturgeon and White Sturgeon. Israel and Klimley 2008 and Israel et al 2009 both indicate that predation may be a concern to the youngest/smallest life stages of both sturgeon species, when they are in the riverine environment. Increased water clarity increases predator efficiency on sturgeon. Gadowski and Parsley 2005. Reduced flows and reduced turbidity caused by the proposed project and alternatives are likely to exacerbate the increased predation rates that might arise from either of the individual impacts. Reducing river flows below the new North Delta Diversion may also concentrate predators and prey into a smaller area, may cause a drop in river depth (stage) that will allow sunlight to penetrate through more of the water column, to depths that represent prime sturgeon habitat in many places. And the proposed cylindrical tee-screens located on the river bottom are likely to create new predation hot spots, a common problem with existing water infrastructure in the Delta. The DEIR does not consider potential adverse impacts from increased predation as a result of the proposed project and alternatives.

Finally, the DEIR's conclusions regarding entrainment and impingement of Green Sturgeon and White Sturgeon at the NDD are arbitrary and capricious. For instance, the DEIR asserts that there would be "no risk of entrainment at the north Delta intakes" of larval Green Sturgeon and very small effects on juvenile Green Sturgeon. DEIR at 12-200. However, unlike salmonids, Green Sturgeon adults and juveniles are generally found near the bottom of the water column. See DEIR at 12A-51 (citing Chapman et al 2019 and Thomas et al 2019). These concerns are even greater for White Sturgeon, given the geographic distribution of larval White Sturgeon throughout the Delta. DEIR at 12-206. The cylindrical tee-screens located on the river bottom under the proposed project and alternatives are likely to cause adverse effects on Green Sturgeon from impingement and entrainment, yet the DEIR fails to even consider potential impingement and exclusively discusses entrainment, unlike with respect to other species. The DEIR fails to provide a reasoned explanation for its conclusions, given that Green Sturgeon and White Sturgeon are generally found along the bottom of the water column and the DEIR does not discuss impingement.

## **VII. The DEIR's Assessment of Water Quality Impacts is Inadequate:**

Finally, the DEIR's conclusions that the proposed project and alternatives would have less than significant impacts to water quality, DEIR at ES-32, is not supported by substantial evidence. These conclusions also fail to consider important aspects of the problem, particularly the effects of climate change (which will increase water temperatures and the formation of harmful algal blooms), and the use of Temporary Urgency Change Petitions to allow for violations of salinity

and other water quality standards. That is particularly true for impacts regarding chloride (salinity), turbidity,<sup>29</sup> and harmful algal blooms.

With respect to salinity, the DEIR demonstrates that the proposed project and alternatives would increase salinity at several locations in the Delta, including Emmaton and Three Mile Slough, and would increase the frequency of violating the water quality standards for the Sacramento River at Emmaton, the San Joaquin River at Jersey Point, and the San Joaquin River at Prisoner's Point. DEIR at 9-89 to 9-90, 9-93, 9-94; *id.*, Appendix 9G-1, at 9G-8. Moreover, the DEIR's claims regarding compliance with water quality standards and use of real time operations to avoid these modeled violations of water quality standards, DEIR at 9-94, fails to consider the routine violation of salinity standards in the Bay-Delta Water Quality Control Plan during critically dry years since 2014 pursuant to Temporary Urgency Change Petitions, the reasonably foreseeable continuation of such violations in future droughts, and the adverse environmental impacts that result of use of Temporary Urgency Change Petitions. Because a violation of water quality standards constitutes a significant impact under CEQA, the DEIR fails to comply with CEQA.

With respect to harmful algal blooms, the DEIR fails to consider the adverse effects of reduced Delta outflow (X2) on the increased magnitude, duration, and intensity of harmful algal blooms. DEIR at 9-26 to 9-27, 9-154. Peer reviewed scientific studies by scientists with DWR conclude that even small shifts in the location of X2 increase harmful algal blooms. For example, Lehman et al. 2020 concluded that even small changes in the location of X2 will dramatically increase the abundance and distribution of harmful algal blooms because there was a "strong correlation of *Microcystis* abundance with the X2 index and water temperature," with their model finding that outflow and water temperatures explained 58-78% of the variation in bloom surface. Most notably, the paper concludes that,

Importantly, relatively small changes in the location of the X2 index may be important. A shift of the X2 index by only 3 km was associated with a factor of 3 increase in the percent abundance of subsurface *Microcystis* cells in the cyanobacterial community between the extreme drought years 2014 and 2015 (Lehman et al., 2018). Similarly, the increase in the X2 index from 71 km in July to between 75 and 76 km in August and September may have facilitated retention of cells in the central Delta during the peak of the bloom in 2017.

Lehman et al. 2020. This finding is consistent with other research from the Bay-Delta, which has found that the frequency of these blooms is closely linked to water residence time (i.e., flow rates). Berg M and Sutula M. 2015. Factors affecting the growth of cyanobacteria with special emphasis on the Sacramento-San Joaquin Delta. Southern California Coastal Water Research Project, Technical Report 869 August. More recently, Lehman et al 2022 concluded that X2 (Delta outflow) and water temperature predict much of the variation in *Microcystis* surface

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<sup>29</sup> See *supra* page 43 regarding the analysis of impacts to turbidity.

biovolume, that it was “not unexpected that the X2 index would account for most of the variation in the *Microcystis* bloom abundance” in the Delta, and that the *Microcystis* bloom in 2014 peaked when X2 was above 85 km. The DEIR’s failure to consider the proposed project and alternatives’ adverse effects of reduced Delta outflow on the formation and extent of harmful algal blooms violates CEQA.

The DEIR’s conclusions regarding water quality impacts fail to consider important aspects of the problem and are not supported by substantial evidence.

### VIII. Conclusion

The DEIR fails to comply with CEQA, and it must be substantially revised to provide the public and decision-makers with accurate information regarding the effects of the proposed project and alternatives, and recirculated for public comment.

Thank you for consideration of our views.

Sincerely,



Doug Obegi  
Natural Resources Defense Council



Gary Bobker  
The Bay Institute



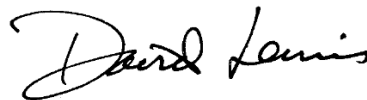
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**Enclosures**