Eric J. Buescher (SBN 271323)
SAN FRANCISCO BAYKEEPER
Email: eric@baykeeper.org

Attorney for San Francisco Baykeeper

Donald B. Mooney (SBN 153721)
LAW OFFICE OF DONALD B. MOONEY
417 Mace Blvd, Suite J-334
Davis, CA. 95616
Telephone: 530-304-2424
Email: dbmooney@dcn.org

Attorney for Friends of the River, California Sportfishing Protection Alliance, Save California Salmon, and Sierra Club

John T. Buse (SBN 163156)
Frances Tinney (SBN 346927)
CENTER FOR BIOLOGICAL DIVERSITY
1212 Broadway, Suite 800
Oakland, California 94612
Telephone: (510) 844-7100
Facsimile: (510) 844-7150
Email: jbuse@biologicaldiversity.org
Email: ftinney@biologicaldiversity.org

Attorneys for Center for Biological Diversity

THE STATE OF CALIFORNIA
BEFORE THE STATE WATER RESOURCES CONTROL BOARD
ADMINISTRATIVE HEARINGS OFFICE

IN THE MATTER OF: SITES PROJECT AUTHORITY WATER RIGHT APPLICATION A025517X01 and accompanying WATER RIGHT APPLICATION 25517X01 and PETITIONS FOR RELEASE FROM PRIORITY OF STATE-FILED APPLICATIONS 25513, 25514, 25517 (UNASSIGNED PORTION), 22235, 23780, AND 23781 IN FAVOR OF WATER RIGHT APPLICATION 25517X01	**NGO PARTIES JOINT CLOSING BRIEF** Hearing Officer: Nicole L. Kuenzi

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Protestants San Francisco Baykeeper, Friends of the River, California Sportfishing Protection Alliances, Save California Salmon, Sierra Club, Center for Biological Diversity, and Water Climate Trust submit this Closing Brief regarding the Sites Joint Project Authority's ("Sites JPA") petition for Assignment of State-filed Application 25517 and accompanying water right Application 25517X01 and the Petitions for Release from priority of State-Filed Applications 25513, 25514, 25517 (unassigned portion), 22235, 23780, and 23781 in favor of water right Application 25517X01 ("Application and Petition"). For the reasons explained below, substantial evidence demonstrates that the Application and Petition should be denied.

I. INTRODUCTION

The Sites Reservoir Project is a water export and water transfer/exchange project that would divert water from the Sacramento River to the largest new reservoir to be built in California since 1978. It would transfer a majority of that diverted water south of the Sacramento-San Joaquin River Delta and San Francisco Bay. The Bay-Delta ecosystem and numerous species and communities that depend upon those waterways are already experiencing an ecological crisis due to decades of water diversions, dams, water quality degradation, and conversion of valuable habitat. Native species in the Bay-Delta ecosystem continue to be in severe decline. The Sites Project ("Project") will further harm these species and make recovery of historical fisheries, or even viable populations, more difficult and less likely. These unreasonable consequences are more likely than not to occur, unreasonable, and contrary to the public interest and California's policies, laws, and values to support thriving natural ecosystems. They are not mitigated or outweighed by the hypothetical environmental benefits touted by the Project, nor justified by the water supply objectives the Project seeks to achieve.

The State Water Resources Control Board ("State Board") has an affirmative duty under the Public Trust Doctrine to protect those resources and attempt, so far as feasible, to avoid or minimize any harm to public trust resources. In the Bay-Delta ecosystem, exercising this obligation to requires acting to *improve* conditions for fish and wildlife. Approving the Application and Petition would move in the opposite direction—exacerbating and accelerating the long-standing decline and recent collapse of endangered fish populations and Tribal, commercial, recreational, and subsistence fisheries. In determining the amount of water available for appropriation, the State Board must take into account, whenever it is in the public

interest, the amounts of water that needs to remain in the source for protection of beneficial uses, and those beneficial uses include any uses specified to be protected in any relevant water quality control plan.

The Sites Project constitutes another project that will contribute to the continuing decline of the Bay-Delta's fragile ecosystem and the native species that rely upon it for their survival. While in some instances the Sites JPA has worked to limit those environmental harms, like proposed refuge water deliveries, it acknowledges, as is undeniable, that diverting water from the watershed will have negative impacts. Those negative impacts require the Sites JPA to obtain an Operations Incidental Take Permit ("Operations ITP" [Ex. SITES-298]) under the California Endangered Species Act for Longfin Smelt, Delta Smelt, Spring-Run Chinook Salmon, Winter-Run Chinook Salmon, and White Sturgeon.

The evidentiary record demonstrates that the Project will reduce flows that support out-migration of juvenile salmonids, that provide migration cues for White Sturgeon and Green Sturgeon, and that provide critically needed flows to support the continued existence of Longfin Smelt and Delta Smelt. While Sites JPA attempts to characterize the flow changes or impacts as "small" or "statistically insignificant," they have outsized biological significance and real-world effects to an ecosystem already in severe crisis. Thus, question is whether the Bay-Delta can tolerate more harm, and whether that harm is worth it for the limited benefits of the Project. The record demonstrates it is not. Given the declining health of the Bay Delta ecosystem, the impacts would be unreasonable, and the project is not in the public interest.

The Project, including the operation of the reservoir, will also have impacts to terrestrial resources, including special status species. The Project will inundate over 13,000 acres of land, including habitat, farmland, homes, and Tribal cultural sites. The extent of that impact remains unknown, as the Sites JPA expressly prohibited its contract biologists from conducting biological surveys anywhere within the Project site under the guise that such activity may upset local residents.

The operation of the Project will also result in significant increases in greenhouse gas ("GHG") emissions, greater than estimated or reported, that Sites JPA failed to adequately address. The Project would also likely result in harmful algal blooms further impacting water quality, both by reducing flows into the Delta and releasing waters likely to have harmful bacteria and toxins. Sites reservoir will become a new source of methylmercury that will be discharged into waters that are already impaired from mercury.

And like many of the other impacts of the Project, the record demonstrates Sites JPA's proposed mitigation measures will not adequately address the impacts from methylmercury.

In addition to the impacts to the Bay-Delta's fragile ecosystem, significant uncertainty remains regarding the cost of Project water and the level of the United States Bureau of Reclamation's participation. The Sites JPA has either been unable or has refused to identify the unit costs of an acre-foot of water from the Project. The uncertainty of the unit costs of water calls into question the viability of a Project that will have significant environmental impacts. This level of uncertainty extends to the Project participants, as they have differing views as to the costs of Project water. While the Project may have water supply benefits for Project participants, these benefits are not as robust or necessary as asserted by the Sites JPA, and will come at a steep economic cost.

Those benefits become even more uncertain, though less likely and more expensive, under proposals to update the San Francisco Bay-Delta Water Quality Control Plan ("Bay-Delta Plan"). The Sites JPA did not analyze or present evidence about how compliance with an updated Bay-Delta Plan would impact the Project related to water availability, water cost, the season of diversion, or the magnitude of water supply benefits. Instead, it relied on an inexact proxy, rejected the appropriateness of the State Board's water availability tool incorporating a 55% unimpaired flow requirement, and sent a comment letter to the State Board explaining that adoption of proposed Program of Implementation options would result in a 30% reduction in yield from the Project.

Neither Sites nor the Bureau of Reclamation have been able to state with any certainty what the Bureau of Reclamation's level of participation will be. The testimony in the record states it is currently at 9 percent, but may go to 16 percent, while the Final Environmental Impact Report analyzed it 25 percent. Reclamation's level of participation will affect the operation of the Project with respect to operations in conjunction with Shasta Reservoir and water transfers.

With all the significant environmental impacts to an ecosystem in crisis and the financial uncertainty of the Project, the Sites JPA failed to adequately consider viable alternatives (other than various versions of a new reservoir) to a 1.5 million acre-foot reservoir, such as groundwater recharge projects, that could significantly reduce impacts to public trust resources.

Based upon the evidentiary record in these proceedings, the NGO Parties respectfully request that the State Board deny the Application and Petition.

II. EXISTING CONDITIONS AND REGULATIONS IN THE SACRAMENTO RIVER, DELTA, AND SAN FRANCISCO BAY ARE NOT PROTECTIVE OF PUBLIC TRUST RESOURCES, NATIVE FISH, OR FISHERIES

As the State Board explained in 2010: "The Sacramento-San Joaquin Delta is a critically important natural resource for California and the nation. It is both the hub of California's water supply system and the most valuable estuary and wetlands on the west coast of the Americas. The Delta is in ecological crisis." (Ex. BK-96 (State Board, 2010) at 13.)[1] Seven years later, the State Board confirmed that "it is widely recognized that the Bay-Delta ecosystem is in a state of crisis. [] Fish species have continued to experience precipitous declines since the last major update to the Bay-Delta Plan in 1995 that was intended to halt and reverse the aquatic species declines." (Ex. BK-98 at 27.)

A year later, the State Board confirmed again the degraded and declining status of the ecosystem and native fish:

> Native species in the Bay-Delta ecosystem are also experiencing an ecological crisis. For decades, valuable habitat has been converted…, the quality of water … has been degraded, there has been a substantial overall reduction in flows and significant changes in the timing and distribution of those flows, and species have been cut off from natal waters. This has led to severe declines, and in some cases extinctions, of native fish and other aquatic species. The overall health of the estuary for native species is in trouble, and expeditious action is needed on the watershed level to address the crisis…

(Ex. BK-99 (State Board 2018) at 4.)

And in 2024, U.S. EPA confirmed that these prior findings continue to be the reality facing the Delta and native fish: "a significant amount of comprehensive scientific information" indicates that "substantially more flow is needed in the Delta and Sacramento-San Joaquin watersheds to support aquatic life." (Ex. BK-82 [US EPA 2024 comment letter to State Board] at 4.) "Scientific consensus indicates that native fish population abundance is positively associated with flow volume [citations] and that large scale increases in both flow and habitat restoration are needed to recover and protect … native species." (*Id.*)

[1] Citations to Exhibits in this brief identify the party offering the exhibit, the exhibit number, and, where appropriate, a citation to the page number of the PDF file.

"Swift action is needed to address the imperiled state of the Delta and the species, communities, and economies that depend on this ecosystem for survival." (*Id.* at 5.)

The driver of this crisis is dams and diversions of flows out of the ecosystem. "The best available science suggests that current flows are insufficient to protect public trust resources." (Ex. BK-96 at 14.) "Declines [of native fish] are attributed in part to flow modifications due to dams and diversions and related operations. At certain times in some streams, flows are completely eliminated or significantly reduced by direct water diversions and impoundments in reservoirs. At other times, flows are increased from reservoirs, but then exported from the watershed before contributing to Delta outflow… A significant and compelling amount of scientific information indicates that restoration of more natural flow functions … is needed now to reverse the species declines." (Ex. BK-98 at 28.) "Water diversions and the corresponding reductions in flows those diversions cause are significant contributing factors" to native species decline. (Ex. BK-99 at 5-6; *see also* Ex. BK-11 at 4 [CDFW 2010].)

While actual flows that reach the Delta and San Francisco Bay are inadequate, they are substantially greater than the required regulatory flows in the status quo. As the State Board explained in 2023: "Total average annual unimpaired (without diversions and dams under current channel and infrastructure conditions) outflows from the Bay-Delta watershed are about 28.5 million acre-feet (MAF). Annual average outflows with diversions are a little more than half this amount at about 15.5 MAF, and outflows during the winter and spring from January through June are less than half. However, average regulatory minimum Delta outflows are only about 5 MAF, or about a third of current average outflows and less than 20 percent of average unimpaired outflows." (Ex. BK-103 at 10.) As a result, "existing regulatory minimum Delta outflows would not be protective of the ecosystem, and without additional instream flow protections, existing flows may be reduced in the future, particularly with climate change and additional water development absent additional minimum instream flow requirements that ensure flows are preserved in stream when needed for the reasonable protection of fish and wildlife." (*Id.*; *see also* Ex. BK-99 at 6; Ex. BK-115 at 56; Ex. BK-124 at 14.)

In addition to the impact on aquatic species, the reductions in flow also contribute to the increasing frequency and intensity of harmful algal blooms in the Delta. (*See* BK-1 at 71-73 (¶¶ 165, 168-172).).

These blooms occur under existing conditions in ways that harm or prevent enjoyment of beneficial uses. (HT Vol. XXVI at 6179:13-17 [Huber].)

Finally, the Sacramento River and the Bay-Delta watersheds are overallocated. Grantham and Viers found that the face value of water rights in the Sacramento River is 150% of its average annual runoff, and that the face value of water rights in the Bay-Delta watershed was 300% of its average annual runoff. (Ex. PCFFA-24 at 5, 8). State Board staff's Draft Staff Report for the update of the Bay-Delta Plan (2023) found that the face value of post-1914 appropriative water rights "Sacramento/Delta watershed" was five times its average annual runoff, not counting riparian or pre-1914 water rights, warning: "there is the potential for future development to increase the diversion and reduce Delta outflow." (Ex. AHO-279 at 258.)

III. LEGAL STANDARD

In reviewing the Petition and Application, the Board's responsibility is to fulfill state policy that the state's water resources "be put to beneficial use to the fullest extent of which they are capable." (Cal. Const., Art. X, § 2; Wat. Code, § 100.) The Water Code charges the Board with ensuring that development and use of the state's waters be conducted in a manner that allows for the greatest public benefit. (Wat. Code, §§ 102, 104, 105.)

In evaluating Sites JPA's Petition for Partial Assignment and the Water Rights Application, the Board's review and decision is governed by several legal standards that govern quasi-judicial administrative proceedings, and those regarding the State Board's obligations regarding water availability, public trust resources, the public interest, the California Endangered Species Act, the applicable Water Quality Control Plan, and the Clean Water Act. Each of these acts and legal doctrines place an affirmative duty on the State Board to protect the State's public resources in determining whether to approve the Application and Petition, as well as what permit terms may be required to avoid environmental impacts and protect public trust resources.

A. Evidentiary Burdens and standards

The State Board's Decision must be limited to the administrative hearing record and be based on substantial evidence. (*See* Code of Civil Procedure, § 1094.5.) The administrative record is limited to the evidence that consists of the transcripts of the hearings, the witnesses' sworn testimony, and the exhibits

accepted into evidence. Sites JPA has the initial burden of proof to provide substantial evidence through testimony and exhibits that affirmatively prove any fact or facts relied upon for approval of the Application and Petition.

B. Other Legal Standards and Requirements

1. Public Trust Doctrine

The State Board has an independent obligation to consider the effect of approving a water right application on public trust resources and to protect those resources and attempt, so far as feasible, to avoid or minimize any harm to public trust resources. (*National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 426.) The public trust is more than an affirmation of state power to use public property for public purposes. It is an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands and tidelands, surrendering that right of protection only in rare cases when the abandonment of that right is consistent with the purposes of the trust. (*Id.* at 441.). The public trust doctrine serves the function in that integrated system of preserving the continuing sovereign power of the state to protect public trust uses, a power which precludes anyone from acquiring a vested right to harm the public trust and imposes a continuing duty on the state to take such uses into account in allocating water resources. (*Id.* at 446.) The public trust doctrine operates simultaneously with the water rights regime, with neither completely yielding to the other. (*Id.* at 452.) Both are crucial to give effect to the diverse interests in the proper allocation of water. (*Id.* at 445.) On the one hand, the state has a valid interest in preserving water courses for public trust purposes, including recreation and wildlife preservation. On the other hand, "[t]he population and economy of this state depend upon the appropriation of vast quantities of water for uses unrelated to in-stream trust values." (*Id.* at 446.) The "state has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible." (*Id*.) Thus, the State Board has broad, continuing authority to establish minimum instream flows, as well as ordering other measures to protect fisheries and other public trust resources, and the obligation to exercise that authority. (*See, e.g.* Wat. Code, §§ 100, 105, 275, 1243, 1253; Cal. Const. Art X, § 2; *National Audubon Society v. Superior Court, supra,* 33 Cal.3d 419.)

In September 1994, the Board issued Water Right Decision 1631 "in accord with the Court's mandate to protect public trust resources where feasible and the mandate of the California Constitution to maximize the reasonable and beneficial use of California's limited water resources." (Ex. WCT-201, Water Right Decision 1631 at 196.) This decision contained legal justification for water diversion limits which are applicable to the water right application by Sites JPA.

Water Right Decision 1631 justified a limitation on diversions by the City of Los Angeles to protect public trust resources and because "evidence shows that there are other sources of water reasonably available to Los Angeles and that the amendments to Los Angeles' licenses are feasible." Water Right Decision 1631 at 177-178 also identified feasible alternatives for Los Angeles:

> The EIR identifies as potential mitigation measures a number of avenues Los Angeles may pursue to obtain or develop replacement water supplies. These include water reclamation projects, using funds available under AB 444, participating in water transfers under the Central Valley Project Improvement Act (Title XXXIV of HR 429), participating in MWD's water reclamation and groundwater recovery rebate program, and implementing and monitoring compliance with urban water conservation best management practices.
>
> The record establishes that Los Angeles has been pursuing new water supplies from various sources. The record also indicates that Los Angeles (or, in the case of water transfers under HR 429, MWD) is pursuing the measures identified in the EIR as means of obtaining replacement supplies. These actions are the primary responsibility of Los Angeles, which has a strong incentive to continue pursuing development of the water supplies it needs.

In contrast to the City of Los Angeles, Sites JPA chose not to analyze alternative water supply and storage options. Alternatives are identified in the administrative record. (See generally Exs. WCT-3 to WCT-72, WCT-101 to WCT-133). Without evaluating alternatives, Sites JPA cannot know if it is feasible to avoid or minimize the impacts to public trust resources which they identify in the administrative record.

Fish and wildlife resources are protected by both statute (Fish & Game Code, § 711.7(a) ["fish and wildlife resources are held in trust for the people of the state by and through [CDFW]"]) and by the public trust doctrine, which encompasses the protection of wildlife. (*Center for Biological Diversity v. FPL Group, Inc.* (2008) 166 Cal.App.4th 1349, 1363.) But "the duty of government agencies to protect wildlife is primarily statutory. Fish and Game Code section 1801, which declares that it is 'the policy of the state to encourage the preservation, conservation, and maintenance of wildlife resources under the jurisdiction and influence of the state,' also declares in subdivision (h) that '[i]t is not intended that this

policy shall provide any power to regulate natural resources or commercial or other activities connected therewith, except as specifically provided by the Legislature.'" (*Environmental Protection Information Center v. California Dept. of Forestry & Fire Protection* (2008) 44 Cal.4th 459, 515; *see also Center for Biological Diversity v. Dep't of Forestry & Fire Prot. (*2014) 232 Cal.App.4th 931, 952–53.)

Public trust resources include, but are not limited to, wildlife, fish, aquatic dependent species, streambeds, riparian areas, tidelands, and recreation in navigable waterways, as well as fisheries located in non-navigable waterways. In addition, it is the policy of California that all state agencies, boards, and commissions shall seek to conserve endangered species and threatened species and shall use their authority in furtherance of the purposes of the California Endangered Species Act, Fish & Game Code, section 2050 *et seq.* State agencies should not approve projects that would jeopardize the continued existence of any endangered species or threatened species if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat that would prevent jeopardy. (Fish & G. Code §§ 2053 & 2055.) Moreover, pursuant to the ruling in *National Audubon Society*, the State Board should not approve water right applications that harm public trust resources when there are feasible alternatives that minimize or avoid harm to public trust resources.

2. Public Interest

As discussed above, the State Board is responsible for the protection of resources, such as fisheries, wildlife, aesthetics, and navigation, which are held in trust for the public. The State Board must consider these responsibilities when planning and allocating water resources, and protect public trust uses whenever feasible. The State Board must consider these public trust values in the balancing of all beneficial uses of water, in accordance with the Water Rights Mission Statement and Water Code section 1253.[2] Water Code section 1253 requires that the State Board "allow the appropriation for beneficial purposes of unappropriated water under such terms and conditions as in its judgment will best develop, conserve, and utilize in the public interest the water sought to be appropriated." The State Board's Water Rights Mission Statement also provides that the State Board's "mission is to establish and maintain a stable system of

[2] See https://www.waterboards.ca.gov/aboutus/waterboardsstructure/mission.html.

water rights in California to best develop, conserve, and utilize in the public interest the water resources of the State while protecting vested rights, water quality and the environment."

3. The Board's Water Rights Order Must be Enforceable

The State Board must include such terms and conditions that "will best develop, conserve and utilize in the public interest the water sought to be appropriated." (Water Rights Order WR 2008-0014 **(**In the Matter of Yuba County Water Agency's Petition to Modify Revised Water Right Decision 1644 related to Water Right Permits 15026, 15027, and 15030 (Applications 5632, 15204, and 15574) at 19; Wat. Code, § 1253; see also Wat. Code, § 1257.) The Board's ability to condition permits and enforce those terms authority is integral to the Board's ability to fulfill its public trust obligations, and it is state policy that the State Water Board enforce permit terms and conditions "vigorously." (Wat. Code, §§ 1253, 1825; WR 2008-0014 at 19.) Thus, the Board must include appropriate conditions in the permits themselves. (*Id.*) These permit conditions must include flow schedules and other appropriate conditions so that the Board can effectively enforce the permit conditions. (*Id.*) Enforceable permit conditions are essential to the Board's ability to meet its public trust obligations. (*Id.*) Thus, a water right decision must be structured to allow effective enforcement by the Board. (*Id. see also* SWRCB Order WR 98-05 at 24.)

4. Water Availability

"In determining the amount of water available for appropriation, the board shall take into account, whenever it is in the public interest, the amounts of water needed to remain in the source for protection of beneficial uses, including any uses specified to be protected in any relevant water quality control plan." (Wat. Code, § 1243.5.)

> The use of water for recreation and preservation and enhancement of fish and wildlife resources is a beneficial use of water. In determining the amount of water available for appropriation for other beneficial uses, the Board shall take into account, when it is in the public interest, the amounts of water required for recreation and the preservation and enhancement of fish and wildlife resources.

(Wat. Code, § 1243.)

Preservation and enhancement of fish and wildlife resources necessarily requires that enough water is kept instream to prevent extinction and support recovery of endangered species (aka recovery flows).

Species recovery (aka delisting) is also consistent with the objectives of the California and Federal Endangered Species Acts. (Fish & Game Code, § 2050 *et seq.;* 16 U.S.C. §§ 1531-1544.)

Pursuant to Article X, section 2 of the California Constitution, the right to use water extends only to an amount and manner of diversion that is reasonable in light of competing needs, including instream needs.

Water Code section 189.7 requires the State Board to "identify issues of environmental justice needs," and contingent upon the appropriation of funding from the Legislature, adhere to "environmental justice goals, policies, and objectives." Therefore, the State Board should comply with the following goals, policies and objectives described in its Racial Equity Action Plan.

> Consider impacts to BIPOC communities, tribal beneficial uses and cultural resources, and related ecosystems when developing, implementing, and enforcing instream flow requirements, consistent with all applicable laws and requirements, including those related to water rights, basin planning, public trust resources, and endangered species.

(Racial Equity Action Plan, State Water Resources Control Board, January 2023, at page 14.)

In 2017, the State Board adopted definitions of Tribal Beneficial Uses (TBUs) for use by Regional Water Quality Control Boards throughout California. These include tribal subsistence fishing (T-SUB) and tribal cultural uses (CUL). The Board based these designations on extensive surveys of California Tribes.

5. The California Endangered Species Act

The California Endangered Species Act (CESA) declares that 'it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy." (Fish & Game Code, § 2053.)

6. Water Quality Control Plans and Clean Water Act

As discussed above, the Board must determine the amounts of water needed to remain in the source for protection of beneficial uses, including any uses specified to be protected in any relevant water quality control plan. (Wat. Code, § 1243.5.) The Water Code mandates the preparation and adoption of water

quality control plans (Basin Plans). (Wat. Code § 13240.) Section 303 of the Clean Water Act also requires states to adopt water quality standards which "consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses." (33 U.S.C., § 1313.) Basin Plans consist of a designation or establishment for the waters within a specified area of beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives. (Wat. Code, § 13050.) In this matter, the relevant water quality control plans are the Basin Plan for the Sacramento River Basin and the Basin Plan for the Bay Area. Thus, the Board's decision must be consistent with the relevant Basin Plans.

IV. THE NATURE OF THE PROJECT, COMBINED WITH THE UNCERTAINTY ABOUT COSTS, OPERATIONS, AND COMPLIANCE WITH FUTURE REGULATORY REQUIREMENTS, REQUIRES REJECTING THE APPLICATION AND PERMIT

A. The Project's Design, History, and Participants

Sites Reservoir was born from a bygone era of state water development. Preventing "wasting to sea" motivated that era, not environmental or public trust uses. (Ex. FOR-20a at 13.) Sites is an attempted revival of a long series of failed or abandoned mega-projects that sought to transfer so-called "surplus" water from the north state to the south. (Ex. FOR-10a ¶¶ 3, 9, 89–93.) The Project's predecessors—such as the Glenn Reservoir Complex, Colusa Reservoir, and Table Mountain Dam—were grounded in the hubris of the 20th-century Bulletin #3, and Reclamation's vision of "total use for greater wealth." (*Id.* at ¶¶ 19–26.) These projects collapsed under the weight of environmental, financial, and political realities. (*Id.* ¶ 31.) Sites has a half-century-long history of public and institutional rejection—by voters (e.g., the defeat of Proposition 9), by the federal government, and by prior state policy makers. The Project is once again on the table—not because of sound planning or urgent need—but because of political persistence and subsidy. (*Id.* at 41 ["The century-old water planning… is still embedded within the souls of water leaders in the "areas of deficiency."]; *Id.* at 23:19–21; *Id.* ¶¶ 47–52 ("Lining the Pork Barrel").)

The proposed Sites Reservoir Project would be a 1.5 million acre-foot reservoir located on the west side of the Sacramento Valley near Maxwell, California. It would be formed by nine total dams (Ex. SITES-69 at 112) and would be filled by diversions from the Sacramento River at Red Bluff and Hamilton City. (*Id.* at 2-4.) The reservoir would inundate 13,200 acres of Antelope Valley (*Id.* at 2-112), including

extensive oak woodlands (Ex. AHO-76 at 8, 39), and destroy 20 homes (Ex. AHO-93 at 26-34), two cemeteries (Ex. AHO-89 at 41), and thousands of acres of farmland (Ex. AHO-82 at 15-34). Further, it would cause the permanent destruction of Tribal ancestral sites, villages, burial sites, and ceremonial resources (*Id.*), including 32 identified locations. (*Id.* at 22-36.)

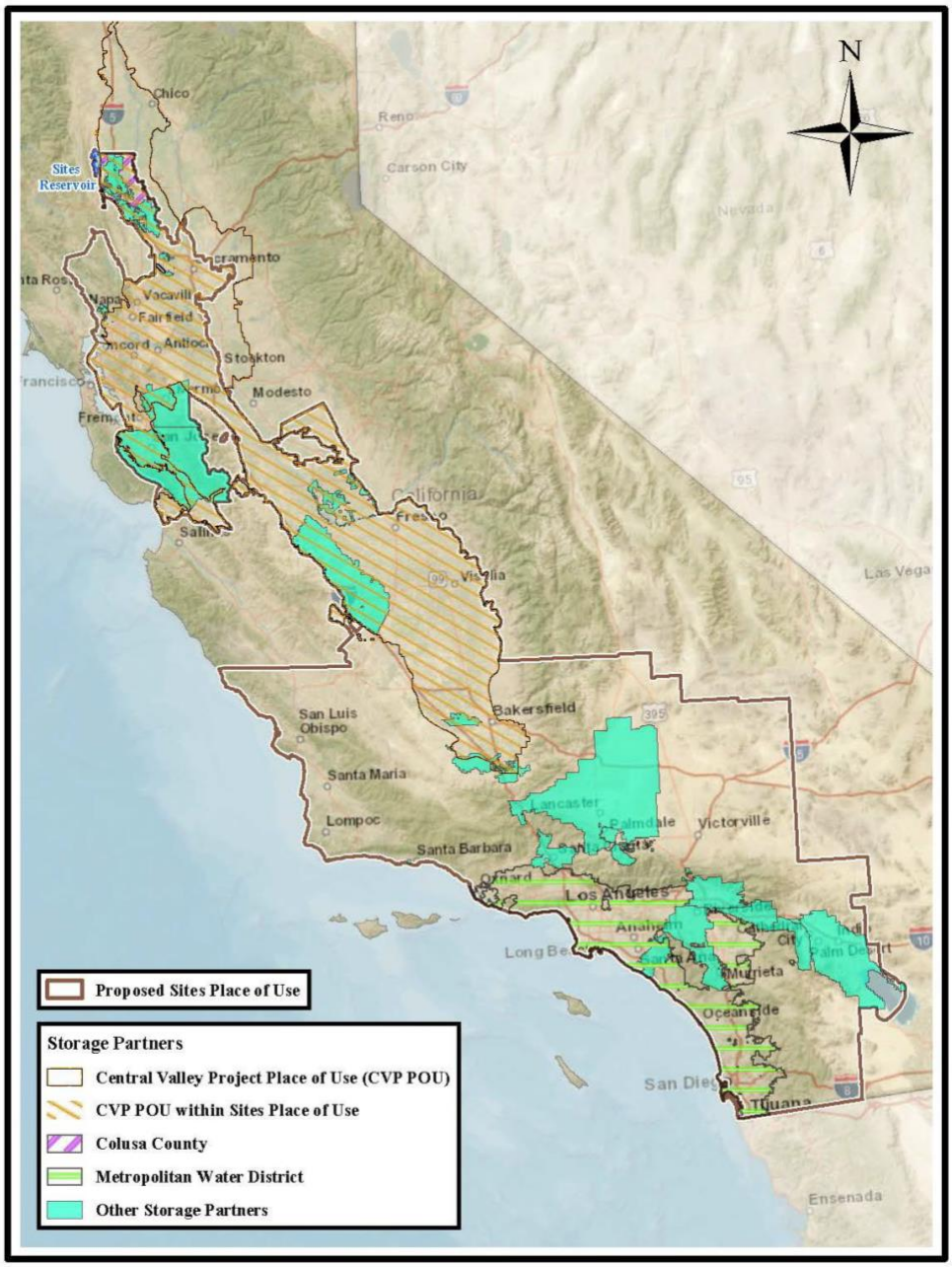
The Project is a water export project. Sites Reservoir would have the largest place of use (the area in which water stored by the Project would be used) of any water project in the state (see AHO-5 at 5, map reproduced below), encompassing 32,691,036 acres across 31 counties. (Ex. AHO-1 at 19.) The Sites JPA seeks to "allow storage partners to sell their water… within the place of use… to assist in paying for their investment." (AHO-5 at 2.) This is not a surprise—the state water rights filing for which the Sites JPA seeks assignment was created for an export project—the Colusa Reservoir—which was previously planned as part of the State Water Project. (Ex. FOR-10a at 19.)

There are 22 Sites Reservoir project participants, including water agencies, irrigation districts, counties, and reclamation districts. (Ex. AHO-5 at 2.) In addition, the State of California is an investor under Proposition 1. (See Ex. SITES-1.) The Bureau of Reclamation (Reclamation) is a likely investor, though its level of participation remains unknown. (See § V.A.3, *infra*.) Of the 22 participants, 10 are north of the Delta, 12 are south; 11 serve primarily municipal uses, 10 agricultural, and one is speculative[3]; nine are located in the Sacramento Valley, eight in Southern California, three in the Bay Area, and two in the San Joaquin Valley. Forty-nine percent of Sites Reservoir storage is held by entities that primarily serve municipal use, 14% by entities that primarily serve agricultural use. Nineteen percent is held by entities north of the Delta, and 53% is held by entities south of the Delta.[4]

[3] There is no estimation of how Colusa County would divide its storage allocation between agricultural and municipal uses provided in the water rights application, but rather a general description that Colusa County will serve both uses (AHO-5 at 13).

[4] This summary is based on information and data presented in AHO-5, including descriptions of project participants, data on demand volume, and storage allocations.

Map of Sites JPA's Proposed Place of Use, AHO-5



Of the 24 total project participants, including the State of California and Bureau of Reclamation, 14 are subject to carriage water requirements. Their combined storage allocations constitute 80% or more of Sites Reservoir water.

B. Sites Reservoir is Designed for Delta Export

Despite Sites JPA's claims that Sites will serve regional needs, the Project is predominantly a Delta export project. Indeed, rather boldly, the proposed place of use aligns with both the State Water Project

(SWP) and Central Valley Project (CVP) export service areas. The Project relies on existing CVP/SWP infrastructure for both diversion and conveyance. (Exs. AHO-5 at 5; FOR-10a at 18, 32.) More than 75% of water for project participants will be exported south of the Delta, not counting potential exports by the State of California or the Bureau of Reclamation. (HT Vol. III at 600:4-601:16.) For decades preceding this iteration, an off-stream Sacramento Valley reservoir was envisioned as at least some part of a coordinated export infrastructure, alongside the Peripheral Canal and Mid-Valley Canal. (Ex. FOR-10a ¶¶ 38, 39.) Though that vision was struck down by Californians at the ballot box in 1982, export project aspirations never really die. (*Id.* ¶ 41.) Significantly, the Colusa Reservoir, from which Sites' partial assignment is sought, was envisioned by DWR as a Sacramento River SWP export project (Ex. FOR-10a ¶¶ 34, 36, fn.72.) Governor Newsom now supports the Sites Reservoir alongside the Delta Conveyance Project as essential projects for climate adaptation—the basis for Sites JPA's claim of consistency with general or coordinated plans. (Ex. FOR-87 at 11 ["complete the seven Proposition 1-supported storage projects"]; *id.* at 15 ["…modernize SWP conveyance in the Delta"]; SITES-71c ¶ 53–55.) The Governor's misguided policy preferences are not state law and do not supplant existing legal protections and obligations which dictate denial of Sites JPA's Application and Petition.

In the past, such export projects have been part of a general and coordinated plan subject to rigorous scrutiny and specific conditioning to protect public trust resources, counties of origin, Delta water quality, and instream flows. (FOR-10a. ¶¶ 27, 29, 40, 40, 53.) If water rights are to be granted, Sites should be treated as part of the family of Delta export projects. (*Id.* ¶¶ 55–56.)

C. The Project Ignores County and Area of Origin Principles Embedded in California Water Law and Practice

State Filed Applications—like the one Sites JPA seeks to partially assign—were originally intended to reserve rights for export projects consistent with a general or coordinated plan. With the creation of County of Origin law and construction of the state and federal export projects, state filings in the modern era have come to serve and privilege "counties of origin" against water export projects. (*Id.* ¶ 4-5; Exs. FOR-53 at 420-424; FOR-54 at 1-2.) Today, those filings are generally used by California counties to build (or attempt to build) local water supply projects with priority dates ahead of export water users. (FOR-10a at 4:4-7.) If others seek assignments or releases from priority, the Board typically

includes provisions that the assignment or release from priority is still subject to future depletion by counties of origin. Sites does not propose such permit language for counties of origin other than Colusa County. Like the export projects from the 20th Century, Sites' water rights permits, if approved, should do so. (*Id.* ¶¶ 65-69.)

Area of Origin law, a separate part of California Water Code, was enacted to protect area of origin watersheds and users from the consequences of SWP and CVP exports. (*Id.* at 22, fn. 77 (¶¶ 6, 27, 40).) However, the Sites JPA has not requested permit terms similarly vulnerable to the future "inchoate" needs in the watershed under Area of Origin law. (*Id.* ¶ 58, citing to FOR-82.) Further, by seeking assignment of a 1978 state-filed application, it also seeks to sidestep Area of Origin obligations in California Water Code section 1215 and the CVP/SWP Delta-Protection Act Delta water quality obligations. The Board should not be constrained by this §1215 loophole and should apply Area of Origin protections and Delta Protection Act protections to non-CVP/SWP export projects like Sites. (*Id.* ¶¶ 53, 55, 56, 57, 59-61.)

D. Operations of the Sites Reservoir Project

The Operations ITP for the Sites Project provides California Endangered Species Act, Fish and Game Code, section 2050 *et seq.,* take authorization for Longfin Smelt, Delta Smelt, Spring-Run Chinook Salmon, Winter-Run Chinook Salmon, and White Sturgeon. (Ex. SITES-298 at 14.) Covered activities under the Operations ITP include (non-exhaustive) operation of project facilities, diversions to Sites from the Sacramento River, storage in Sites, exchanges/transfers with the CVP and SWP, and water releases from Sites. (*Id.* at 4.) Condition 9 of the Operations ITP outlines take minimization measures for the Project related to operations of fish screens at diversion facilities, diversion criteria, exchanges and transfers, water releases, and temperature management.

Most significantly, the Operations ITP changed the diversion criteria for the Proposed Project as compared to the Sites JPA's proposal. The greatest change is the addition of Condition 9.14, which establishes "flow dependent diversion" criteria. (*Id.* at 45.) This condition replaced the 7-day pulse flow protection initially proposed by the Sites JPA. These criteria would limit the volume of diversions to Sites Reservoir depending on flow at specified points in the Sacramento River. In practice, this would prevent the Project from flatlining the Sacramento River hydrograph at certain flow thresholds. (Ex. CSPA-101c at 9.) The Operations ITP also increases the Wilkins Slough minimum flow requirement from 10,700 cfs

to 10,930 cfs. (*Id.* at 44.) The ITP also changes diversion criteria related to "excess conditions" in the Delta. Under the ITP, diversions to Sites Reservoir can occur after delta outflow (as NDOI) has been, for three days, 3,000 cfs greater than it was when "excess" conditions were declared. (*Id.* at 43.) This condition is less stringent than the 7-day waiting period proposed by Sites JPA.

The Operations ITP also sets conditions that could result in future operational changes for the Project. Condition 6 requires Sites JPA to notify CDFW if baseline conditions change which might necessitate an amendment to the ITP. Condition 8 outlines various monitoring and science requirements for the covered species related to population size, habitat, mitigation, survival rates, and project-related stressors, as well as water quality and metal monitoring. (*Id.* at 25-39.) Importantly, Sites JPA claims the required study and monitoring will be implemented through its Adaptive Management Program. (SITES-317 at 11.)

V. THE APPLICATION AND PETITION SHOULD BE DENIED

A. Substantial Uncertainty Remains about the Costs, Benefits, and Regulatory Conditions under which the Project would Operate

Despite the hundreds of thousands of pages of documents submitted by the parties, the years of analysis and documentation for the draft and final EIS/EIR, and weeks of testimony before the hearing officer, substantial and material uncertainty remains. The costs of the Project, from construction, operations, maintenance, and decommissioning, as well as the related cost of water from the Project are unknown and have not been updated by Sites to account for changes, delays, and new information. The regulatory requirements regarding instream flows are scheduled to be substantially updated by the end of this year, yet little information is available from Sites JPA about the potential impacts of those updated rules for the availability of water, its cost, the potential benefits from diversions, or the restrictions faced by the Project. The participation of the Bureau of Reclamation is uncertain and unknown. The Project's Adaptive Management proposals are incomplete. And the permit terms and conditions proposed by Sites which rely on other agencies, other water rights holders, and other regulators would supplant the State Board's authority and obligation to adequately condition any water rights granted to Sites JPA

1. The Sites JPA Failed to Identify the Unit Cost of an Acre-Foot of Water from the Proposed Sites Project

Sites General Manager Jerry Brown testified that the Sites JPA conducted a "value planning" exercise in 2019 and 2020 that caused the Sites JPA to revise its proposed project so because the project to date had resulted in "unit costs" for water "exceeding the ability of several participants to pay." (Ex. SITES-39 at 7:24-8:11). When asked on cross-examination both what prior unit costs had been too expensive, Mr. Brown was unable to provide a dollar amount or a specific reference. (*See* HT Vol. II at 285:12-17.)

Mr. Brown was also unable to state the present unit cost of an acre-foot of water from the Sites project. (*Id*. at 286:15-287:6). Mr. Brown's colleagues on Sites witness panel 1 were equally unable to state the present unit cost for water. (*Id*. at 287:7-9).

a. FOR witness Buckley calculated the likely unit cost of Sites water at $1,600 per acre-foot not accounting for reduced yield due to the Incidental Take Permit

Friends of the River rebuttal witness Mark Buckley, economist with EcoNorthwest, identified a previous cost estimate in a 2021 Sites JPA Draft Finance Plan (Ex. FOR-366) as $850 per acre-foot, with an additional delivery cost south of Delta of $450 per acre-foot. (*See* Ex. FOR-365 at 8:5-7). Citing also to an updated Sites JPA Finance Update from 2023 (Ex. FOR-366), Mr. Buckley compared escalated capital costs from 2021 to 2023 to escalate the likely unit cost of an acre-foot of Sites water delivered south of Delta to $1,600 per acre-foot, without accounting for the reduced yield of the Sites project due to restrictions introduced by the Operations ITP. (Ex. FOR-365 at 8:8-11).

b. Sites JPA witness Walker estimated reduced yield to Sites from the Operations ITP as about 16%

Sites JPA witness Wesley Walker of MBK Engineers describes, in his December 13, 2024 "Technical Memorandum, Subject: Sites Reservoir Potential Diversions from the ITP Historical Analysis," how he modified the "Historical WAA Tool" to account for changes in potential diversions between the Sites JPA's proposed diversion criteria and the diversion criteria required by the Operations ITP. (*See* Ex. SITES-334-R at 2-6.) Table 9 of SITES-334-R shows that for all water year types, average

annual potential yield with the ITP diversion criteria is about 84% of the average annual potential yield with Sites Project Authority's diversion criteria as proposed in its water right application. Dividing Mr. Buckley's figure of $1,600/acre foot by 0.84, that suggests an additional cost per acre-foot due to the Operations ITP diversion criteria of just over $300, for a total south-of-Delta unit cost of about $1,900.

c. The Sites JPA cannot accurately evaluate the unit cost of an acre-foot of water from the Sites project because it has not modeled the project with the diversion criteria in the Operations ITP

The unit cost of Sites water is dependent on the yield of the project. However, on cross-examination during the Sites JPA'S case-in-chief on the Operations ITP, Sites witness Mr. Chad Whittington confirmed that the Authority had not performed CalSim 2 modeling of the operations of the proposed Sites Reservoir under the diversion criteria in the Operations ITP. (HT Vol. XXII at 5508:6-5509:4.)

In a colloquy on March 11, 2025, the final hearing day, the Hearing Officer described her intent to leave the hearing record open during briefing:

> … so one of the things that has crossed my mind, and whether we will have follow-up questions about I'm not sure, is whether, for example, the – the updated CalSim modeling, which I think has not been done but is going to be done soon. I'm not sure what to do with that…
>
> * * *
>
> So what I had been thinking is that we would set an appropriate schedule for closing briefs but not yet close the evidentiary record.

(HT Vol. XXXII at 7207:8-13 and 7209:23-25.) Per email dated April 2, 2025, the Hearing Officer left the record open.

Messrs. Mooney, Buescher, and Shutes, on behalf of the NGO protestants, emphasized, during the same March 11, 2025 colloquy, the importance of having both complete modeling and an updated unit cost in the hearing record. As summarized by Mr. Shutes, "[I]t would be an incomplete record if we didn't have modeling that included the ITP … And the same goes for the cost. … It's directly part of the public interest consideration." (HT Vol. XXXII at 7225:21-22, 7226:1, 7-8.)

To date, the Sites JPA has not produced updated CalSim modeling for the Project or any updated analysis of the unit cost of an acre-foot of water from the Project. On the contrary, counsel for the Sites JPA filed with the AHO on May 1, 2025, "Sites Project Authority's Request to Close Evidentiary Record."

d. The Sites JPA and project partners have presented conflicting evidence on how the Hearing Officer and the Board should evaluate the cost of water

Despite his inability under cross-examination to state a unit cost for Sites Project water, Sites witness Jerry Brown did state regarding the value planning exercise: "this was a key issue for participants, the affordability of the project." (HT Vol. II at 285:16-17.)

However, Sites rebuttal witnesses Robert Kunde and Jordon Navarrot both explained reasons for evaluating the unit cost of Sites project water differently.

Mr. Kunde, representing Sites project partner Wheeler Ridge-Maricopa Water Storage District in Kern County, explained: "The more realistic 'common sense approach' is to assume that Sites water would be delivered, in addition to lower cost supplies to permanent high value crops better able to afford the Sites water cost." (Ex. SITES-419 at 3:14-16 [emphasis in original].) Mr. Kunde's rebuttal testimony shows Table 1 and Table 2, examples of a series of supplemental water supplies purchased by his district in 2021 and 2022, some less expensive and some more expensive than his projected $1145/acre-foot cost for Sites project water. (*Id*. at 5:15-6:11.) Mr. Kunde explains: "several sources at lower cost would be melded with Sites water to lower the overall water cost." (*Id*. at 5: 10-11.)

Similarly, Mr. Navarrot stated in his rebuttal testimony that Reclamation District 108 would use Sites project water in combination with less expensive sources of water, making Sites project water "well within the realm of economic viability." (Ex. SITES-417 at 3:14-20.)

For the agricultural project partners represented by Mssrs. Kunde and Navarrot, the testimony suggests that the cost of Sites water is not a limiting factor in project participation.

State Water Contractors witness Brandon Goshi, representing Metropolitan Water District (MWD), percentage-wise the largest Sites project partner, stated that MWD's Purewater Southern California Project would have a per-acre-foot cost from $2,820 to $3,624. (Ex. SWC-1 at 10:8-9.) This suggests that a cost to MWD of something on the order of $2,000 per acre-foot would be competitive.

Cost should therefore not constrain the AHO and the Board in identifying the measures necessary for the protection of fish and wildlife in any water right permit that may be granted.

e. The Sites Project is one among many potential responses to dry-year water supply

No basis exists for the State Water Board to find that the Sites Project is an essential element in California water planning. The testimony of Mr. Kunde, Mr. Navarrot, and Mr. Goshi suggests on the contrary that there are many options for meeting California's future dry-year water supply needs. These alternatives, as well as the actual projected cost of water, its affordability, and its necessity, remain uncertain, despite Sites JPA's evidence and desire to close the evidentiary record. The AHO and State Board cannot reasonably approve the Application and Petition in the absence of this information.

2. Sites JPA Failed to Meet its Burden to Demonstrate that the Project Is Feasible, Operable, Beneficial, and in the Public Interest if the Bay-Delta Water Quality Control Plan Is Updated

a. A January through June flow requirement for Sites diversions of 42,800 cfs Net Delta Outflow Index would reduce project yield by about 30% compared to Operations ITP diversion constraints alone

On redirect examination, the Sites JPA introduced a January 30, 2025 letter from the Sites JPA and others to the State Board regarding how the State Board should treat new diversions in the update of the Bay-Delta Plan. (See Ex. SITES-424.) The letter predicted a 30% reduction in Sites Project yield under the imposition of State Board staff's proposed Alternative 6a, a January-June constraint that would allow no new watershed diversions unless the Net Delta Outflow Index was at or above 42,800 (*Id.* at 1-2.) On re-cross-examination, Sites' witness Angela Bezzone confirmed that she had reviewed the exhibit and "was involved in drafting portions" before it was sent. (HT Vol. XXIV at 5821:21-24.) She also confirmed she was familiar with the stated potential reduction in Sites project yield in a "high-level sensitivity" conducted by her colleague Mr. Walker, and that "we noted that it could be up to 30 percent for Sites Reservoir." (*Id*. at 5824:20-24.)

Exhibit Sites-424 and Ms. Bezzone's testimony on re-cross regarding it is the best evidence in the record of the potential effects of a 42,800 cfs January-June NDOI flow requirement for Sites diversions.

NGO protestants strongly recommend that the Hearing Officer and the State Water Board consider this testimony in evaluating project yield and aquatic protections.

Sites presented limited information about potential operations of the Project in the event that an updated Bay-Delta Plan included an unimpaired flow requirement of 55%, stating: "water is available for appropriation, albeit at substantially lower volumes than those shown in the Sites WAA Report … the volumes, timing, and frequency of water available for appropriation shown in this analysis are also approximate." (Ex. AHO-39 at 235). As described below, Sites' operations interaction with the Voluntary Agreements are uncertain, though Sites diversions would substantially reduce the purported "additional" flows promised by the Voluntary Agreement parties. Nor did Sites JPA provide information about the potential impact of requirements identified by the State Board about how the Board's two proposed alternatives for protecting existing baseline flows would impact operations of the Project.

Sites was plainly aware of the pending updates to the Bay-Delta Plan, as well as the range of potential alternatives that the Board was considering in that process long before it began its case-in-chief. It chose to use "Alternative 4" from 2019 Bureau of Reclamation analysis related to Shasta operations as a proxy for a 55% unimpaired flow regime that would exist under an updated Bay-Delta Plan. (HT Vol. VII at 1740:24-1742:3.) But as the testimony from Mr. Walker made clear, the "Alternative 4" regime is far different from the requirements of the contemplated update which would exist in the Bay-Delta Plan. (See generally HT Vol. VII at 1742:4-1747:18; see also Ex. BK-126 at 30, 134.) This is a failure to meet its burden given that the Project's operations, scheduled to begin no sooner than 2033, will not occur under the existing regulatory scheme. This chosen uncertainty means that Sites JPA failed to provide substantial evidence to demonstrate that there is water available beyond that which must remain instream to protect beneficial uses, comply with regulatory requirements, and meet the demands of existing water rights holders.

Moreover, Sites JPA did not attempt to account for instream needs for Tribal beneficial uses including Tribal subsistence fishing and Tribal cultural uses—beneficial uses contemplated in the updated Bay-Delta Plan. Instream flows needed to satisfy these Tribal beneficial uses, including harvest, are no less than, and arguably more than, the flows needed to support survival and recovery of endangered

species. Therefore, to satisfy Tribal beneficial uses, the State Board must, at a minimum, protect instream flows necessary for the survival and recovery of endangered species.

An update of the Bay-Delta Plan is scheduled to occur this year. If the AHO does not recommend rejection of Sites' Application and Petition because of this lack of evidence, it should, at minimum, recommend that the State Board decide the Application and Petition after it finalizes its update of the Bay-Delta Plan. Such a recommendation would allow the State Board to make an ultimate decision on the Application based on the best information for water availability, water supply benefits, unit costs, and impacts of the Project, and would allow the parties and the public the benefit of further evidence, including cross-examination, on these subjects based on an updated Bay-Delta Plan.

b. Sites diversions would offset the "flow additions" that are the basis of the proposed Voluntary Agreement schema

The proposed Voluntary Agreement (VA) alternative to the Bay-Delta Plan update purports to increase Delta inflow and outflow through a combination of increasing reservoir releases, non-diversion of those reservoir releases, and Delta exports foregone. (*See generally* Ex. AHO-279, Draft Staff Report on Bay-Delta Plan Update, Chapter 9 at pdf 2293). Providers of VA "flow assets" do not get credit for unregulated water that is already in the system; they must release additional stored water or not divert water that they otherwise could. Through this schema, the VA purports to provide additive Delta inflow and outflow not only above existing requirements, but also above a baseline of both required flow and the otherwise unregulated and uncaptured flow that would have occurred in the Bay-Delta system absent the VA.

It is not certain that Sites diversions of unregulated flow in the Sacramento River would otherwise become Delta inflow. However, Sites JPA witnesses Walker and Bezzone made a simplifying assumption that the relation was 1:1. (Ex. AHO-48 at 3.) Diversions to Sites Reservoir would reduce either Delta inflow or diversions to junior diverters between Sites points of diversion and the Delta at Freeport. Since Sites JPA stipulated to the seniority of the SWP and CVP to Sites diversions and to several other Sacramento River diverters (Sites JPA's SPA Special Term 4, 3/26/25), the subset of Sites diversions that would not become Delta inflow is small. It could be better quantified by updated CalSim modeling of Sites diversions under Operations ITP criteria that the Sites JPA failed to produce.

A conservative estimate of the average annual amount that Sites diversions would offset VA flow "additions" in Above Normal water year types is 400 TAF or 67% and in Below Normal water years is 139 TAF or 26%. (Rebuttal Testimony of Chris Shutes, CSPA-101c at 7:3-11, Table CSPA-101B.)

Sites witness Bezzone attempted to rebut Mr. Shutes by terming them "uninformative as to the questions of how the Project may interact with VA flow assets and affect Delta outflow." (Ex. SITES-395 at 13:16-18.) On cross-examination, Ms. Bezzone clarified that by "interact" she meant simultaneous (same-day) Sites diversions and deployment of VA flow assets. (HT Vol. 24 at 5760:7-11). Notwithstanding the truly uninformative observation that Sites would not be so brazen as to directly divert VA flow assets, the simple arithmetic using the best available information is this: over a water year, Sites diversions would on average reduce the net flow addition of Above Normal VA flow assets by 67% and the net flow addition of Below Normal VA flow assets by 26%. To those percentages, what the VA would giveth Sites would taketh away.

3. The Amount and Extent of the Bureau of Reclamation's Participation in the Sites Project Remains Uncertain

The Bureau of Reclamation's potential participation in the Sites Reservoir Project ranges from 9 to 25 percent. The adopted preferred alternative in the FEIR assumed 25% federal participation in the Sites Project, while the Operations ITP assumed 16%. (HT Vol. XXII at 5426.) However, to date the federal government has only dedicated funding to purchase a 9% share of the storage in the Sites Project. (HT Vol. II at 298).

Reclamation would have the ability to use its own water stored in Sites Reservoir for release in lieu of releases from Shasta Reservoir, or simply to meet the purposes of the CVP. The Sites Project also envisions potential "exchanges" between Reclamation and other Sites Project partners wherein a partner would release water from Sites in lieu of releases from Shasta Reservoir that Reclamation would later repay with releases from Shasta. (HT Vol. XXIV at 5860:22-5861:7 (Forsythe).) A partnership agreement or contract between Reclamation and Sites JPA to describe and set rules for each of these types of actions has not been negotiated or finalized. (Ex. SITES-410 at 8:27-28.) In addition, "There is nothing that [Sites JPA is] envisioning contractually enforceable between the Authority and Reclamation on its use of water." (HT Vol. XXIV at 5863:23-25 [Forsythe].)

Sites JPA contends that release of Reclamation or another partner's water from Sites Reservoir in lieu of releases from Shasta Reservoir would have benefits to salmon. (*Id*. at 5861:15-19.) As explained below, this is incorrect, even if exchanges do occur. (See § V.B.1.b, *infra*.) Sites JPA also claims water backed up into Shasta Reservoir by means of release from Sites Reservoir, either from CVP water stored in Sites or through exchanges, would not be released under CVP water rights and if exported from the Delta would be subject to carriage water. (HT Vol. XXIV at 5916:24-5917:8.)

4. The AHO and the Board Cannot Rely on Sites JPA's Promised Adaptive Management Plan to Provide Protection for Fish and Wildlife.

The AHO and the State Board should disregard Dr. Greenwood's opinions in both his case-in-chief testimony and his supplemental testimony that the Sites Project's adaptive management provides a basis to conclude that the Project will reasonably protect salmonids and other fish of management concern. (*See* Ex. Sites-104 at 15:22-25 and Ex. Sites-312 at 15:17-20.) Sites' Adaptive Management Plan is too conceptual and undeveloped to provide the basis for such a conclusion.

As described in the rebuttal testimony of Chris Shutes (CSPA-101c at 17:3-18:7), the Sites JPA's description of adaptive management plan does not:

- Define the decision space for changes to Sites operations;
- Define the decisionmakers for changes to Sites operations;
- Define the governance of adaptive management;
- Define how adaptive management would isolate project effects from other factors.

On cross-examination, Sites witness John Spranza acknowledged that adaptive management could consider diversion criteria less restrictive than those proposed by the Sites Authority. (HT Vol. VIII at 2107:20-2109:1). Mr. Spranza acknowledged that the "Sites Project Authority Board would be the decision-maker for what management actions, experiments, are funded and implemented in any one year or five-year period…" (*Id.* at 2110:5-8.)

If the State Board grants the requested permit, it should give no weight to any prospective protection that adaptive management may offer to fish and wildlife in the future. Any future changes to diversion criteria or other mitigation and protection measures would not be subject to the scrutiny of public evidentiary hearing, and as proposed would not leave the State Board as the ultimate decisionmaker.

B. The Project will have Significant, Negative, and Unreasonable Impacts on Aquatic Species, Water Quality, and Public Trust Resources

1. The Project Would Harm Endangered and Native Fish Species and Tribal, Recreational, and Commercial Fisheries

a. Overview of Impacts on Aquatic Species and Resources

The Sacramento River, Sacramento-San Joaquin River Delta, and San Francisco Bay are home to an array of native fish populations, including six state or federally protected endangered, threatened, or candidate species that are impacted by the Project. (See Ex. BK-1 [Rosenfield Testimony] at 6 (¶ 10), 14 (¶ 27), 43 (¶ 94), 51 (¶ 118), and 62-63 (¶¶ 142, 144); see also Ex. Sites-300 at 24.) There is no dispute that some of these species are at high risk of extinction. (HT Vol. VIII at 1965:20-1965:1 [Wilder] [winter-run Chinook Salmon and Delta Smelt are on the "verge of extinction"]; *see also* Ex. BK-1 at 7-8 (¶ 13), and 14-15 (¶ 28) [spring-run and winter-run Chinook Salmon], 53 (¶ 123) [Longfin Smelt], 62 (¶ 142) [Delta Smelt]; Ex. BK-106 (SWFSC, 2023) at 141 [Chinook Salmon]; Ex. BK-115 (USFWS 2022) at 88 [Longfin Smelt].)

In addition to these endangered species, other native fish species like fall-run and late fall-run Chinook Salmon are rapidly declining. Fall-run Chinook Salmon, which have supported tribal, recreational, subsistence, and commercial fisheries from the Sacramento River to the Pacific Ocean, have declined in recent years due to the point where the fishery has been closed for three years running. (Ex. GSSA-1 [Artis Testimony] at 3, 5-6, 9 (¶¶ 1, 12, 24); Ex. BK-1 at 14 (¶ 26).[5]) Fall-run Chinook Salmon, while not officially listed under the endangered species acts, is at risk of extinction within 15-20 generations absent changes to improve conditions. (See Ex. BK-61 [Moyle 2017] at 10 [Table 3, defining risk categories] and 45 [identifying fall-run as a species of "high concern"].)

Unsustainable diversion is the primary force driving the precipitous declines of native fish species in San Francisco Bay and its watershed, including the Sacramento River valley; and existing regulatory

[5] The closure of the 2025 commercial salmon fishing season, extending from Humbug Mountain in southern Oregon to the US/Mexico border, was officially ordered by NOAA on May 16, 2025. (See 90 Fed. Reg. 20820 et seq. (May 16, 2025), at 7.) The NGO parties request the AHO take notice of this closure and admit the Federal Register publication into evidence.

requirements, including such as D-1641, biological opinions and incidental take permits, and the long-outdated Bay-Delta Plan, are inadequate to provide reasonable protection of these species, to allow for the recovery of these species, or to protect public trust resources. (Ex. BK-103 at 10; see also Exs. BK-96 at 13-14; BK-98 at 27-28; BK-99 at 4-6; BK-82 at 4-5; BK-11 at 4; Ex. BK-115 at 56; Ex. BK-124 at 14; BK-1 at 6 (¶ 10).) These regulatory requirements, pending an updated Bay-Delta Plan, currently require less than 20% of unimpaired flow on an average annual basis. (Ex. BK-103 at 10.)

In 2010, the State Board, pursuant to the Delta Reform Act, conducted a scientific analysis to develop flow criteria that would be protective of the Sacramento-San Joaquin Delta ecosystem and related public trust resources. (Ex. BK-96 [State Board Public Trust Report].) The analysis was conducted to determine what flows would be protective of fish "if fishery protection was the sole purpose for which waters were put to beneficial use." (Ex. Sites-303 at 1; see also Ex. BK-96 at 14-16.) As a result, the report identifies flow criteria that, if met, would support native fish species, and above which diversions would be unlikely to cause harm or prevent the viability of those species. (See BK-132 at 2-3 (¶¶ 3-8) [Rosenfield rebuttal testimony explaining appropriate uses of the State Board's 2010 report].)

The stark gap between the flows that would protect and support healthy and thriving native fish populations and the required flows under existing regulatory requirements must inform the analysis of the impacts. (Compare, e.g., Ex. BK-96 at 17 [75% unimpaired flow needed] with Ex. BK-103 at 10 [under 50% of unimpaired flow in January to June becomes Delta outflow, regulatory requirements are under 20% of unimpaired flow].) Diverting more water in the face of a crisis, where regulatory required flows are less than a third of protective flows, will have consequences that are far larger than the percentage differences described by Sites' witnesses.

While Mr. Wilder characterizes a proportional effect as the same no matter the baseline status of the species, HT Vol. VII, 1908:2-13, this view finds no support in the best available science, logic, or reality in the Bay-Delta ecosystem as it relates to native endangered fish. (Ex. BK-132 at 13-14 (¶¶ 34-37).) The Project will reduce flows that are needed to support out-migration of juvenile salmonids, that provide migration cues for White Sturgeon and Green Sturgeon, and that provide critically needed flows to support the continued existence of Longfin Smelt and Delta Smelt, whether those flow changes or impacts are characterized as "small" or "statistically insignificant." (*Id.* at 14-15 (¶ 38).)

Small percentage impacts, or those that appear to be statistically insignificant, have outsize biological significance and real-world effects. (Ex. BK-132 at 13 (¶ 35), quoting Ex. BK-131 ["all else being equal, small populations are at a greater risk of extinction than large populations primarily because several processes that affect population dynamics operate differently in small populations than in large ones"].) For species on the brink of existence, even "small" reductions in survival or population growth are unreasonable. (See Ex. BK-132 ¶ 37.) The Sites Project's diversions will exacerbate the problems that have decimated fisheries, degraded the ecosystem, and pushed native fish to the brink of extinction.

b. The Proposed Season of Diversion Improperly Prioritizes Marginal Hydrological Gain over Protection of Key Life Stages of Native Fish

One could fairly call the approach of Sites JPA to the proposed season of diversion as "catch it if you can." The proposed allowed season of diversion to Sites Reservoir is September 1 through June 14. (Ex. SITES-298 at 43 (Operations ITP Condition 9.7).) According to analysis performed by Sites JPA witness Wesley Walker, the Operations ITP diversion criteria would have allowed **no** potential diversions to Sites Reservoir in July through November when evaluated using historical hydrology from water years 2000 through 2024. (*See* Ex. SITES-334-R at 33 (Table 15, below).)[6] In addition, in Dry and Critical water years, the ITP diversion criteria would have allowed **no** potential diversions in the months of April-June.

Table 15. Monthly Average Total Potential Diversions under the ITP Historical Analysis (no FV demands). Values in 1,000 acre-feet.

Month / WY Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Wet	0	0	62	148	101	206	169	74	29	0	0	0	789
Above Normal	0	0	1	103	127	98	40	81	5	0	0	0	454
Below Normal	0	0	8	62	44	65	12	2	8	0	0	0	202
Dry	0	0	20	23	12	13	0	0	0	0	0	0	68
Critical	0	0	21	10	17	0	0	0	0	0	0	0	49
All Years	0	0	24	66	56	73	43	28	8	0	0	0	297
Max Year (2006)	0	0	86	232	142	258	249	154	45	0	0	0	1,166

[6] Mr. Walker identified the values in Ex. SITES-334R that he based on historical gage data without considering the face value of downstream water rights, as a "more realistic view of Sites potential diversions" than figures that included downstream, more restrictive face value demands. (*Id*. at 30.) Thus, we discuss Table 15 (without face value demands) rather than Table 9.

Based on the same water year 2000-2024 historical hydrology, Mr. Walker derived the following statistics. The average annual potential diversions in Below Normal water years would have been 12 thousand acre-feet (TAF) in April, 2 TAF in May, and 8 TAF in June. Average amounts of potential diversions in Above Normal water years would have been 81 TAF in May and 5 TAF in June. Average amounts of potential diversions in Wet water years would have been 74 TAF in May and 29 TAF in June.

Total average annual potential diversions in Critical water years would have been 49 TAF, in Dry water years would have been 68 TAF, and in Below Normal water years would have been 202 TAF.

However, rather than shorten the season of diversion in light of the absence of near-absence or diversion opportunities that this analysis showed for various months and water year types, Sites JPA witnesses have defended the opportunity to capture whatever water the Operations ITP would allow.

Thus, for instance, Ms. Bezzone conducted an analysis to show that some amount of water would have been available to Sites JPA for diversion in the final week of November 2024. (Ex. SITES-395c at 8:9-15 and 9:1-16 (Figure 1).) Ms. Bezzone concluded that small sample size limited full evaluation of diversion opportunities. (*Id*. at 8:16-22.) Noting that climate change may alter future hydrology, Ms. Bezzone also concluded that diverting an anomalous early storm showed that the Sites project would be "adaptable" and thus exemplified "resiliency." (Id. at 9:19-26.)

Dr. Greenwood on cross examination admitted that under the Sites JPA's proposed "pulse protection" diversion criteria in its ITP Application, Sites JPA would not have been allowed to divert the first fall or early winter flow pulse for seven days. (HT Vol. XXV:16-22.) Del Rosario *et al*. found that the first fall or late fall flow pulse greater that 400 cubic meters per second (approx. 14,125 cfs) generally occurred one day before a "catch spike" of winter-run Chinook salmon and within a week of the median for winter run catch in the Sacramento River at Knights Landing. (Ex. BK-21 at 11.) After being shown Ms. Bezzone's example of a November 2024 Sites JPA diversion in SITES-395c and relevant parts of Del Rosario *et al*., Mr. Shutes asked Dr. Greenwood: "And it's your opinion that it's not worth the loss of diversion opportunity during the first flush specifically to protect winter-run Chinook salmon in November, December of any given season; is that correct?" Dr. Greenwood declined to answer directly. (HT Vol. XX at 6117:11-20.)

Dr. Rosenfield's case-in-chief testimony discussed negative temperature impacts in the lower Sacramento River due to diversions, stating:

> [D]uring key months for fall-run and spring-run outmigration (April-June), Nobriga et al. (2021) detected statistically significant, inverse relationships between monthly mean river flow and monthly mean water temperature in the Delta. Bashevkin and Mahardja 2022 found a negative temperature-inflow relationship in which springtime water temperatures decreased up to 2°C as inflow increased. See also, Vroom et al. (2017). These results suggest that increased diversion of Sacramento River flows during the migration season of juvenile Chinook Salmon would contribute to increases in the temperatures they experience in the lower river and the Delta.

(Ex. BK-1 at 22 (¶ 42); citing Exs. BK-5 [Bashevkin and Mahardja], BK-72 [Nobriga *et al*.], BK-118 [Vroom *et al*.].)

Sites witness Dr. Hassrick directly agreed that found that flow pulses are even more important for Chinook Salmon in dry years than in wet years (HT Vol. VIII, 2024:18-25 (Dr. Hassrick); *see also* Ex. BK-1 at 18 (¶ 38.a); Ex. BK-28 (Hassrick, 2022).)

In sum, the evidence thus shows the marginal water supply benefits of a season of diversion that includes September, October, November, May, and half of June. The evidence shows the even more marginal water supply benefits in these months in Critical, Dry, and Below Normal years, and more generally of diversions to Sites Reservoir in these water year types at all.

The evidence also shows great impacts to fish from diversions in these time periods. If the State Board grants the requested permit, the State Board should reset these priorities by reducing the season of diversion and limiting diversions to appropriate water year types, consistent with the attached recommended permit conditions.

c. The Sites Project Would Have Unreasonable and Harmful Impacts on each of California's runs of Chinook Salmon

California historically supported over two million Chinook Salmon returning to spawn in the Sacramento River and San Joaquin River. (Ex. GSSA-1 at 5 (¶ 11.) Each of the four distinct Sacramento Valley Chinook Salmon populations once numbered in the tens or hundreds of thousands of adults. (See Ex. BK-121 [Yoshiyama et al. 1998].) Abundance and populations of these runs have declined precipitously. (Ex. BK-1 at 14-15 (¶ 28).) Winter-run Chinook Salmon and Central Valley spring-run Chinook Salmon are now at high risk of extinction in the near-term. (Ex. BK-106 [Southwest Fisheries

Science Center 2023] (viability assessment of Pacific salmon); Ex. BK-1 at 14-15 (¶ 28).) Fall-run Chinook Salmon have declined precipitously and their productivity and population genetics are increasingly influenced by hatchery production. (*Id.*; *see also* Ex. BK-61 at 4.) From 1995 to 2004, the population of wild spawning upper Sacramento River fall-run Chinook Salmon was over 175,000 annually; in 2023 that number was 6,120 fish, a nearly thirty-fold reduction or 96% decline. (Ex. GSSA-1 at 6 (¶ 13).) The viability and condition of Central Valley Chinook Salmon runs has declined in recent years due low egg to juvenile survival due to low river flows, reduced Delta outflows, and high river temperatures. The fall-run Chinook Salmon fishery was closed in 2023, 2024, and 2025. (Ex. GSSA-1 at 3, 5-6, 9 (¶¶ 1, 12, 24); Ex. BK-1 at 14 (¶ 26); see also fn. 5, *supra*.)

The historic and recent collapse of winter-run and spring-run Chinook Salmon, *see* Ex. BK-61, and the near replacement of naturally spawned fall-run Chinook Salmon by hatchery fish, *see* Exs. BK-38, BK-120, demonstrate the inadequacy of existing regulatory protections and the need for additional river flows in the Sacramento River and through the Delta and cold-water habitat below Central Valley dams. (Ex. BK-1 at 17 (¶ 34).) Cold water and adequate river flows are essential to the persistence and recovery California's Chinook Salmon populations. (*Id.*, citing Exs. BK-66; BK-98; BK-106.)

The primary determinant for Chinook Salmon juvenile outmigration survival is river flow. (Ex. BK-1 at 18 (¶ 38).) The best available science has identified strong, statistically significant relationships between Sacramento River and Delta flow and survival of migrating Chinook Salmon juveniles. (Ex. BK-1 at 18-22 (¶¶ 38-42).) The science identifies flow that provide benefits to juvenile Chinook Salmon and which are necessary to protect and restore Sacramento Valley Chinook Salmon populations. (*Id.*)

This science demonstrates that Chinook Salmon survival increases as flows increase through the Delta, and that the relationship is generally linear, meaning more flow leads to more fish. (Ex. BK-1 at 21 (¶ 39); HT Vol. VIII at 2012:21-2013:14 (Greenwood); HT Vol. VIII at 2101:6-10 (Spranza) [recognizing linear flow survival relationships].) The best available science indicates, among other things, that:

- Chinook Salmon gain particular benefit from wet storms in dry years (HT Vol. VIII, 2024:18-25 (Dr. Hassrick); Ex. BK-1 at 18 (¶ 38.a); Ex. BK-28 (Hassrick, 2022));

- Winter-run Chinook Salmon outmigration is triggered at flows of at least 14,125 cfs at Wilkins Slough, but not at 10,600 (Ex. BK-1 at 20 (¶ 38.j); Ex. BK-21 (del Rosario, 2013); HT Vol. VIII, 2031:4-23 (Greenwood));
- Flows at Freeport of at least ~35,300 cfs are protective of juvenile smolt migrating through the Delta (Ex. BK-1 at 18-19 (¶¶ 38.b), and at 21 (¶ 40); Ex. BK-27 (Hance 2021)), and outmigration survival decreases sharply as delta inflows decline below ~35,000 cfs (Ex. BK-1 at 19 (¶ 38.g), and at 21 (¶ 40); Ex. BK-101 (Perry 2018)); and,
- Outmigration survival is most strongly predicted by river segment flow rates (Ex. BK-1 at 19-20 (¶ 38.h); BK-29; HT Vol. VIII, 2015:19-24 (Greenwood, discussing Ex. BK-29)).

Each run of juvenile Chinook Salmon will experience lower survival migrating out of the Sacramento River because of changes to average monthly flows projected under Sites' operations. (Ex. BK-1 at 24-25 (¶ 47).) Sites operations are projected to reduce Sacramento River flow during peak migration and rearing periods for juvenile Sacramento Valley Chinook Salmon. (*Id.*) These reductions happen throughout the Sacramento River during crucial migratory and rearing periods for Chinook Salmon.

Flows would be reduced at Red Bluff in a majority of years for each month from December through September. (Ex. AHO-123 at 213 [Table 5B2-12-4c].) Winter-run juveniles migrate downstream during August through December, spring-run juveniles migrate downstream during November to January, and fall-run juveniles migrate past Red Bluff by the end of February. Reduced flows at Red Bluff as a result of Sites operations will have negative effects on each run of juvenile Chinook Salmon. (Ex. BK-1 at 24 ¶ 47.a.)

At Wilkins Slough, flows are lower from January through April in each water year type, as well as in December during the majority of years. (Ex. AHO-123 at 257 [Table 5B2-14-4c].) Winter-run juveniles are found downstream of Wilkins Slough in moderate to high abundance from November-February. Spring-run juveniles migrate in the lower Sacramento River from November through May. And fall-run juveniles lower river migration window spans March-May. During each of these migratory windows, these juveniles will experience reduced flows during their outmigration windows. (Ex. BK-1 at 24-25 (¶ 47.b).)

At Freeport, flows are reduced in all or most year types for each month December-April and June. (FEIR/EIS Appendix 5B3 at Table 5B3-1-4c). This reduction in flow corresponds to the period of peak winter-run Chinook Salmon juvenile presence in the Delta. (Ex. BK-1 at 25 (¶ 47.c).) Juvenile spring-run Chinook Salmon are found in the Delta in high numbers during April and May and would be negatively affected by flow reductions during this period. (*Id.*) Fall-run Chinook Salmon migrate into and through the Delta from April-June, and the Project's reductions in monthly average flow will have a negative impact on their survival in, and migration through the Delta, during April and June of most years. (*Id.*)

Delta outflow is similarly impacted by the Project. In all or most years from December-April and June, outflow is reduced. (Ex. AHO-124 at 94 [Table 5B3-5-4c].) This period includes the prime months of outmigration for all Central Valley Chinook Salmon runs. (Ex. BK-1 at 25 (¶ 47.d).)

In sum, Sites operations will result in reduced Sacramento River flow, Delta inflow, and Delta outflow, at times when migrating and rearing Chinook Salmon juveniles benefit from increases in those flows. (Ex. BK-1 at 25 (¶ 48).) The best available science indicates that these flow effects will negatively impact juvenile Chinook Salmon migration and survival. (Ex. BK-1 at 25 (¶ 48), 30 (¶ 61).)

Beyond the impacts of reduced river flow, Sites Project's operations will substantially reduce availability of wetland and riparian habitats used by rearing Chinook Salmon as they prepare to migrate to the ocean. (Ex. AHO-178 at 12-21 [Table 11J-4], and at 22 [Table 11J-5].) These reductions occur throughout much of the lower Sacramento River and Delta during all or most water year types. (Ex. BK-1 at 32 (¶ 68).) When available suitable habitat is a limitation on outmigration survival for Chinook Salmon, Sites operations that substantially reduce that habitat will have a substantial negative effect on their populations. (*Id.*)

The Sites JPA's contention that Chinook Salmon will benefit from better temperature management as a result of exchanges with Shasta or Oroville is highly speculative. (See § V.A.3., *supra*; see also Ex. BK-1 at 30 (¶¶ 62, 63).) However, even if they did occur, they would not have net beneficial effect. (Ex. BK-1 at 30-32 (¶¶ 64-67).)

d. The Sites Project Would Have Unreasonable and Harmful Effects on White Sturgeon and Green Sturgeon

i. White Sturgeon

The San Francisco Bay estuary population of White Sturgeon is imperiled and will be negatively impacted by operations of Sites Reservoir. (Ex. BK-1 at 33 (¶ 69).) White Sturgeon have been identified as a "candidate species" under CESA. (Ex. BK-1 ¶ 74; Ex. BK-17 (CDFW Recommendations for adoption of emergency protections by Fish and Game Commission).)

Based on the best available science analyzing White Sturgeon, the population of White Sturgeon in the San Francisco Bay and Sacramento River has decreased by between two-thirds in the last several decades to as much as 89% as compared to the early 1980s, and continues to decline. (Ex. BK-1 at 35-37 (¶¶ 77-78, Figures 3 and 4).) These declines are especially concerning for the viability of White Sturgeon due to their longevity and the infrequency with which they reproduce. (Ex. BK-1 36-37 (¶ 78).)

White Sturgeon rely on high river flows to reproduce. (Ex. BK-1 at 37-40 (¶¶ 80, 82-85, Figure 5).) However, the necessary high flow conditions are increasingly rare due to water diversion and storage operations upstream. (*Id.* at 11-12 (¶ 22), 33 (¶ 69), 35 (¶ 75), 39 (¶ 83) [adequate flows for recruitment and spawning in roughly 17% of years since 1999], 39 (¶ 84) [same since 2000]; *see also* Ex. BK-86 at 13 (Figure 3 in paper).) And the benefits from additional flows to White Sturgeon are not entirely linear – rather they show a "hockey stick" approach which shows little if any benefit at Delta outflows in May and June under 37,000 cfs, and then a markedly steeper response demonstrating increasing benefits as flows increase above the threshold. (Ex. BK-1 at 41 (¶ 89).) These are the very flow conditions that Sites operations will target for diversion. (Ex. BK-1 at 33 (¶ 69).) Sites Reservoir will degrade habitat conditions for White Sturgeon in the Sacramento River and Delta in ways that are very likely to accelerate the decline of this population. (*Id*.)

For example, in wet water year types, the Project will reduce April-July Sacramento River flows at Freeport, Ex. AHO-124 at 6 (Table 5B3-1-4c) and via the Yolo Bypass, *id.* at 50 (Table 5B3-3-4c). Reductions in these flows that appear small are likely to have a material population level effect, because of the status of the species, the hockey-stick or threshold function of flows needed for reproductive success, and the strength of the correlation between high flows and reproductive success above the

threshold. (Ex. BK-1 at 41 (¶ 90).) Similarly, the Sites Project's diversions will reduce migratory passage at the Sutter Bypass to the detriment of White Sturgeon. (*Id.* at 42 (¶ 92), citing Ex. AHO-78 at 260 [Table 11-61].)

In sum, White Sturgeon populations have been declining for decades, continue to do so, and require additional spring-summer Delta inflow and outflow to stabilize and eventually recover. Sites Reservoir would reduce those flows by diverting water that is critical to the reproductive success and ultimate viability of White Sturgeon. (Ex. BK-1 at 42-43 (¶ 93).)

ii. Green Sturgeon

The southern distinct population segment of North American Green Sturgeon is a federally threatened species in San Francisco Bay and its watershed. (Ex. BK-1 at 43 (¶ 94); *see also* Ex. BK-68 (National Marine Fisheries Service Five Year Status Review of Green Sturgeon, 2021).).

Freshwater flow needs of Green Sturgeon are thought to be similar to those of White Sturgeon. (Ex. BK-1 at 43 (¶ 94), citing Ex. BK-35.) However, they spawn further upstream and juveniles rear in fresh water longer than White Sturgeon. This makes Green Sturgeon particularly susceptible to entrainment impacts from unscreened and inadequately screened diversions. (Ex. BK-1 at 43 (¶ 94).) The number of juvenile Green Sturgeon entrained and killed is more likely than not to increase if the volume of water diverted at these intakes increases, as it will under Sites operations. (*Id.* at 43, 44 (¶¶ 94, 98); *see also* Ex. BK-45 at 12 (left column, finding that in laboratory settings, Green Sturgeon "contacted the screens twice as frequently as White Sturgeon" and are "much more likely to become impinged on screens").) Green Sturgeon are also impacted by migratory barriers at Sutter Bypass and the Anderson-Cottonwood Irrigation District dam on the Sacramento River pose threats to the population and to migratory and reproductive success. (Ex. BK-1 at 46-47 (¶ 104).)

Diversions to Sites Reservoir are likely to reduce the frequency, magnitude, and duration of flows that trigger downstream migration of juvenile Green Sturgeon. (Ex. BK-1 at 43 (¶ 94).) Like White Sturgeon, Green Sturgeon need flows supporting spawning, incubation, and juvenile recruitment to occur on the order of once in four years to maintain population viability. (*Id.*) Current levels of diversion result in less frequent flows that Green Sturgeon need to complete their life cycle; Sites operations will exacerbate this problem. (*Id.*) Sites' diversions would also threaten to increase entrainment or

impingement impacts on Green Sturgeon, especially because there are no Green Sturgeon-specific criteria to protect the population from the impacts of screens at the diversion points. (Ex. BK-1 at 47 (¶ 105).)

Sites would degrade habitat conditions for Green Sturgeon in the Sacramento River and Delta in ways that are more likely than not to accelerate decline, and increase extinction risk, of this population. (BK-1 at 43 (¶ 94).) Diversions to Sites are expected to reduce Sacramento River flows at Red Bluff (upstream of the Woodson Bridge gage) and at Hamilton City (downstream of the Woodson Bridge gage) in almost every year-type of every month from November through March. (Ex. AHO-78 at 251-255 [Tables 11-58 and 11-59].) These reductions, especially of pulse flows during that time, will harm Green Sturgeon by reducing flows that juvenile Green Sturgeon rely on for outmigration. (Ex. BK-1 at 47-48 (¶¶ 106-107).) The Project also would reduce the number of days and years when Green Sturgeon can migrate upstream of the Sutter Bypass and Colusa Weir, impairing adult migratory success and reducing spawning. (Ex. BK-1 at 48 (¶ 108).) Finally, Green Sturgeon are likely to suffer from increased entrainment and to be impinged on screens at the diversion locations, further harming the species. (Ex. BK-1 at 48-50 (¶¶ 109-114).)

e. The Sites Project Would Have Unreasonable and Harmful Impacts on Longfin Smelt and Delta Smelt

Longfin Smelt and Delta Smelt are "pelagic" fish, meaning they live most of their lives in the open, tidal waters of the Delta, in San Francisco Bay, and / or in the ocean. (Ex. BK-1 at 50-51 (¶ 115).) Although pelagic fish do not directly encounter the diversions that draw water for Sites Reservoir out of the Sacramento River, they are affected by the resulting reduction in flow into and through the estuary. (*Id.*)

i. Longfin Smelt

Longfin Smelt populations are currently not viable. (Ex. BK-1 at 53 (¶ 123); BK-115 (USFWS 2022 Status Assessment for Longfin Smelt) at 88.) Existing regulatory requirements, including D-1641 and the 2019 Biological Opinions and Incidental Take Permits for the State Water Project and Central Valley Project are inadequate to protect Longfin Smelt or its habitat. (Ex. BK-1 at 54-55 (¶ 124); *see also* Ex. BK-124 at 14 (USFWS Proposed Listing Rule for Longfin Smelt) [the "continued threats facing the estuary and Bay-Delta longfin smelt, such as reduced freshwater inflow, severe declines in population

size, and disruptions to the DPS's food resources have not been ameliorated" by existing regulatory restrictions].)

To recover, Longfin Smelt population growth must occur more frequently than the status quo. The State Board has identified a January-June Delta outflow threshold of 42,800 cfs average Delta Outflow from January-June, which is likely to lead to population growth, rather than decline. (BK-1 at 55 (¶ 128); *see also* Ex. AHO-271 at 193; Ex. BK-96 at 91 [Table 8, describing year-round protective flows for Longfin Smelt].)

Longfin Smelt respond strongly and negatively to decreases in Delta outflow. (Ex. BK-1 at 51 (¶ 118).) Because the flow-productivity relationship is continuous, reductions in Delta outflow across the entire range of possible flows will have negative effects on this population. (Ex. BK-1 at 55-56 (¶ 129).) In addition, the population is impacted episodically by high levels of entrainment-related mortality at the CVP and SWP water export facilities in the south Delta; entrainment mortality is highest when Delta outflow is lowest. (Ex. BK-1 at 51 (¶ 118).)

Sites operations will reduce productivity and abundance of Longfin Smelt. (Ex. BK-1 at 57 (¶ 132).) Sites operations would reduce Delta outflow during winter-spring months. (Ex. AHO-124 at 94 [Table 5B3-5-4c].) Sites JPA's own analysis shows declines in Longfin Smelt projected abundance in all year types (see Ex. AHO-78 at 300 [Table 11-84]) and that the population is more likely than not to be lower under Sites operations than under the status quo in every water year type. (See *id.* at 301 (Table 11-85).) The San Francisco Bay estuary's unique population of Longfin Smelt will be harmed by diversion of river flow to Sites Reservoir that reduce winter-spring outflow of freshwater from the Delta. (Ex. BK-1 at 51 (¶ 118).) Increasing pressure on San Francisco Bay's unique Longfin Smelt population by reducing Delta outflows in the winter and spring, as Sites operations would do, is inconsistent with protecting Longfin Smelt or ensuring their persistence into the future. (Ex. BK-1 ¶ 132.)

Acknowledging the significance of these impacts, Sites proposes to mitigate for them, but there is no scientific basis to support Sites' theory that the proposed mitigation will make up for the harms from loss of flow. (Ex. BK-1 at 51 (¶ 118.)) The proposed mitigation of these impacts is highly unlikely to compensate for harm done to Longfin Smelt viability by Sites operations. (Ex. BK-1 at 51 (¶ 118), and 60-62 (¶¶ 138-141).) There will be a significant negative effect on Longfin Smelt due to reductions in

Delta outflow. That effect is not mitigated by the shallow water habitat restoration proposed with the Project – indeed, that mitigation lacks scientific basis and is not related to harms caused by reduced flow. (Ex. BK-1 at 62 (¶ 141).)

ii. Delta Smelt

Delta Smelt are among the world's most endangered fish species and are on the "verge of extinction." (HT Vol. VIII at 1965:20-1965:1 (Wilder); *see also* Ex. BK-1 at 62 (¶ 142).) Delta Smelt were once among the most numerous resident fish in San Francisco Bay but are now extremely rare. (Ex. BK-1 at 63-64 (¶ 144, Figure 9), citing Ex. BK-08 (CDFW 2001).) Delta Smelt were first listed under the federal and state endangered species acts in 1993—since then abundance indices have declined by more than 99% despite ESA and CESA protections. (*Id*.) Delta outflow is critical to Delta Smelt survival, recovery, reproduction, and population growth. (Ex. BK-1 at 64-65 (¶¶ 146, 147).)

Delta Smelt are likely to be negatively impacted by operations of Sites Reservoir, and the proposed mitigations for the harm to the species are not likely to provide significant benefits, and may cause further harm and reduce the already limited habitat available to the species. (BK-1 at 62 (¶ 142).) Sites Reservoir operations in the winter-spring, the seasons when the Delta Smelt population is most susceptible to the impacts of entrainment, are likely to result in increased entrainment related mortality for Delta Smelt. (Ex. BK-1 at 66-67 (¶ 152).) Any additional entrainment-related mortality of Delta Smelt is inconsistent with maintaining this unique, endemic species in the wild. (*Id.*, citing Ex. BK-104 (Smith et al. 2021).)

Sites JPA's assertions that the Project will enhance food web productivity for Delta Smelt through releases into the Yolo Bypass are unsupported by evidence that such an action will have a positive effect on the species. (Ex. BK-1 at 67 (¶ 153).) The claim relies on a hypothetical assumption that is not well supported or well tested. (*Id.*; see also Ex. AHO-78 at 277.) Beyond being speculative, there is a significant risk that summer/fall releases of water from Sites Reservoir into the Yolo Bypass will damage Delta Smelt habitat due to impacts on water quality, including pesticides, water temperature, and dissolved oxygen. (See Ex. AHO-78 at 281-285 [identifying negative impacts to water quality in the same habitat relied upon to benefit Delta Smelt].) The presumed benefits of Sites JPA's planned summer-fall releases to Yolo Bypass are speculative at best. At worst, they will harm Delta Smelt by killing or injuring them and by reducing the geographic distribution of the population as a whole. (Ex. BK-1 at 67 (¶ 154).)

f. The Project Would Have Unreasonable and Harmful Negative Effects on the Estuarine Ecosystem and Food Webs that Support Native Fish and Fisheries

Most of the Bay-Delta's estuarine fish species rely on zooplankton prey during at least part of their life-cycle. (Ex. BK-1 at 69 (¶ 161).) Estuarine zooplankton populations are sensitive indicators of the condition of estuarine habitat, and other organisms (e.g., waterfowl and shorebirds) also rely on zooplankton prey. (Ex. BK-1 at 69-70 (¶ 162, Figure 10).) The steep decline in density of formerly widespread and abundant zooplankton and native mysid shrimp indicates that estuarine habitat conditions have deteriorated in upper San Francisco Bay and the Delta. (*Id.*) Abundance of each of these species in the estuarine low salinity zone responds strongly and positively to Delta outflow, and populations of key zooplankton indicators of estuarine habitat are extremely low in the spring when average March-June Delta outflow is below ~30,000 cfs (*E. affinis*) or average March-May flows are below ~40,000 cfs (mysid shrimp). (*Id.*)

Diversions of flows that reduce Delta outflow in these times below these rates have significant impacts on the estuarine ecosystem, these species, and as a result, the species that depend on them. (Ex. BK-1 at 70-71 (¶¶ 163, 164).) While the effects are described by Sites as "small," the impact is likely to be ecologically significant, especially because low zooplankton density is already of concern. (Ex. BK-1 at 70-71 (¶ 164).)

g. The Project Would Have Unreasonable and Harmful Negative Effects on Commercial and Recreational Fisheries

Low stocks and high temperature dependent mortality in the Sacramento River precipitated the complete closure of commercial and recreational salmon fishing in California in 2023 and 2024. (Ex. GSSA-1 at 3 (¶ 1); see also Ex. PCFFA-1 at 2:8-12; 13:8-11 (Bradshaw).) The commercial salmon season in 2025 is also closed from southern Oregon to the U.S.-Mexico border and has severely restricted the recreational salmon fishery. (See footnote 5, above.)

The Sacramento River contributes a major portion of the Chinook salmon potentially harvestable in ocean commercial fisheries throughout California and southern Oregon. (Ex. PCFFA-1 at 1:25-2:2.) The fall-run Chinook salmon is the only California run sufficient to allow even a minimal harvest. (*Id.* at

4 fn.) Bycatch of the severely depleted stocks of ESA-listed winter-run and spring-run Chinook can also limit the season and the harvest of fall-run. (*Id.,* at 4, fn. 2; 9:18-10:4.)

One of the largest potential impacts of Sites JPA's diversions is the temperature effects downstream of the points of diversion in the spring months of April-June. (Ex. BK-1 at 21-22 (¶¶ 41-42).) The Operations ITP Condition 9.21 restricts Sites JPA operations to avoid temperature impacts in the Sacramento River from exchanges with Shasta Reservoir, and Condition 9.23 restricts releases of Sites water into the Sacramento River at Knight's landing, also to avoid temperature impacts. However, no condition in the Operations ITP restricts diversions to Sites in April-June to avoid temperature impacts in the Sacramento River.

Conditions of approval in the ITP do not explicitly protect unlisted fall-run Chinook salmon. However, the Pacific Fisheries Management Council has expressed extreme concern about their future:

> Any actions that increase water diversions from, or increase water temperatures within, the Sacramento/San Joaquin River systems are very likely to exacerbate an already dire situation for these depressed salmon stocks and the fishing communities that depend upon them for their livelihoods.

(Ex. PCFFA-19 at 4; see also Ex. BK-61 at 45 [fall-run], 63 [late fall-run].)

The viability of California's commercial and recreational salmon industries is in grave jeopardy. Further reductions in salmon populations from the status quo will exacerbate existing catastrophic impacts on the salmon fishing industry and threaten the long-term viability of a fishery worth an estimated $500,000,000 to $2,000,000,000 a year. (Ex. GSSA-1 ¶¶ 3, 43-48, 50.)

2. <u>The Project Would Have Unreasonable and Harmful Effects on Water Quality</u>

a. Water Temperature

i. <u>Sites JPA Underestimated the Impacts the Project on Sacramento River temperatures</u>

The Sites JPA's analyses of water temperature are flawed and likely underestimate the impacts of Sites diversions and reservoir releases on the Sacramento River.

The CE-QUAL-W2 model, which generates the Sites release temperature estimates, is built to target a release water temperature of 65°F. (HT Vol. XXVI at 6233:7-13 (Dr. Winslow).) There are, however, circumstances where 65°F releases are not possible. During rice season (June-September), the

model fails to meet the temperature target 20-45% of the time (Ex. SITES-111c at 25:27-28), and exceeds the target 20% of the time in August and September. (*Id.* at 26:7.) Low reservoir storage can cause temperatures releases to exceed 75°F, and presence of HABs and lack of temperature stratification also complicate the ability to meet the 65° target. (*Id.* at 9:26; HT Vol. XXVI at 6237:10-17.)

The CE-QUAL-W2 model, despite its bias for 65° output, is then fed into the Sites Release Temperature Blending Tool, which calculates water temperatures at various locations downstream of Sites Reservoir, and reports them as monthly average temperatures. (Ex. SITES-110 at 4:18.) Sites JPA's analyses using this tool excluded important data and improperly used warming rates of a natural river, which warms more slowly than canals. (Ex. SCS-8a at 3:4-14.) When accounting for these issues, Sites water released in hot summer months will likely be 75-80°F as it reaches the Sacramento River at Knights Landing—nearly 4° warmer than estimated by Sites JPA. (*Id.* at 3:3.) Project discharges that cause temperatures to exceed 68° at Knights Landing would violate the Central Valley Basin Plan's Controllable Factors Policy (*Id.* at 4:21).

It is also worth noting that monthly averages of the CalSim modeling introduce uncertainty into the analysis by concealing potential temperature impacts that occur on shorter timescales, and are thus of limited use in understanding biological and water quality consequences of those temperature impacts.

There are numerous other uncertainties in the Sites water temperature analyses. No data were collected on water temperature in the source canals (Tehama-Colusa and Glenn-Colusa). (HT Vol. IV at 914:6-8 (Dr. Winslow).) Collection would have improved understanding of reservoir water temperature, and thus improved understanding of both release temperatures and probability of HAB formation in the reservoir. In addition, Sites JPA did not model downstream impacts of targeted reservoir release temperatures lower than 65°F, and thus missed an opportunity to better understand cold water management opportunities (Vol. XXVI at 6236:19). Third, the Sites JPA did not even consider temperature impacts on the Sacramento River caused by diversions to the reservoir from Red Bluff and Hamilton City pumping plants. Removing at times significant flow would cause the Sacramento River would to warm more rapidly. (Ex. SCS-8 at 3.)

The Project's temperature modeling contains significant uncertainties—regarding inputs, reservoir operations, downstream effects, and the efficacy of Shasta exchanges. It is not in the public interest to approve a massive water infrastructure project based on conjecture regarding environmental benefits.

ii. Exchanges with Shasta will Not Improve Temperatures in the Sacramento River nor Mitigate or Avoid the Project's Harmful Impacts on River Temperatures

Claims that Shasta exchanges will result in temperature improvements in the Sacramento River are speculative and are not supported by substantial evidence. In her rebuttal testimony, Ms. Bezzone states, "Exchanges with Sites Reservoir would provide an additional tool for Reclamation to satisfy its temperature management obligations." (Ex. SITES-395c at 16:18-19.) Similar claims are repeated throughout the record. (*See, e.g.,* HT Vol. XXIV at 5872:20-5873:2 (Ms. Forsythe).)

As described above, Sites and Reclamation have not executed a "partnership agreement" or contract that would bind Reclamation to certain actions to release water from Sites in April-June in order to "preserve storage" in Shasta Reservoir. Indeed, the Sites JPA has acknowledged that it cannot so bind Reclamation. (Ex. SITES-314 at 14 (Draft Operations Plan).) Reclamation's operations at Shasta would be taken under Reclamation's CVP existing water rights. (*Id.* at 40.) Thus, short of reopening Reclamation's CVP water rights, there is no apparent mechanism for the State Board to condition any water right to provide additional State Board oversight of the operations involving Sites Reservoir that are purported to improve water temperature at Shasta Reservoir and in the Sacramento River.

Ms. Bezzone's rebuttal testimony outlined a conceptual example of how such an operation would work. (EX. SITES-395c at 14:9-23 and Figure 3 at 15:1-13.) The example is notable in that the small outlet capacity from Sites (1000 cfs) constrains the operation by which water from Sites is released in order to preserve storage in Shasta Reservoir.

Ms. Bezzone argues that Reclamation can be relied on to use its "flexibility" to improve water temperature management: "Reclamation's past practices indicate Reclamation takes its temperature management obligations seriously, and reasonably anticipated exchanges with the Project provide an additional mechanism for Reclamation to satisfy these obligations." (*Id.* at 18:7-10.) The results of this past practice, particularly in the years 2014, 2015, 2021, and 2022 cited by Ms. Bezzone (i*d*. at 17: 1-8)

tell a different story. Notwithstanding the potential measures and the measures taken by Reclamation in those years, the outcome for salmon was abject failure. (*See, e.g.* Ex. CSPA-7 at 16 (Feb. 3, 2015 Temporary Urgency Change Order of Executive Director of State Board). *See also* Ex. CSPA-8 at 19 (Feb. 15, 2022 Water Rights Order 2022-0095).)

"Adding storage in Shasta Reservoir, whether from Sites or other source, is no assurance that Reclamation will optimize that added storage for temperature control." (Ex. CSPA-1c at 15:9-11.) Indeed, Reclamation has taken the position since 2014 that it is constrained by contract from reducing deliveries to Sacramento River Settlement Contractors so long as it has the ability to deliver contracted amounts. Reclamation explicitly claimed in 2020 that it has no discretion to maintain water in storage in Shasta at the expense of deliveries to Sacramento River Settlement Contractors. (*See* Ex. CSPA-10 at 2.) Reclamation's flexibility, whether from Sites or otherwise, does not extend to the measures that would fix the problem: reduction of deliveries from Shasta Reservoir in the first Dry or Critical year. "A reactive policy of triaging drought once storage is depleted in CVP and SWP reservoirs is fundamentally a flawed strategy." (CSPA-1c at 18:4-5.) "Potential exchanges with Sites Reservoir would effectively be a better Band-Aid on what is fundamentally a structural problem of the overallocation of CVP and SWP resources." (Id. at 18:16-18.) It is telling that the only mention in the Operations ITP of potential temperature effects releasing water from Sites Reservoir in lieu of Shasta Reservoir is Condition 9.21 constraining Sites JPA from releasing water from Sites Reservoir if Sites water would warm the Sacramento River at Knights Landing. (Ex. SITES-298 at 51.)

b. The Project Will Likely Increase the Frequency and Intensity of Harmful Algal Blooms due to Reduced Flows into the Delta and the release of Water from Sites Reservoir Containing Cyanobacteria and Cyanotoxins

Currently, harmful algal blooms cause adverse effects in the Delta that impact beneficial uses of water. (HT Vol. XXVI at 6179:13-17 (Huber).) These excessive growths of algae can release toxins which are harmful to fish, degrade water quality, and pose a threat to humans and other animals, currently occur in the Delta and in most central valley reservoirs in California. (Ex. BK-1 at 71 (¶ 165); HT Vol. VI at 1484:20-1485:3 [Sites would be similar to Shasta and Oroville in providing a seed source for HABs in the Delta].)

The Sites reservoir is expected to be no different. (Ex. AHO-73 at 80; Ex. BK-1 at 73 (¶ 173); HT Vol. VI at 1476:21-1477:18, 1478:6-10 (Huber).) Indeed, it is likely Sites Reservoir will suffer from higher frequency and intensity of harmful algal blooms as compared to other large Sacramento valley reservoirs. (Ex. SCS-8a at 15-18 (¶¶ 14, 15, Figure 5).)

Recognizing that harmful algal blooms are likely to form in the reservoir, and that discharging water laden with cyanobacteria or cyanotoxins risks impacting already degraded water quality, Sites JPA proposes to attempt to manage HABs in the reservoir and in its releases. (Ex. AHO-108 at 36-42 (Reservoir Management Plan re Harmful Algal Blooms, section 2D.3.1).) However, the terms of the management plan suffer from the same deficiencies as Sites JPA's other ongoing management and monitoring efforts: it is non-binding, leaves sole discretion to the Sites JPA. First, the Management Plan is vague about what it will measure or monitor. It states that if monitoring indicates that HABs are a "consistent problem near the I/O tower," then "additional measures **may** be implemented." (Ex. AHO-108 at 41; Ex. SCS-8a at 19.) Second, the Management Plan does not yet include any standards, thresholds, or requirements for how to balance competing interests or requirements related to HABs, methylmercury, temperature, salinity, or other pollution controls. (See generally, HT Vol. VI at 1456:14-1459:20 [acknowledging that the operations plan "could use a little more specificity" that currently exists].) And third, any decision about potential action that "may be implemented," is based solely in the discretion of the Sites JPA. (HT Vol. VI at 1457:10-1458:10, 1495:22-1496:20.)

Moreover, whether the proposed actions that "may be implemented" are effective is untested and uncertain. (Ex. SCS-8a at 19-24.) Sites JPA's reliance on degradation of these materials is misplaced. (Ex. SCS-8a at 26-28; Ex. BK-1 at 74 (¶ 174).) Cyanotoxins and cyanobacteria released from Sites reservoir are likely to persist in Delta waters, increase cyanobacteria inoculum in the Delta, and exacerbate drivers of HAB formation in the Delta. (Ex. SCS-8a at 28-29; Ex. BK-1 at 74 (¶ 174); Ex. BK-75 (Peacock 2018).)

A primary factor that has increased HABs in the Delta is a lack of freshwater flow—flow levels that can impede the formation, duration, and extent of HABs do not occur in most years. (Ex. BK-1 at 71 (¶ 166).) Sites JPA downplays the impact of reduced flow caused by Sites' diversions. (Ex. BK-1 at 72-73 (¶ 170).) However, in the Delta, seasonal freshwater flow rates have a known negative effect on HAB

growth and persistence. (Ex. BK-1 at 72 (¶ 168-169.) And diversions during large storm events, especially in the late winter or early spring of dryer water years would diver the flows that the best available science shows suppress HAB formation. (Ex. BK-1 at 72-73 (¶ 170).) Moreover, Sites operations will reduce Delta inflows during winter and spring, including in June, during all water year types. (Ex. AHO-124 at 6 [Table 5B3-1-4c].) Reducing these flows, which can help to flush Delta channels from HAB forming cells early in the season and as they begin to bloom in June, increases the risk and severity of blooms occurring, spreading, and persisting later in the summer. (Ex. BK-1 at 73 (¶ 171).)

Finally, conditions and impacts from HABs are likely to increase and to begin earlier in the year due to climate change. As a result, reductions in flows in the winter and spring are likely to have a larger impact on HAB formation and persistence in the future than they do under existing conditions. (Ex. BK-1 at 73 (¶ 173).)

c. Mercury

Contamination of surface from mercury and methylmercury is the legacy left over from the California Gold Rush. (Ex. FOR-2 at 14:2-13.) In an aquatic system mercury can mix with decaying plant matter and methylate, forming methylmercury. (Ex. FOR-2 at 14:15-19; SITES-116c at 7:19 to 8:8.) Methylmercury will bioaccumulate in fish and enter the food chain. (Ex. FOR-2 at 15:8-10.) Excessive bioaccumulation results in waterways impaired for fish consumption, resulting in health advisories because the fish are too contaminated for human consumption. (Ex. FOR-2 at 15:1-6.)

The Sites Reservoir will result in conditions where mercury will transform to methylmercury (methylation) "due to the thermal stratification, high organic matter fueling anerobic decomposition that consumes oxygen, and methylation in anerobic sediments by sulfate-reducing bacteria." (Ex. SITES-116c at 7:12-15; *see also* FOR-2:15-19.) As a result, Sites Reservoir will "result in net methylation of mercury." (Ex. SITES-116c at 7:15-16.) Concentrations of methylmercury within the reservoir will be higher than the source water from the Sacramento River. (Ex. SITES-116c at 7:18-21.) A new reservoir, such as Sites Reservoir, will experience an initial spike in mercury methylation for up to 10 to 15 years. (Ex. SITES-116c 7:25-28.)

Sites JPA relies upon Mitigation Measure WQ-1.1 to minimize the potential impacts from mercury. (Ex. AHO-73 at 65-68; HT VI at 1446:22-25; SITES-116c at 23:1 to 25:18.) WQ-1.1 provides for the removal of vegetation from inundation area; waiting 10 years to stock fish; a fish sampling program; water chemistry management actions; and managing reservoir fisheries. (Ex. AHO-73 at 65-68.) However, Sites JPA's expert expects "mercury concentrations in largemouth bass in the future reservoir to exceed State objectives." (HT Vol. VI at 1501:20 to 1502:22; Ex. SITES-11 at 11:1 to 12:5.)

On cross-examination, Sites JPA witness Carmen Irvine acknowledged that Sites JPA has no planned mitigation measure to limit stage-height fluctuations in Sites Reservoir in order to reduce methylation of mercury. (HT Vol. VI at 1503:1-7.) Mr. Irvine also stated that Sites JPA made no commitment to install a hypolimnetic oxygenation system in Sites Reservoir, though this option was called out in Mr. Irvine's testimony. (HT Vol. VI at 1508:20-22 and 1509:22-25; Ex. SITES-116 at 24:6-12.)

On cross-examination, Mr. Irvine confirmed that the Colusa Basin Drain is currently impaired for mercury. (HT Vol. VI at 1449:5-7.) Mr. Irvine further confirmed that diversions from the Sites Reservoir would increase concentrations of mercury in the Colusa Basin Drain. (HT Vol. VI at 1449:5 to 1450:11.) While Mr. Irvine stated that is why Mitigation Measure WQ-1.1 was adopted as part of the Project, he did not deny that the Project would cause an increase in mercury concentration in mercury-impaired waters. (HT Vol. VI at 1450:4-12.)

In cross-examination by Mr. Shutes, Mr. Irvine acknowledged that there are no mitigation measures that address fluctuation in reservoir levels and that his testimony and opinion as to mercury and methylmercury did not take into account the operation of the reservoir even though that could be factor. (HT Vol. Vol. V at 1504.) In cross-examination, Mr. Irvine also testified that he did not evaluate the mercury or methylmercury contamination for the Tehama-Colusa Canal or the Glenn-Colusa Irrigation District Main Canal, as the Sites JPA did not provide any data regarding those waterways. (*Id.* at 1511-1512.)

Based upon the Sites JPA's expert, the Project has the very real potential to contribute mercury to waterways already impaired from mercury contamination. Even with the implementation of WQ-1.1, the Project will still contribute to mercury contamination. As such, the Sites JPA failed to meet its burden that the Project will not have mercury related impacts.

C. Sites JPA Failed to Meet its Burden to Show the Project will Not Cause Unreasonable Harms to Terrestrial Species, and the Evidence Demonstrates Significant and Unmitigated Harms will Result

Sites JPA failed to meet its burden with respect to the Project's impact on terrestrial species. Testimony from Sites JPA's experts demonstrate that Sites officials made the conscious decision to not follow standard protocol of conducting biological surveys to establish a baseline for plants and wildlife that will be impacted from the Project's inundation of 26,000 acres. Instead, the Sites JPA's contract biologists limited their respective reviews to a search in the California National Diversity Database for the area, the U.S Fish and Wildlife Service list; aerial imagery from Google Earth; species distribution, habitat association, and habitat requirements information; habitat connectivity layers in CDFW online map view; and location of special-status birds in e-Bird. (Ex. SITES-264 at 11; SITES-114c at 3:17-28.)

The Project area provides habitat to dozens of species, including numerous special-status species. (Ex. FOR-18 at 18-27 (Smallwood); compare with Ex. AHO-77 at 15-29.) Sites JPA's contract biologists provided written and oral testimony regarding the existing environmental setting, potential impacts to plants, wildlife and sensitive natural communities, as well as the adequacy of the mitigation measures resulting from the construction and operation of the Sites Reservoir. (See Exs. SITES-114c (Hale Testimony); SITES-113c (Webber Testimony); see also Ex. AHO-77.) Ms. Hale's testimony and opinion relied primarily on aerial imagery and habitat modeling. (See Exs.-SITES 113c at 4:5 to 5:23; SITES-264 at 4.) Ms. Webber's testimony and opinion relied primarily on land cover mapping and aquatic resources mapping. (Ex. SITES -113c at 3:14 to 6:8; SITES-277 at 4-5.) Both Ms. Webber and Ms. Hale testified that neither they nor their colleagues had conducted biological surveys, ground-truthing, or error analysis in the mapping of land cover and model-predicted species occurrences, with the exception of 1,000 acres where Sites had done some geotechnical work. (HT Vol. IX at 2375:7 to 2382:13.)

Since 2017, Sites JPA has worked on reviewing and analyzing the environmental impacts of the project with respect to terrestrial species. During that time, Sites JPA's contract biologists never visited the project site for the purpose of conducting biological surveys, with the exception of the 1,000 acres where Sites conducted geotechnical studies. Sites JPA made no apparent effort to gain access to private

property to conduct biological surveys, even though Department of Water Resources had previously gained access from 1998 to 2004 and 2010 to 2011. (HT Vol. IX at 2397:13 to 2398:11 [Hale].) Sites JPA specifically prohibited its contract biologists, including Ms. Hale and Ms. Webber, from conducting biological surveys from public roads. (HT Vol. IX at 2379:4 to 2380:22.) The only explanation Sites JPA's officials provided the biologists was that they were afraid of upsetting local residents because the Project is not very popular. (HT Vol. IX at 2380:15-18.)

Sites JPA's decision to prohibit its contract biologists from conducting biological surveys resulted in an inaccurate environmental baseline for plants and wildlife. (Ex. FOR-344 at 11-12 [Smallwood].) There is no dispute that survey data qualifies as the most essential information needed to accurately characterize the existing environmental setting. (Ex. FOR -344 at 3:5 to 4:12; *see also* HT Vol. IX at 2380:19 to 2381:9.) Dr. Smallwood's Rebuttal Testimony provided a detailed analysis of how Sites JPA's failure to conduct biological surveys impacts the environmental setting and analysis of impacts to terrestrial resources. (Ex. FOR-344 at 3:25 to 10:9.) In summary Dr. Smallwood testified that without an accurate baseline setting, Sites JPA's biologists cannot accurately evaluate impacts to plants and wildlife or identify adequate mitigation measures to address those impacts. (Ex. FOR-344:11-12.) As evidence of the importance of conducting biological surveys, Dr. Smallwood testified that on three separate occasions he, along with his assistant, conducted surveys from the public road. (Exs. FOR-344:6-16; FOR 18: 7-9.) Dr. Smallwood testified that on September 15, 2024 he detected 10 additional wildlife species beyond the 60 species he had identified in the two previous surveys from the road. (Exs. FOR-344 at 13:6 to 7:27; FOR-18 at 2:22 to 3:4; FOR-114.) Thus, Dr. Smallwood's three days of biological surveys from a public road found more species than reported by Sites JPA's contract biologists, who relied upon aerial images.

Sites JPA states that it will conduct pre-construction surveys for some species as a mitigation measure once the Sites Project is approved. (Ex. SITES-114c at 16:20 to 17:6; AHO-77 at 3, 79, 84, 91, 92, 118, 122, 127, 133, 134, 139.) These mitigation measures rely on surveys that come too late in the review process and will go unreported to the public or the State Board. They would not have the benefit of peer review nor would the State Board or the public have to opportunity to review them. The pre-construction surveys are only for certain species as set forth in the FEIR's mitigation measures. (*See*

AHO-77 at 3, 79, 83, 84, 91, 135.) Thus, for a number of species, there is no requirement for a preconstruction survey.

Sites JPA had ample opportunity to conduct biological surveys in order to fully understand the Project's impacts to biological resources. Sites JPA did not. Instead, by prohibiting its contract biologists from doing any biological surveys, Sites JPA deliberately and intentionally withheld the true extent of the Project's impacts on terrestrial resources from itself, the State Board, and the public. The Sites JPA's refusal to provide survey data on terrestrial species constitute a failure to provide substantial evidence to support the biologists' testimony. Thus, Sites JPA has failed to meet its burden of proof that the Project will not unreasonably impact terrestrial wildlife.

Without knowing the species that would be impacted by the Sites Project, as well as the population of the impacted species, the State Board cannot properly evaluate the Project's impacts to terrestrial wildlife. Without knowing the full extent of the Project's impacts to terrestrial resources, the State Board simply cannot fulfill its obligations under the public trust doctrine.

Finally, Sites JPA failed to adequately address the change in status for the Burrowing Owl. On October 10th of 2024 that the California Fish and Game Commission identified the Burrowing Owl as a candidate species. (HT Vol. XXII at 5458:21-25.) The Construction ITP does not address the Burrowing Owl's updated status, and CDFW has not issued a subsequent ITP to close this gap. (*See* SITES-299; HT Vol. XXII at 5458-5460.)

D. Sites JPA Has Severely Underestimated Potential Greenhouse Gas Emissions from the Project, Resulting in Increased Climate Risk

Greenhouse gas emissions from surface water reservoirs contribute to planetary warming, have been increasing over time, and are expected to continue increasing into the future. (Ex. FOR-20a at 7:14-15 citing to Exs. FOR-250, FOR-178, and FOR-179.) Reservoirs also create emissions from hydropower operations, (FOR-20a ¶ 12), and during dam decommissioning (Ex. FOR-20a at 8:1-3 citing to Exs. FOR-180 and FOR-181). The Sites JPA presented Project emissions estimates from the FEIR that adopted, in part, a framework created by the Intergovernmental Panel on Climate Change (IPCC). Sites JPA's fragmented methodology, coupled with faulty assumptions, resulted in a critical underestimate of potential Project emissions—68,235-84,363 metric tons of CO_2 equivalent (MT CO_2e) per year. (Ex.

FOR-170; Ex. AHO-88 at 12, 15.) After correcting issues with the Sites JPA's methods, annual Project emissions are expected to be 362,000 MT CO2e, which is equivalent to emissions from 80,653 gas powered cars operated annually. (Exs. FOR-20a at 4:3; FOR-166 at 3.) The project has the real risk of emitting more than 800,000 MT CO2e annually. (Ex. FOR-317 at 13:3.)

1. Sites JPA Misidentified the Reservoir's Likely Trophic Status

When land is flooded, organic matter in the water decomposes and releases GHGs. These emissions are classified as surface emissions, and they are major, significant sources of the GHGs that the reservoir will produce. Much of these emissions are in the form of methane, which is 80 times more powerful than carbon dioxide as a greenhouse gas. (Ex. FOR-20a at 8:11, ¶¶ 12-13.) Sites JPA estimates that roughly 60%-92% of total Project emissions will be surface emissions (AHO-88 at 15.)

The IPCC equation for calculating surface emissions relies heavily on a variable, "alpha (α)", which is an equation multiplier that represents the "trophic status" of the reservoir. (HT Vol. XI at 2967:24-2968:4 (Mr. Matsui).) Alpha (α) is a measure of biological productivity of a water body, and is influenced by quantity of biomass and nutrients in the water, including agricultural pollution and organic matter (e.g. plants, algae, etc.). (FOR-317 at 3, footnote 2). Nutrient loads can increase biomass by contributing to the growth of living organisms. Low alpha (α) values correlate with clean bodies of water with low nutrients and organic matter, such as cold, pristine mountain lakes. A low alpha (α) system (i.e. lower trophic status) would have little decomposition and resultant surface GHG emissions would be low. Alternatively, high alpha (α) values correlate to warm bodies of water with high levels of nutrient loads (e.g. agricultural pollution), plant growth, and algae (e.g. harmful algae blooms). A high alpha (α) system (i.e. high trophic status) has high organic matter loads, which decay and produce a high level of GHG

emissions. In the IPCC guidance, alpha (α) values range from 0.07, which represents the absolute lowest trophic status, to 39.4, representing the highest trophic status. (Ex. FOR-251, Table 7.11 at 15, below.)

TABLE 7.11 (NEW)
RELATIONSHIPS BETWEEN TROPHIC INDEX (TI), SURFACE CONCENTRATIONS OF CHLOROPHYLL-A (CHL-*A*), TOTAL PHOSPHORUS (TP), TOTAL NITROGEN (TN), SECCHI DEPTH (SD), AND TROPHIC CLASS[1] AND TROPHIC STATE ADJUSTMENT FACTOR (α_i)

TI	Chl-*a* (µg/L)	TP (µg/L)	TN (µg/L)	SD (m)	Trophic Class	Trophic State Adjustment Factor α_i Range and (recommended value)
<30 - 40	0 - 2.6	0 - 12	–<350	> 4	Oligotrophic	0.7 (0.7)
40 - 50	2.6 - 20	12 - 24	–350-650	2 - 4	Mesotrophic	0.7 - 5.3 (3)
50 - 70	20 - 56	24 - 96	650-1200	0.5 - 2	Eutrophic	5.3 - 14.5 (10)
70 - 100+	56 - >155	96 - >384	>1200	< 0.5	Hypereutrophic	14.5 - 39.4 (25)

[1] (Carlson 1977), (Smith *et al*. 1999)

The Sites JPA chose to use the alpha (α) value of 1 to represent the trophic status of the Sites Reservoir. (HT Vol. XI at 2965:18-20 (Ms. Jaglo).) This decision ignored the Sites JPA's own information on predicted reservoir water quality and the IPCC's recommendations on choosing an alpha (α) value based on the general assessments of reservoir trophic status.

In using an alpha (α) value of 1, the Sites JPA misapplied IPCC guidance. Though the guidance says 1 can be used as a default value, it makes it clear that a more accurate estimate can be made with general information about the reservoir's condition. (Ex. FOR-251 at 15 ["trophic state adjustment factor…can be estimated from other general assessments of reservoir trophic status"];; Ex. FOR-251 at 12 ["if sufficient data exist, it is *good practice* for the compiler to develop country-specific emissions factors…to reduce uncertainty," emphasis in original].) Witnesses for Sites JPA testified that it was not possible to estimate trophic status of a reservoir that had not been built (HT Vol. XI at 2970:10-16 (Ms. Jaglo)), ignoring IPCC guidance, and ignoring its own evidence on water quality, which is relevant to the estimated trophic status of the reservoir. (HT Vol. XI at 2973:8-12.)

For example, in the FEIR, Sites JPA determined that reservoir water quality would lead to harmful algal blooms, which is also a determination that the reservoir would be eutrophic to hypereutrophic, correlating with an alpha (α) value of 5.3-39.4. (Ex. FOR-317 at 4-5 (¶¶ 5-6).) In addition, Sites JPA provided measurements of total phosphorous, the most critical nutrient for trophic status (HT Vol. XXXI at 6962:20-21 (Mr. Easter)), in the Sacramento River source water. During diversion season,

measurements of total phosphorous ranges from 200-400 micrograms per liter (µg/L), with an outlier value in May of more than 1,800 µg/L. (Ex. AHO-142 at 31, Fig 6E-39.) These phosphorous concentrations are "sufficient to drive the reservoir into a hypereutrophic state," (HT Vol XXXI at 6957:14-15 (Mr. Easter)), correlating to an alpha (α) value of 14.5-39.4.

The Sites JPA's choice of a default alpha value of 1 was counter to IPCC guidance to use available site-specific information and led its witnesses to substantially underestimate likely GHG emissions from the proposed Sites Reservoir.

2. The GHG Analyses of Sites JPA Excluded Emissions Sources

In addition to greatly underestimating one emissions source due to improper alpha (α) selection, Sites JPA's estimate of Project GHG emissions excluded six emissions categories altogether. (HT Vol. XII at 3025:2-3027:25 (Mr. Matsui); Ex. FOR-170 at 2.) Despite the claims of Sites JPA's witnesses that their GHG analyses closely followed IPCC guidance (see HT Vol. XI at 2940:12, 2953:24, and 2979:19 (Ms. Jaglo), HT Vol. X11 at 3026:5, 3034:3-6 (Mr. Matsui)) failure to include these emissions sources is in direct conflict with IPCC guidance. (Ex. FOR-317 ¶¶ 12-17.) These witnesses acknowledged that excluding these emissions would result in undercounting Project emissions. (*Id.* at 3028:12-19.)

3. Sites JPA's Underestimation of Emissions Underestimates Needed Mitigation with No Firm Commitment to Cure

Sites JPA's arbitrary and unsupported use of an alpha (α) value of 1 is the basis for its estimate of the Project's GHG impacts, and thus the basis for its proposed mitigation. There is no firm commitment to cure the resulting deficiency in mitigation. The GHG Reduction Plan suggests only a possible reevaluation of emissions as the project is built and operated. (Ex. AHO-88 at 19 ["the Authority ***may*** …reanalyze GHG emissions." (emphasis added)].) Sites JPA witness Mr. Matsui confirmed that Sites JPA would have the "***opportunity***… to reevaluate what the emissions are" (HT Vol. XI at 2978:16 (emphasis added)), but that, regarding mitigation of emissions, "estimates established in the environmental document are sufficient for identifying what the commitment is if that's what the Authority elects to do." (*Id.* at 2980:12-15; 2979:11-17.) Mr. Matsui later provided a conflicting statement, referring back to the Reduction Plan, that updated analyses "will be performed," (*Id.* at 2981:3). Despite Mr. Matsui's

confusion, he was clear that if the reservoir does not achieve net zero emissions, that would not trigger any limitation or consequence on the Project. (*Id*. at 3038:9-16.)

The GHG Reduction Plan lacks a clear, binding commitment to correct for errors like the underestimation of surface emissions and the missing emissions sources.

4. The Sites JPA's GHG Mitigation Plan is Inadequate and Largely Unworkable

The state of California has committed to achieving net zero emissions by 2045. (HT Vol. XI at 2935:22-2936:1.) The Sites JPA proposes a three-tiered plan to mitigate its emissions: onsite measures, offsite measures, and offsets. The purported effectiveness of this structure collapses under scrutiny.

Onsite reduction measures are the first tier of the plan, but it includes no specific or enforceable measures to actually lower the emissions of the reservoir. (AHO-88 at 20-22.) Sites JPA's experts admit that the greatest single source of emissions cannot be reduced, and that there is no plan to use "new technologies" to do so. (HT Vol. XI 2987:14-15 (Mr. Matsui); *Id.* at 2988:8-11 (Ms. Jaglo).) They also state that onsite emissions reduction can be waived if not feasible. (*Id.* 20-23.)

The next tier of the plan, offsite measures, will later develop a plan to reduce some unspecified amount of emissions offsite. (AHO-88 at 22-23.) Offsite measures are not required to meet the standards of being real, additional, permanent, quantifiable, and verifiable. (*Id.* at 2994:8-2995:20 (Mr. Matsui).) In addition, Sites JPA admits that it has not identified any local projects. (*Id.* at 2990:22-2991:3.) If the Sites JPA decides none are feasible, it can instead focus on the third step of the plan: offsets. (*Id.* at 2997:6-13.)

Ultimately, mitigation is likely to boil down to the third tier of its plan: purchasing offsets for substantially all of the (under)estimated emissions. But offsets are not a free pass to emit without environmental consequences. According to the Sites JPA's own estimates of the project's emissions, achieving net zero will require a million new tree seedlings growing for a year, or over 15,000 gas passenger vehicles not being driven for a year. If the true emissions are double, triple, or quadruple the Sites JPA's estimates, then the scale and difficulty of offsetting them increases proportionately, and would not otherwise be necessary without the Sites Reservoir.

Growing evidence shows that carbon credits are not up to the challenge. Although credits have a role in mitigating emissions that truly cannot be avoided, treating them as a foolproof mechanism that

justifies approving unnecessary emissions is backwards. Carbon credits systematically over-credit emissions reductions, are unlikely to be "permanent" due to climate-induced uncertainly (i.e. wildfires destroying offset forests), are difficult to guarantee as truly "additional," and are vulnerable to political rollbacks. They have been described as an "imaginary commodity created by deducting what you hope happens from what you guess would have happened."

It is not in the public interest to approve massively emitting projects that will worsen the climate crisis. Unsubstantiated net-zero promises cannot obscure that fact.

5. Friends of the River's GHG Testimony and Evidence is more Reliable than that of the Sites JPA

The Sites JPA failed to present witnesses that were critical to preparation of its GHG emissions estimates. (*Id.* at 2973:18-19 ["The specific modeling team that prepared the analysis in 21A, they were not available to be at this hearing"] (Mr. Matsui).) Its GHG analysis misread IPCC guidelines and thus failed to follow best available science. (Ex. FOR-317 ¶¶ 12-17.) The GHG modeling team failed to use a site-specific estimate of reservoir trophic status (alpha). (HT Vol. XII at 3034:3-6; *Id.* at 3025:2-3027:25.) These flaws have embedded severe inaccuracies into its analysis, from estimates of emissions to adequate mitigation.

The State Board should disregard Sites JPA's estimates of GHG emissions and instead rely on the estimates provided in Exs. FOR-20a and FOR-317 in assessing and evaluating the Project's climate impacts and potential mitigation measures.

VI. THE RECORD EVIDENCE, IN LIGHT OF THE HEARING ISSUES, REQUIRES DENIAL OF THE APPLICATION AND PETITION

A. Hearing Issues 1 and 2: State Filings and Release from Priority

The State Board should not approve the requested assignment of a state filing for the Sites Project or the requested release from priority in favor of the Sites Project. If the State Board approves a permit for the Project, the water right should have a priority date that reflects the date of the water right application.

The reasons are described above and in the testimony of Mr. Stork. (See Ex. FOR-20a and supporting exhibits.)

The Sites petition for assignment clearly does not qualify under the county-of-origin protections under which the State Board assigns some state filings. The Sites Project would be an export project, the polar opposite of a county-of-origin assignment. Sites JPA's apparent justification for petitioning for assignment is that the Project would somehow qualify as part of a state plan, similar to state filings under which the State Board assigned to the CVP and SWP. As described above and in the testimony of Mr. Stork, the situations are clearly distinguishable.

Large responsibilities for maintaining flows and water quality have come with the water rights for the CVP and SWP. The Sites Project as proposed would have no similar responsibilities. Restrictions on water deliveries and use of Delta export facilities are now also integral to CVP and SWP water rights. As proposed, the Sites Projects would have no such restrictions, and would even be able to export water at times the CVP and SWP was export-constrained.

Though their business model has created a host of problems, the CVP and SWP provide water to a wide range of entities at a relatively low cost. The Sites Project would provide water to a limited subset of project partners at very high cost; water available to others via transfer would come at an even higher cost. The CVP and SWP provide water essential to a very large number of Californians in a very large part of the state, a dependence which itself is problematic. Water from the Sites Project is not really essential to anyone.

The hearing issues ask whether the Board should evaluate assignment of a state filing to the Sites Project on the basis of public interest. The general answer is: of course it should. The specific answer is: the Sites JPA has not demonstrated the public interest assigning the Sites Project a 1977 priority date. The Sites Project would not best conserve the state's waters or the public interest. What would conserve is a vision and a business model of diversion that was left behind half a century ago but that persevere only through persistence and the lack of willingness to let a bad dream die.

It is unclear to NGO protestants whether assignment of a state filing would deprive the counties of origin of water needed for their development, though Mr. King has made arguments in that regard that deserve careful consideration. That immediate issue on the broader level could and should be cured by a permit term assuring counties of origin of their priority to water for future development, should the

state filing be assigned. But that cure would be dependent on an unwarranted underlying decision to assign the state filing in the first place.

For the same reasons that assignment of a state filing is unwarranted, so too is a release from priority. The answers to questions regarding assignment of a state filing also apply to the request for release from priority.

B. Hearing Issue No. 3A – Water Availability, Necessary Instream Flow, and Conditions

Sites JPA has failed to demonstrate that there is water available for diversion above the flows necessary to remain instream to reasonably protect fish and wildlife, beneficial uses of water, or public trust resources. Instead, Sites JPA's focus was on whether water was available above and beyond existing regulatory requirements. Because those requirements are inadequate to protect public trust resources, fish and wildlife, endangered species, or beneficial uses of water, including Tribal uses and fisheries, Sites JPA has failed to meet its burden with respect to Hearing Issue 3A.

The best available science shows that 75% of unimpaired Delta outflow is necessary to support and protect public trust resources and native fish populations. (Ex. BK-96.) The State Board is considering adopting an updated Bay-Delta Plan requiring 55% of unimpaired flow, within an adaptive range of 45% to 65%. (Ex. AHO-279.) The State Board is also considering alternative related to the proposed Voluntary Agreements to ensure protection of current existing, but unregulated, flows. (Ex. BK-133.) Sites JPA did not analyze at 75% of unimpaired bypass flow requirement and did not take the other potential outcomes seriously. Instead, Sites JPA asserted that adoption of the options in the 2024 Draft Program of Implementation would reduce the water supply for the Project by 30%. (Ex. SITES-424.)

An update of the Bay-Delta Plan is scheduled to occur this year. If the AHO does not recommend rejection of Sites' Application and Petition because of this lack of evidence, it should, at minimum, recommend that the State Board decide the Sites JPA's Application and Petition after the State Board finalizes its update of the Bay-Delta Plan. Such a recommendation would allow the State Board to make an ultimate decision on the Application based on the best information for water availability, water supply benefits, unit costs, and impacts of the Project.

The Sites JPA's proposed operations would substantially reduce the purported "additional" flows promised by the Voluntary Agreement parties. Sites JPA, however, failed to provide information about the potential impact of requirements identified by the State Board about how the Board's two proposed alternatives for protecting existing baseline flows would impact operations of the Project. (Ex. BK-133.) If the Voluntary Agreements are adopted as part of a Bay-Delta Plan, Sites JPA's diversions should be limited to wet years only.

If the Application and Petition are granted, they should be conditioned as explained in § VII., *infra*, and in Appendix A.

C. Hearing Issue No. 3D – Public Interest

For the reasons set forth above, as well as in the summary below, the State Board should deny the application because it is not in the public interest. If the State Board approves the application, then the State Board should also include the NGOs' proposed permit conditions as set forth in the Appendix attached to this Closing Brief.

The proposed appropriation is not in the public interest. There are significant uncertainties regarding Project water costs, and the Project will further impair the Bay-Delta ecosystem and have a significant impact on instream flows that are needed for public trust resources. If approved, the NGO's have proposed the terms and condition in the attached Appendix.

The Sites Project would have significant, unmitigable impacts on Tribal cultural resources, lands, and interests. For the reasons set forth in the Tribes' Closing Brief, the appropriation will impact tribal lands, tribal interest and tribal cultural resources.

There is no evidence in the record that the proposed appropriation would advance racial equity or environmental justice. In fact, for the reasons set forth in the Tribes' Closing Brief, the proposed appropriation would have the opposite effect.

The Sites Project will have unreasonable impacts to water quality, fish, wildlife and public trust resources. The Sacramento River, Sacramento-San Joaquin River Delta, and San Francisco Bay are home to an array of native fish populations, some of which are at high risk of extinction. The evidentiary record demonstrates that Sites operations will reduce Sacramento River flow during peak migration and rearing

periods for juvenile Sacramento Valley Chinook Salmon. These reductions happen throughout the Sacramento River during crucial migratory and rearing periods for Chinook Salmon.

At Wilkins Slough, flows under the Project would be lower from January through April in each water year type, as well as in December during the majority of years. Winter-run juveniles are found downstream of Wilkins Slough in moderate to high abundance from November-February. Spring-run juveniles migrate in the lower Sacramento River from November through May. And fall-run juveniles lower river migration window spans March-May. During each of these migratory windows, these juveniles would experience reduced flows during their outmigration windows. The Project would similarly impact Delta outflow, because in all or most years from December-April and June, outflow would be reduced. This period includes the prime months of outmigration for all Central Valley Chinook Salmon runs.

The Sites Project's operations would substantially reduce availability of wetland and riparian habitats used by rearing Chinook Salmon as they prepare to migrate to the ocean. These reductions would occur throughout much of the lower Sacramento River and Delta during all or most water year types. Similar impacts would occur related to White Sturgeon, Green Sturgeon, Delta Smelt, Longfin Smelt, and the estuarine habitat of San Francisco Bay and the Delta.

These harms are unreasonable on their face and are not outweighed by the limited and uncertain benefits claimed by Sites JPA. The evidence in the record indicates that the Project would result in limited supplies of high cost water, and that diversions, especially from September to November and after May 1 will have significant harms. The cost of water is almost certain to increase with an updated Bay-Delta Plan, further limiting the benefits and further demonstrating that the harms would far outweigh the marginal benefits.

Additionally, because the Project would be an export project, diversions to Sites should be subordinated to uses in the area of origin, which dictates denial of the Permit.

D. Hearing Issue No. 4 – Alternatives and Conditions

Alternatives were identified in the administrative record. (WCT-003-072 and WCT-101-133.) Sites JPA, however, chose not to analyze alternative water supply and storage options. Without evaluating alternatives, Sites JPA cannot know if it is feasible to avoid or minimize the impacts to public trust resources which they identify in the administrative record.

If the Permit is approved then the permit conditions identified in Appendix A and described below should be included in the water rights permit.

VII. PROPOSED ADDITIONAL TERMS AND CONDITIONS

A. NGO Proposed Conditions

While the Application and Petition should be denied, should the State Board grant them, the best available science and California law dictate the imposition of conditions in any approved permits to ensure the protection of the public interest and of public trust resources. As explained by Dr. Rosenfield, as "impacted as Sacramento River and Delta hydrology are currently, and as precarious as populations of numerous fish species are, the direct and cumulative impacts of diversion to Sites Reservoir may be negligible if certain requirements are met." (Ex. BK-1 at 8-9 (¶ 16.) A consolidated list of the conditions proposed by the NGO Parties is attached as Appendix A.

First, conditions must be included to ensure the protection of instream flows, native fish and fisheries, and public trust resources. (Appendix A, Nos. NGO 1-6, 14-16, 18.) Second, conditions must be included to ensure that the Sites Project is treated as an export project. (Appendix A, Nos. NGO 25-30.) Third, conditions must be set to ensure that the Sites Project's operations do not degrade water quality in the Sacramento River or the Delta. (Appendix A, Nos. NGO 7, 8, 12, 20, 21.) Fourth, any permit should be conditional on Sites JPA completing additional analyses about impacts to tribal resources prior to constructing or operating the Project. (Appendix A, Nos. NGO 9-11.) Fifth, a permit term must be adopted to ensure Sites JPA's promises of net-zero Greenhouse Gas Emissions are kept and met. (Appendix A, No. NGO 19.) Sixth, terms and conditions to ensure that Sites JPA and participants are responsible for and pay all costs, including for maintenance and decommissioning of the facility, must be included in the any permit. (Appendix A, Nos. NGO 22-24.) Seventh, and finally, if the VAs are adopted, the State Board should include Permit terms in Sites Permit to (a) limit diversion to wet years, and (b) ensure protection of currently unregulated "baseline" flows as described in Alternative 6a options 1 and 2. (Appendix A, No. NGO 13.)

The permit terms offered by Sites Reservoir are inadequate to satisfy the legal obligations of the State Board.[7] Sites JPA proposes to limit conditions on its operations to CESA rules from the ITP, rather than having specific conditions imposed in its permit by the State Board. This does not comply with California law and does not adequately ensure that harms from the Project which could be avoided are not inflicted on native fish or water quality. The terms proposed by Sites JPA are not based on the best available science and will not sufficiently avoid or mitigate impacts on public trust resources. Moreover, the reliance on adaptive management or other agencies to fulfill the State Board's obligations is inadequate.

VIII. CONCLUSION

For the foregoing reasons, and based on the evidence submitted in this proceeding, the Application and Permit should be denied.

Dated May 27, 2025

/s/ Eric J. Buescher
Attorney for San Francisco Baykeeper

/s/ Don Mooney
Attorney for Friends of the River, California Sportfishing Protection Alliance, Save California Salmon, and Sierra Club

/s/ John Buse
Attorney for Center for Biological Diversity

/s/ Konrad Fisher
Water Climate Trust

[7] The NGO Parties support the inclusion of Sites Special Term 6 related to the Trinity River.

APPENDIX A

NGO PARTIES' PROPOSED TERMS AND CONDITIONS

Appendix A – NGO Parties' Terms and Conditions, if the Application and Petition Are Not Denied

<table>
<tr><th>Term Number</th><th>Proposed Language / Term</th><th>Evidence</th></tr>
<tr><td>NGO 1</td><td>The season of diversion shall be from December 1 through April 30.

If the season of diversion begins prior to December 1, the conditions identified in NGO 2 in December should apply. If the season of diversion ends after April 30, the conditions on diversions identified in NGO 2 in April should continue to apply.</td><td>Exs. BK-1 at 18, 22; BK-5; Ex. BK-28; BK-72, BK-118; CSPA-01 at 20-21.

HT Vol. VIII, 2024:18-25.</td></tr>
<tr><td>NGO 2</td><td>No diversions unless each of the following conditions are met

<table>
<tr><th></th><th>December</th><th>January</th><th>February</th><th>March</th><th>April</th></tr>
<tr><td>2A</td><td colspan="5">Net Delta Outflow Index is equal or greater than 75% of total unimpaired Delta outflow</td></tr>
<tr><td>2B</td><td>Sacramento River flow is >14,126 cfs at each of Red Bluff, Hamilton City, and Wilkins Slough</td><td colspan="3">Sacramento River flow is >24,720 cfs at each of Red Bluff, Hamilton City, and Wilkins Slough</td><td>Sacramento River Flow is Greater than 11,030 cfs at Wilkins Slough</td></tr>
<tr><td>2C</td><td colspan="5">Sacramento River flow is >35,315 cfs at Freeport</td></tr>
<tr><td>2D</td><td></td><td colspan="4">Cumulative average Delta Outflow from January 1 to Date of Diversion is > 42,800 cfs</td></tr>
</table>

For these conditions, where the compliance point is at or upstream of the point of diversion, the measurement shall be based on the actual 72-hour running average of flow at that location. Where the compliance point is downstream of the point of diversion, the measurement shall be based on the 72-hour running average of forecasted flow at that location. (See Sites-298 at 44, 49 (Conditions 9.12. and 9.15).)</td><td>NGO2A (native Bay-Delta fish): Exs. BK-96 at 17; BK-01 at 12-13 (¶ 23).

NGO2B (winter-run Chinook Salmon): Exs. BK-01 at 20 (¶ 38.j); BK-21.

NGO2C (Chinook Salmon): Exs. BK-01 ¶¶ 38.b, 38.g, 40; BK-27; BK-101.

NGO2D (Longfin Smelt, White Sturgeon): Exs. AHO-271 at 193; BK-01 at 55 (¶ 128); BK-96 at 91 (Table 8).</td></tr>
</table>

NGO 3	No diversions of flows for 14 days following a 2-day increase of at least 19% of flow at Woodson Bridge over the previous 7-day baseline. The baseline shall reset every 7 days for purposes of measuring a 2-day increase.	(Green Sturgeon): Exs. BK-01 at 47-48 (¶ 106); BK-80 at 7, 10 (Figures 2 and 4).
NGO 4	Total diversions from Sites Reservoir on any day, summed across all points of diversion, shall be no greater than 5% of Sacramento River flow as measured at the point of diversion where flow is lowest.	Ex. BK-1 at ¶ 16.
NGO 5	No diversions to Sites Reservoir shall occur when average daily water temperatures at either point of diversion exceed 18.3ºC (~65ºF).	Ex. PCFFA 15 at 7-9.
NGO 6	No diversions to Sites after February 15 during Critically Dry, Dry, or Below Normal water year classifications.	Ex. CSPA-1 at 21 (¶ 54).
NGO 7	A permit term ensuring no diversions occur when a Temporary Urgency Change is in effect for Delta Water Quality should be included. Sites JPA's Special Term 9 should be modified as follows: "Permittee shall not divert water to storage during times when Bay-Delta Water Quality Control Plan or CESA or ESA permitting requirements ~~for Delta Outflow, X2 (Spring), Rio Vista, Emmaton, Jersey Point, and Delta Export to Inflow (E:I) ratio~~ are modified by a Temporary Urgency Change Petition/Order ~~and the CVP or SWP are operating to the modified conditions~~."	Ex. CSPA-101 at 10-11 (¶¶ 29-31).
NGO 8	No deliveries from Sites Reservoir south of Delta, except for reasons of health and safety, shall occur when Temporary Urgency Change Orders for Delta water quality are in effect.	Ex. FOR-10a at 29-30 (¶¶ 54-55)

NGO 9	All construction and operations of the Project must include effective Tribal consultation and involvement. No construction or operation of the Project may begin until the State Board and impacted Tribes have approved the Sites JPAs plan for consultation and involvement. Current and future designations of Tribal Beneficial Uses in the Central Valley Region and Bay-Delta shall be integrated into Sites Reservoir planning, construction and operation upon designation.	*See* Tribal Parties' Closing Brief.
NGO 10	No construction of the Reservoir may begin until a complete survey of Tribal Cultural Resources likely to be impacted by construction or inundation has been finished.	*See* Tribal Parties' Closing Brief.
NGO 11	Any and all adjudicated and unadjudicated tribal water rights shall have priority over the Sites Water Right A025517X01 or any other permit issued to the Sites JPA.	*See* Tribal Parties' Closing Brief.
NGO 12	No releases from Sites Reservoir shall occur unless cyanobacteria cells and toxin concentrations in the Reservoir are below California Cyanobacteria and Harmful Algal Bloom Network Caution (Tier 1) levels of 4000 cells/ml and 0.8 micrograms/L for microcystin.	Exs. AHO 108 at 38 (Table 2D-2); Ex. BK-1 at 73-74.
NGO 13	If the Voluntary Agreements are adopted as part of a Bay-Delta Plan, diversions shall be limited to wet years only. Additionally, both options 1 and 2 of the State Board's proposed Alternative 6a in the October 2024 Draft Program of Implementation should be included as conditions in the Permit if the VAs are adopted.	Exs. CSPA-1 at 21; CSPA-101c at 7, Table CSPA 101B; Ex. BK-133.
NGO 14	No releases from Sites Reservoir to the Sacramento River or the Cache Slough complex shall occur when the water temperature of the water discharged exceeds the water temperature of the receiving water.	Exs. BK-01 at 22-23 (¶¶ 41-45), 67 (¶ 154),
NGO 15	No diversions to Sites Reservoir shall be allowed in a water year that follows a season in which releases from Keswick Reservoir cause a total decreased stage change in the Sacramento River at the Keswick Dam gage from October 1 through December 31 greater than 1.5 vertical feet.	Ex. CSPA-1 at 21-22 (¶ 56).

NGO 16	No diversions to Sites shall be allowed in December and January in a water year that follows a winter run spawning season in which temperature dependent mortality of Sacramento River winter-run Chinook Salmon eggs was greater than 30%, or in which egg to fry survival of winter-run Chinook Salmon was less than 25%.	Ex. CSPA-1 at 21-22 (¶ 56).
NGO 17	Sites JPA's Revised Trinity River Term.	SPA Special Term 6.
NGO 18	Any agreement between the Sites JPA and the Bureau of Reclamation regarding the Sacramento River Temperature Management Plan involving releases of water from Sites reservoir to back up storage behind Shasta dam must include an analysis of compliance and of the impacts of the Temperature Management Plan both with and without those uses. Such an analysis shall be part of the Sites JPA's Compliance Plan pursuant to SWRCB Standard Permit Term 70.	Ex. CSPA-1c at 10-12 (¶¶ 26-36)
NGO 19	Prior to operation of the Project, and on an ongoing basis after operations begin, Sites JPA must update its accounting of reservoir greenhouse gas emissions using the best available science and tools and implement concrete mitigation measures that achieve net zero emissions consistent with the updated accounting, without relying on the purchase of carbon credits or offsets.	Ex. FOR-20s at 2-7 (¶¶ 3-11); Ex. FOR-317 at 3-6 (¶¶ 3-7); HT Vol. XXXI at 6956:12—6958:15; *See also* Tribal Parties' Closing Brief.
NGO 20	Wherever existing quality of surface or ground waters are better than objectives established for those waters in a basin plan or water quality control plan, the existing quality, including temperature, shall be maintained or improved and not be degraded or diminished due to operation of the Sites Project.	State Water Board Resolution 68-16.
NGO 21	Sites operations must be consistent with all existing law and existing water use plans, including Recovery Plans, Water Quality Control Plans, Biological Opinions, Incidental Take Permits, Water Board Orders and Water Board Resolutions, as well as any later adopted more protective plans, permits, orders, opinions, or resolutions.	

NGO 22	All operations and maintenance costs for the project will be paid by the Participants of the Sites Joint Powers Authority.	Ex. FOR-14 at 13 (¶22).
NGO 23	The Sites Project Authority shall establish a mitigation fund in an amount sufficient to ensure that any harms caused by the Project can be paid from the mitigation fund, rather than by the public or from operational expenses.	Ex. FOR-14 at 13-14 (¶¶ 23-24)
NGO 24	The permittee shall develop a plan to decommission the project at the end of its useful life. The costs of this plan shall be included in the capital, operating and maintenance costs for the Project. No construction or operations may begin until the State Board has approved the plan.	Ex. FOR-20s at 3 (¶ 5), 8 (¶ 12) (*citing to* Ex. FOR-180 (Pacca, 2007), Ex. FOR-181 (Amani et al. 2022)).
NGO 25	As a condition of any permit issued, the Sites Project Authority shall meet a defined portion of Delta water quality obligations now borne by the Department of Water Resources and the Bureau of Reclamation. The State Board shall base this portion on storage volumes and/or capacity.	Ex. FOR-10a at 28-30 (¶¶ 53-57)
NGO 26	Any permit issued shall be subject to Water Code § 1215, area of origin law, either by rejecting the assignment of a state filing and offering a new water right, or by including provisions in any assignment that subjects the assignment to Water Code § 1215.	Ex. FOR-10a at 29, 31 (¶¶ 56, 60, 61)
NGO 27	Any permit issued shall make the use of the permit subject to the requirements of the Delta Protection Act	Ex. FOR-10a at 28-30 (¶¶ 53, 56, incl. footnote 101)

NGO 28	Any permit issued shall allow no transfer of water sourced in Sites Reservoir through CVP or SWP export facilities when the CVP and SWP export facilities are subject to restrictions on export of CVP or SWP water, such that the sum of all exported water would exceed the amounts allowed to the CVP and SWP.	Ex. FOR-10a at 35 (¶ 70)
NGO 29	Any assignment or release from priority shall contain standard conditions to protect counties of origin.	Ex. FOR-10a at 33-34 (¶¶ 65-69)
NGO 30	Any permit issued shall restrict the place to the actual places of use of Sites participants, not including the Bureau of Reclamation. Place of use for Reclamation water sourced in Sites shall include only the places of use of the Central Valley Project.	Ex. FOR-10a at 35-38 (¶¶ 72–81)